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"JOURNEY OF A THOUSAND MILES" CHALLENGES ENCOUNTERED BY INTERNATIONAL MEDICAL GRADUATES AND COMPARATIVE PROBLEMS FACED BY AMERICAN GRADUATES DURING INTERNAL MEDICINE RESIDENCY TRAINING AT A COMMUNITY HOSPITAL IN ILLINOIS.

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BACKGROUND: International physicians make up 25% of the physician work force in the United States, a majority of international applicants pursue Internal Medicine. Based on their accents, religious symbolism or ethnicity, they are often perceived as being different. American-Graduates, although being in a familiar environment, face huddles such as student-loan debt and face challenges such as having to compete with International-Graduates who have more clinical experience.

METHODS: A cross sectional study was done at Saint Francis Hospital. Questionnaires included a basic survey about questions including wellness, personal and work life balance, burnout, and discrimination at the workplace. International students had additional questions including ease of availability and access to basic necessities such as housing, cultural food, and community and learning curve. Questions also included communication barriers faced, and other perceived challenges. American Graduates were inquired about challenges and their perception regarding integration of international students.

RESULTS: Total residents were 60; 39-IMGs-65%, 2-US-IMGs 3.33%, 19-AMG-31.66% with 22- IMGs-56.4% and 10-AMGs-52.63% replied. Within IMGs: 12-females(54.54%) and 10-males(45.45%). AMGs: there were 5 females(50%) and 5 males(50%). 100%-IMGs applied for US residency match for: Better opportunities, 36.36%-Better pay, 90.9%-Quality of life, 86.36%-Work hours. 95.45%-IMGs reported better work hours. 31.81%-IMGs stayed late for work vs 20%-AMGs. 22.73%-IMGs had difficulty finding apartment vs 0%-AMGs. 68.19%-IMGs reported difficulty in finding local food, 77.28%-reported difficulty finding home community. 90.9%-IMGs feel compensated enough for the work they do vs 60%-AMGs. 27.27%-IMGs face discrimination; 83.33% were discriminated based on race vs 30%-AMGs; 66.66% was racial and 33.33% sexual. 45.45%-IMGs reported depression vs 60% AMGs. 80% IMG and 83.33% AMGs are likely to seek help, mostly from family. Both IMGs and AMGs reported to feel burned out at least once a month, most during long-call days. 63.63%-IMGs reported ease in balancing work/personal life vs 80%- AMGs. Most IMGs and AMGs interact with each other during work, and have no problems making friendsips, but rarely meet socially. 36.36%-IMGs think they are treated differently than AMGs. Biggest challenge for IMGs when adjusting to the US system was cultural change and getting used to EMRs. 81.81%- IMGs and 90%-AMGs stated that this is their intended specialty. Most IMGs are able to visit home 1-2 time/year, 4 cannot due to civil war. 100% IMGs do not regret their decision to pursue residency in USA.

CONCLUSIONS: This study outlines different difficulties faced by IMGs and AMGs alike. IMGs reported more racial discrimination and the biggest challenge was to learn the Electronic-Medical-Records and culture. Despite these challenges, IMGs reported that 100% of them do not regret their decision to pursue residency in the United States.

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A MULTI-SITE FOCUS GROUP STUDY OF U.S. ADULT WOMEN'S BELIEFS AND ASSUMPTIONS ABOUT BLADDER HEALTH AND FUNCTION

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BACKGROUND: The Study of Habits, Attitudes, Realities, and Experiences (SHARE), a qualitative study of the Prevention of Lower Urinary Tract Symptoms (PLUS) Research Consortium, explored women's knowledge experiences, perceptions, knowledge, and behaviors about bladder health/function. The purpose of this analysis was to characterize women's lay beliefs and assumptions about bladder health and function.

METHODS: Forty-four focus groups were conducted across seven U.S. research centers with 360 women and adolescents, organized by six age categories. Focus groups were audio-recorded and transcribed. Following transcript and fieldnote coding, multi-level qualitative content analyses was used to classify emergent themes. A transdisciplinary lens and inductive approach guided data interpretation of the" bladder beliefs and assumptions code". A team of investigators articulated interpretive insights, which were validated by a community engagement panel.

RESULTS: Women exhibited limited understanding of bladder health and function, with assumptions and beliefs shaped by personal experience and hearsay. Except for the rare occasion when women had input from a medical professional, notions about bladder health and function were characterized by uncertainty, tentativeness, and unconfirmed impressions. Women speculated on (1)the function of the urinary tract system in cleansing or flushing the bodily system of impurities and toxins, (2) the functional relationship between and among the kidneys, bladder, urethra, vagina, pelvic floor and (3)the impact on bladder function of medications for chronic conditions. Women's assumptions and beliefs about bladder health were framed within a "cause and effect" perspective, covering a wide array of habits/behaviors while conjecturing about the physiological mechanisms through such practices promote or deter bladder health. Finally, there was agreement on the importance of bladder friendly habits and the inadvisability of potentially harmful practices. This was acompanied by an assumption that bladder problems could be prevented by developing community- based programs for educating women about bladder health and function, encouraging women to practice healthy bladder habits, eliminating taboos about discussing bladder health, and empowering women to speak out about their bladder-related experiences and concerns.

CONCLUSIONS: Community-engaged public health messaging can inform women's assumptions and beliefs about bladder health/function, educating women about the promotion of bladder health and the prevention of LUTS.

BEHAVIORAL INCENTIVES TO IMPROVE MOBILITY AND DECREASE OPIOID USE IN VETERANS WITH CHRONIC PAIN

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BACKGROUND: An estimated 88.5 million adults suffer from daily pain, resulting in an estimated cost of $635 billion in lost productivity and $300 billion in health care expenditures. To manage their chronic pain, 5 to 8 million Americans take an opioid medication daily. However, the risks associated with ongoing opioid use (overdose, abuse, diversion) temper their analgesic effects. Appreciating the gains in health outcomes that behavioral incentives produce, we tested the hypothesis that loss-framed financial incentives combined with technology enabled care (TEC) can improve patient mobility, reduce pain, and decrease opioid use in patients with chronic pain.

METHODS: We conducted a randomized controlled trial, allocating 40 patients 1:1 to a lottery-based behavioral incentive program combined with TEC vs. TEC alone (e.g., text-message communication and activity trackers). Patients were eligible if they received care from a VA pain-focused primary care program, on opioid therapy, and had a cell phone with text messaging capabilities. Patients were excluded if they had cancer-related pain, sensory impairments precluding the use of TEC, or had mobility limitations precluding them from walking. The primary outcome was the change in mobility (number of steps taken), and secondarily, pain severity, physical function, and opioid use using self-reported questionnaires over 12-weeks. Data were collected weekly using activity trackers, and text-messaged questionnaires. We measured baseline mobility using a two-week pre-study period observation before randomization. For the lottery + TEC arm, participants were eligible for a weekly regret lottery if their steps increased by 5% from the prior week. Once the subject reached 150% of baseline, they were always entered into the lottery. The eligible lottery participants could win either $30 or $100; those not meeting the walking goals were told what they would have won had they met their goal.

RESULTS: Forty subjects have been enrolled and 38 have completed the study. The remaining two subjects will complete the trial by January 31, 2020. The results of the full sample will be available for presentation. Based on interim data analyses on the first 20 subjects, the lottery + TEC arm increased weekly average by 2004 steps, whereas the TEC only arm decreased by 1239 steps. For secondary outcomes, the lottery + TEC arm had improvements in pain severity and physical function but not chronic pain.

CONCLUSIONS: Combining a regret lottery incentive with TEC improved mobility in patients with chronic pain, as well as increased participation in exercise and decreased pain severity and interference. While additional interventions or longer-term follow-up may be needed to observe decreases in opioid use, our findings provide important insights into the potential for behavioral incentives to improve the quality of life for Veterans on opioids for chronic pain.

A BILINGUAL PATIENT PORTAL: WHO ARE THE SPANISH-SPEAKING PORTAL USERS?

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BACKGROUND: Patient portals are a standard part of care and have an impact on health outcomes. However, limited English proficient (LEP) patients lag in their use of portals. This gap has been attributed to a lack of multilingual portals. Our hospital offers a bilingual (English and Spanish) portal, but little data exists on who are Spanish-speaking portal users. The goal of our study was to understand factors associated with the use of a bilingual portal among Spanish-speaking patients.

METHODS: We used institutional data from an academic medical center using Epic's MyChart. Our study population was Spanish-speaking patients, defined as those who had Spanish as their preferred language and who had at least 1 encounter or portal login since the implementation of the Spanish portal in October 2016. Our primary outcome was portal use, defined as having an active registration status. We evaluated factors associated with portal use including demographics and patient complexity (defined as number of problems on their problem list). We also examined the relationship of portal use to Emergency Department (ED) and outpatient visits. We performed unadjusted and adjusted analysis comparing Spanish-speaking portal users and nonusers. Analyses were performed using R software version 3.5.

RESULTS: From the 36,256 Spanish-speaking patients included in our study, we found that only 3,789 patients were portal users, accounting for 0.7% of all portal users. This number represents 10.5% of Spanish- speakers. In multivariate analysis of Spanish-speaking patients only, the characteristics associated with portal use were being younger, female, married or widowed, and having more health problems (Table). We also found Spanish-speaking portal users to have a higher number of outpatient visits, as compared to Spanish- speaking nonportal users.

CONCLUSIONS: Despite a bilingual portal, Spanish-speakers made up a small percentage of portal users. Portal users tended to have worse health status and more outpatient visits, in contrast to descriptions of portal users as the "worried well." Our study is limited by inaccuracies of patient language in administrative data. Ultimately, language is only one barrier to portal use among Spanish-speakers, training and institutional commitment are critical to achieve technology equity.

Table. Association Between Patient Characteristics and Patient Portal Use

	Bivariate Analysis			Multivariate Analysis	
	Spanish-speaking Portal User N= 3789	Spanish-speaking non-Portal User N=32467	p-value	OR	p-value
Age, mean(sd)	50.2 (16.9)	52.2 (17.6)	<0.001	0.97	<0.001
Sex			<0.001		
Female, n(%)	2074 (70.6)	21019 (64.7)		1.17	<0.001
Marital status, n(%)			<0.001		
Married	1857 (49.1)	12424 (38.3)		1.96	<0.001
Single	1367 (36.1)	15049 (46.4)		ref	
Divorced/Separated	407 (10.7)	3626 (11.2)		1.31	
Widowed	158 (4.2)	1368 (4.2)		1.80	
Number of Medical Problems, median (IQR)	9 (4-16)	4 (1-11)	<0.001	1.04	<0.001
ED visits, mean (sd)	1.7 (2.7)	1.4 (2.7)	<0.001	0.93	<0.001
Outpatient Visits, median (IQR)	12(5-27)	2 (0-12)	<0.001	1.02	<0.001

A BRIEF PRE-VISIT EDUCATIONAL VIDEO IMPROVED PATIENT ENGAGEMENT AFTER CLINICAL VIDEO TELEHEALTH VISITS; RESULTS FROM A RANDOMIZED CONTROLLED TRIAL

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BACKGROUND: Interactive video telehealth primary care visits are increasingly used to improve access to care, but the technology may limit provider-patient communication and the development of the provider-patient relationship. We evaluated the efficacy of a brief pre-visit video to improve patient engagement in their video visits.

METHODS: Patients (N=87) with type 2 diabetes mellitus and elevated HbA1c (≥7%) were enrolled in a randomized controlled trial to test the efficacy of the pre-visit video. Patients were US Veterans living in rural communities who received primary care with video telehealth. The intervention was a 12-minute video that was developed using communication and social behavioral theories, patient interviews, and a panel of communication and clinical experts. The video encouraged patients to use active communication behaviors showing positive role models overcoming common communication challenges in medical visits. Using these resources, we also developed a pamphlet for patients that describes how to use active communication behaviors in medical visits. Patients were randomized 1:1 to receive the video DVD and pamphlet (intervention) or the pamphlet alone (control) by US mail prior to their scheduled video visit. Patients completed pre-visit and post-visit telephone interviews to collect demographics, covariates, and outcomes. Analyses compared the intervention and control groups using bivariate statistics and multiple regression. Here we report outcomes from survey measures; data collection for clinical outcomes is ongoing.

RESULTS: There were no statistically significant differences in age, gender, race, education, income, social support, depression screen, and physical or mental functional status between intervention and control groups (P>0.05). Mean baseline HbA1c did not differ in intervention and control groups (8.5% vs 8.6%; P=0.92). There were no statistically significant differences in intervention vs. control for patients' post-visit ratings of communication (94.2 vs. 89.0; P=.16), shared decision-making (17.2 vs 15.2; P=0.08), patient centered care (90.2 vs 84.9; P=0.21), or patient satisfaction (24.2 vs 23.5; p=0.53). Ratings of post-visit empathy were higher (44.6 vs 40.6; P=0.05) in the intervention group than control group. After adjusting for baseline outcomes using multiple regression, there was no difference in post-visit self-efficacy to communicate between intervention and control groups, but the intervention group reported higher scores on post-visit therapeutic alliance with the provider and higher patient engagement, compared with patients in the control group, [Beta 3.7 (SE 1.8); P=0.05] and [Beta 1.9 (SE 0.9) P=0.04], respectively.

CONCLUSIONS: This study showed the efficacy of a pre-visit video to improve patient engagement and therapeutic alliance after video telehealth visits with their provider. Future studies should be conducted to evaluate the effectiveness of pre-visit videos that promote patients' active participatory communication.

A CALL TO MEDICINE: A MULTICENTER STUDY OF SENSE OF CALLING AND PHYSICIAN WELLBEING

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BACKGROUND: Medicine is often viewed as a "calling"- a desire to commit one's life to work that is personally meaningful and socially significant. A sense of calling in arduous fields, such as music and academia, has been associated with greater job satisfaction, commitment, and wellbeing. No studies have determined if similar outcomes exist in medicine. In the setting of strenuous training and demanding careers, sense of calling has the potential to protect physician wellbeing. We aim to evaluate associations between sense of calling and physician wellbeing

METHODS: We conducted an anonymous multi-institutional cross-sectional survey of 1143 faculty internists and neurologists. The survey included five validated scales measuring sense of calling,[1] emotional exhaustion, depersonalization, cynicism, resilience, and work engagement. Primary outcomes were associations between sense of calling and these markers of wellbeing. Multivariate regressions were used, controlling for site, physician age, gender, race, specialty, years in practice, practice setting, compensation, clinical time, and faculty track.

RESULTS: A total of 433 physicians (37.8%) responded. Respondents were similar in gender and specialty to the invited population; most were clinician educators (183/393, 47%). Mean sense of calling was 5.04/6.00 (SD 1.17). Twenty-eight percent had symptoms of emotional exhaustion and 12% had symptoms of depersonalization. Sense of calling was negatively associated with emotional exhaustion (*beta* -0.57, 95% CI -0.69 to -0.44, $p<0.001$), depersonalization (*beta* -0.46, 95% CI -0.63 to -0.29, $p<0.001$), and cynicism (*beta* -0.60, CI -0.74 to -0.47, $p<0.001$), and positively associated with resilience (*beta* 0.14, 95% CI 0.07 to 0.21, $p<0.001$) and work engagement (*beta* 0.45, 95% CI 0.36 to 0.53, $p<0.001$).

CONCLUSIONS: Our findings show that sense of calling has beneficial associations with multiple aspects of physician wellbeing. Educators should find ways to cultivate, advance, and protect sense of calling in the process of learner professional identity formation to produce well and engaged doctors.

ACCEPTABILITY OF VIDEO DECLARATIONS OF ADVANCE CARE PLANNING PREFERENCES BY CANCER PATIENTS

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BACKGROUND: A videotaped declaration by patients of their advance care planning preferences could be an opportunity to supplement advance directive forms and allow patients to more fully express their preferences in a manner that is compelling for families and clinicians. The objective of this study is to examine the acceptability of video declarations among patients with advanced cancer from the patients' perspective.

METHODS: Participants were from outpatient and inpatient settings of a large urban safety-net hospital with a diagnosis of any type of advanced cancer. After viewing a brief educational video describing approaches to end-of-life care, we used a tablet computer to videotape participants as they described their wishes for medical care including specific medical treatments (i.e., CPR/intubation). Afterwards, we administered a questionnaire to participants about the acceptability of this process including close-ended rating scales (e.g., helpfulness, ease) and open-ended questions to allow the participant to provide further detail. Descriptive statistics were calculated and answers to open-ended questions were summarized and grouped by thematic category.

RESULTS: There were 29 participants; mean age was 61.3 (SD=10.1) years. About half were female (48%); the most prevalent race/ethnicity group was black/African American (41%), followed by white (34%), Hispanic (14%), and other (11%); 41% had ≤ high school degree. About half (48%) reported their health was fair or poor and half (55%) reported

having a previous conversation about end-of-life wishes with family/clinicians. The majority rated 'quite a bit' or 'extremely' to the following indicators of acceptability: confidence about what they said in their video (96%), making the video was helpful (86%), making the video was easy (65%), and recommending others make a video like this (79%). Several thematic categories described benefits of the video declaration process: authenticity ("Feels more from the heart"), face the issue head on ("… instead of avoiding conversation. Made me deal with it. Kept putting it off."), convey wishes to family ("Those that [are] concerned in your care that they know [my] position and can honor it."), and reassurance for family ("Easy for family to know what to do. Takes pressure off."). Participants also noted that the video could be difficult to make ("Not everyone thinks like I do").

CONCLUSIONS: Findings show patients with advanced cancer from diverse groups found the video declaration process to be acceptable, with almost all being confident in expressing their wishes and most finding the process helpful. Further research will examine the acceptability of the videos from the family member caregiver and clinician perspectives. If integrated into widespread use, video declarations may be an acceptable way to help promote care concordant with patients' preferences.

ACO AWARENESS AND PERCEPTIONS AMONG SPECIALIST PHYSICIANS VERSUS PRIMARY CARE PHYSICIANS: A SURVEY OF A LARGE MEDICARE SHARED SAVINGS PROGRAM

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BACKGROUND: Medicare Shared Savings Program (MSSP) Accountable Care Organizations (ACOs) have achieved only modest savings. One possible explanation for their limited success is organizational failure to engage frontline ACO providers, particularly those specialist physicians (e.g., cardiologists) and surgeons who serve as gatekeepers to expensive testing and procedures. However, it is unknown whether awareness and perceptions differ between specialist physicians versus primary care physicians (PCPs) in ACOs.

METHODS: We compared awareness and perceptions of ACOs between specialist physicians and PCPs. To do so, we designed and administered a survey to physicians in the Physician Organization of Michigan ACO, one of the ten largest MSSP ACOs. Our primary exposure was whether a respondent was a specialist physician, including internal medicine subspecialists (e.g., cardiologist), surgeons, and other specialist physicians (e.g., dermatology) versus a PCP. Outcomes pertained to ACO awareness and perception of ACO effects on physician behavior (e.g., clinical practice), quality of care (e.g., care coordination, health of complex patients), and physician satisfaction (e.g., professional satisfaction, administrative burden). We used multivariable fixed-effect models to test within-organization associations between physician type and ACO awareness and perceptions. Multiple imputation and survey weights were used to reduce bias from missing data and survey non-response.

RESULTS: Survey respondents included 900 physicians: specialist physicians (75%), comprising internal medicine subspecialists (23%), surgeons (14%), and other specialist physicians (35%), and PCPs (25%). Response rate was 34%. ACO awareness and perceived ACO effects on physician behavior and clinical outcomes varied substantially between specialist physicians and PCPs. Compared to PCPs, specialist physicians were less likely to know they were in an ACO (47% vs. 71%, difference: -24 percentage points [pp]), that the ACO was held accountable for spending and quality (25% vs. 47%, -22 pp), or that their ACO had lowered spending (10% vs. 19%, -9 pp). Furthermore, specialist physicians were less likely to perceive that the ACO had a positive impact on care quality (26% vs. 40%, -14 pp), care coordination (-14 pp), or the health of medically complex patients (-11 pp). Specialist physicians were also less likely to perceive that the ACO had any effect on clinical practice (17% vs. 27%, -10 pp), compensation (23% vs. 36%, -13 pp), or receiving useful feedback (15% vs 29%, -14 pp). In contrast, the perceived effect of ACOs on physician satisfaction did not systematically vary between specialist physicians and PCPs.

CONCLUSIONS: In one of the largest surveys of ACO physicians to date, we found that specialist physicians reported substantially lower ACO awareness and more negative perceptions of ACO effects on patient outcomes. Limited engagement of specialist physicians may hamper ACO efforts to reduce spending and improve quality.

A COST-BENEFIT ANALYSIS OF MEDICAL SCRIBES ACROSS MEDICAL SPECIALTIES

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BACKGROUND: Electronic Health Record (EHR) use has been shown to increase time spent on documentation and worsen physician burnout. One potential solution to EHR-related burnout is the use of medical scribes, nonclinical staff members who document clinic visits under physician supervision. Data show that scribes can increase physician efficiency, allowing physicians to see more patients per day without decreasing physician well-being. Increased productivity from the use of medical scribes has led to increased net revenue for clinics in multiple single-specialty studies. To our knowledge, no study to date has performed a cost-benefit analysis of medical scribes in multiple medical specialties. To generalize findings from single- specialty studies, we modeled the number of additional patient visits required to recover the costs of hiring scribes for 32 medical specialties.

METHODS: We modeled scribe costs and productivity-associated revenue increases from the perspective of an outpatient clinic contracting with a third-party scribe provider. Scribe costs were estimated from costs our institution faced when contracting to hire scribes, which paralleled costs previously reported in other studies. To estimate revenue from additional visits, we used 2015 Centers for Medicare & Medicaid Services (CMS) national billing data from the Medicare Provider Utilization and Payment Data dataset. We calculated the percentage of outpatient visits in each specialty billed at each Evaluation and Management level of service code. Using 2015 non-facility price CMS reimbursement rates, we then calculated the mean and standard deviation for the revenue generated by each additional visit across specialties. Specialty-specific data from the 2012-2016 National Ambulatory Medical Care Survey was used to estimate additional revenue from laboratory tests. Our primary outcome was the number of additional patients a provider would need to see per year and per day to have 90% confidence in recovering scribe costs.

RESULTS: Adding two new or three return patients per day was sufficient to not only recover scribe costs, but actually increase net revenues for all specialties. Across all specialties, the mean number of additional new patient visits required to recover costs was 1.34 visits per day (295 visits per year). The mean number of additional return patient visits required to recover costs was 2.15 visits per day (472 visits per year). Internal

Medicine required 1.20 new patient visits per day (263 visits per year) or 1.90 return patient visits per day (417 visits per year) to recover costs.

CONCLUSIONS: Across medical specialties, scribes offer an economically feasible way to address physician documentation burden, as long as physicians are willing to increase their patient load. Our results likely underestimate the full potential of scribes because our work does not include potential downstream revenue from future visits, procedures, and surgeries, or account for changes in physician well-being.

ACROSS RACE, ETHNICITY, AND LANGUAGE: AN INTERVENTION TO IMPROVE ADVANCE CARE PLANNING DOCUMENTATION UNMASKS HEALTH DISPARITIES

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BACKGROUND: Conversations around advance care planning (ACP) allow patients to direct the type and intensity of the medical care that they receive. Known ethnic and racial disparities in ACP exist, with racial and ethnic minorities less likely to have living wills and DNR orders. We aimed to understand the impact of an intervention to improve the documentation of ACP conversations for hospitalized patients on health disparities at our institution.

METHODS: In February 2019 the Division of Hospital Medicine at an urban, academic health system launched an initiative to improve rates of documented ACP conversations using new tools available in the electronic medical record (EMR). Hospitalists and trainees were encouraged to document ACP conversations for all patients >75 or with advanced illness as measured by recognized ICD-10 codes. EMR-generated reports provided patient-level compliance and demographics for 5563 discharged or deceased patients who met criteria from July 2018 to October 2019 prior to and following the intervention. ACP completion by discharge was analyzed by self-reported race, ethnicity, and preferred language. Patients with unknown/declined race or language were excluded. We used ANOVA analyses to determine baseline differences as well as chi-square tests to assess the effect of the intervention on racial/ethnic and language groups.

RESULTS: Using the quarter prior to the intervention as a baseline, November 2018-January 2019, overall rates of ACP documentation improved significantly when compared to the most recent 3 months of the intervention, August–October 2019 (356/1012 [35.4%] compared to 740/1090 [64.6%], P<0.001). At baseline there were no disparities by race/ethnicity (P=0.182) but significant disparities were associated with patient preferred language (P=0.035), with Russian speaking patients less likely to have ACP documentation compared to English speaking patients (P=0.0042). In the most recent 3 months of the intervention, race/ethnicity (P=0.035) and language (P=0.036) were associated with significant differences in ACP documentation. Using White/Caucasian race as a reference, patients identifying as Hispanic/Latino were significantly less likely to have ACP documentation (P=0.0003). Using English language as a reference, Spanish speaking patients were significantly less likely to have ACP documentation (P=0.0254); there was no longer a difference in ACP documentation rates for Russian speaking patients.

CONCLUSIONS: An intervention designed to improve ACP documentation resulted in overall improved rates of documented ACP conversations for hospitalized medical patients. However, the intervention was associated with new disparities especially for Hispanic/Latino and Spanish speaking patients. Further analysis is needed to explore the interaction between ethnic and language disparities and the underlying patient, provider, and system-level factors associated with these identified disparities.

ADAPTATION OF AN MHEALTH INTERVENTION FOR LATINX PEOPLE LIVING WITH HIV IN THE SOUTHERN U.S.

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BACKGROUND: Latinx people in the United States are disproportionately diagnosed with HIV and experience health disparities when living with HIV. They face many challenges, including language barriers, discrimination, stigma, and immigration status concerns. In the non-urban South, a low density of Spanish speaking People Living with HIV and a paucity of Spanish-speaking healthcare providers leads to a lack of social support and difficulty accessing services. PositiveLinks (PL) is a successful mHealth intervention for PLWH developed with a mostly African-American population. PL includes daily tracking of medication adherence, mood and stress; appointment reminders; educational resources; lab results; a community message board; and secure messaging with the clinic. We aimed to conduct formative work to guide adaptation of PL for Spanish-speaking Latinx PLWH.

METHODS: We conducted semi-structured interviews to explore participants' attitudes toward technology, desired mHealth features, and feedback on a Spanish-language PL prototype. Participants were Spanish-speaking Latinx patients recruited from a non-urban Ryan White HIV/AIDS Program clinic and a community-based organization. Interviews were conducted in Spanish, audio-recorded, transcribed, and translated to facilitate analysis. Each interview was coded by at least two team members with discrepancies resolved by consensus. The codebook was developed iteratively until high reliability was achieved.

RESULTS: Participants (n=22) included 10 men, 10 women, and 2 transgender women. Mean age was 41.1 (SD 11.6) years and all were foreign born. Prior negative experience with technology was described by 73% of participants. Positive associations with technology included personal connection (91%) and access to information (68%). In discussing PL features, participants expressed desire for access to information (86%), positive reinforcement/support (82%), personal connection (64%), ease of use (45%), and connection to their care team (41%). Most participants (n=16) suggested improvements. Priorities included creation of an integrated Spanish-language community board to bring together different clinical sites, rather than the current single-site board, and redesign of the labs feature. Participants (n=3) who expressed difficulty with the lab result feature had follow-up interviews for feedback on the redesigned display and reported improved understanding of the visuals and text.

CONCLUSIONS: Spanish-speaking Latinx PLWH, who face many barriers to care, voiced a need for reliable information and social support, and they felt that a linguistically and culturally tailored adaption of the PL mHealth intervention could help meet these goals. Our team continues to work with participants to improve the fit of features to their needs. This work will inform the next phase of larger scale implementation of PL for Spanish speakers with evaluation of app usage and quantification of associated clinical outcomes.

ADDRESSING HEALTH LITERACY NEEDS IN SHARED DECISION-MAKING FOR BREAST CANCER SCREENING: PATIENT AND PRIMARY CARE PROVIDER PERSPECTIVES

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BACKGROUND: Women with low health literacy (LHL) are at risk for not receiving recommended shared decision-making (SDM) for breast cancer screening. This study characterized approaches to, challenges with, and desired conditions to promote SDM for breast cancer screening between primary care providers (PCPs) and women with LHL ages 40-54.

METHODS: Women ages 40-54 with LHL(<7 on the Health Literacy Skills Instrument-10) who had no history of breast cancer or mammogram in the prior 9 months, were approached prior to a primary care well- visit at an academic safety-net hospital. PCPs practicing at this site were eligible for PCP interviews. Qualitative, in-depth interviews explored experiences with mammography counseling and SDM. For analysis, 2 individuals developed a codebook by coding 6 transcripts and establishing consensus. One person coded remaining transcripts with second coder review. Thematic analysis identified key themes regarding mammography knowledge, decision-making, and context desired for SDM.

RESULTS: Of 25 patients, 18 identified as black, 3 as Hispanic/Latina, 2 as non-Hispanic white, and 3 did not disclose. Average patient age was 46.5 years; 12 had a prior mammogram. Of 20 PCPs, 15 were female; 12 had practiced for >5 years. Patients with LHL described that doctors had critical knowledge that they did not possess. Patients ascribed embodied knowledge ("I know my own body") only to themselves; but described a lack of technical knowledge (what tests are appropriate and what they do) and process knowledge (what happens during a mammogram visit) and attributed such expertise to their PCPs. Women desired more technical and process knowledge, viewing these as necessary for decision-making and in reducing screening- related fear. PCPs aspired to conduct SDM, but varied in efforts to elicit patient preferences. PCPs were reluctant to engage patients with LHL in SDM due to time constraints and fearing that increased information might confuse patients or deter them from having mammograms. Patients described mammography as providing a high amount of certainty. PCPs also noted that the idea that mammography is not a "crystal ball" is not well-known and counseling should better prepare women for uncertain results and call backs. PCPs and patients felt education would be best delivered by support personnel outside of visits to facilitate mammography-related SDM during clinical visits with limited time. Notably, only 2 PCPs supplied patients with educational materials as part of mammography discussions.

CONCLUSIONS: Patients indicated they had little process and technical mammography knowledge, which hampered participation in SDM. Patient experience was reflected in PCP descriptions of their own counseling styles, which they recognized provided few details and rarely included the provision of supportive educational materials. Research on optimizing tools that relay technical and process knowledge about mammography prior to clinical encounters and facilitate SDM during visits is needed.

A DESCRIPTION OF PATIENTS SERVED AND DIAGNOSES AT THE CRIMSON CARE STUDENT-FACULTY COLLABORATIVE CLINICS IN MASSACHUSETTS.

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BACKGROUND: The Crimson Care Collaborative (CCC) is a group of student-faculty collaborative clinics that provides evening primary care and urgent care services at seven different sites throughout the greater Boston area. In addition to providing clinical care, CCC aims to link patients to primary care practitioners and provide health professional students with longitudinal primary care experiences. To understand the patients served and clinical experience for student volunteers, we assessed the demographic and socioeconomic characteristics of patients and visit diagnoses at two CCC sites.

METHODS: Retrospective cross-sectional observational analysis of patients seen at two different CCC clinic sites: Massachusetts General Hospital (MGH) Internal Medicine Associates (IMA) and MGH Chelsea Health Center (CHC). The IMA is a hospital-based clinic that receives referrals for patients without PCPs who are seen at the MGH Emergency Department as well as evening visits for established IMA patients. CHC serves established patients and a post-incarceration population. Patient level social and demographic measures and visit level diagnoses were collected for 503 patients (287 IMA patients and 216 CHC patients from 2016-2018).

RESULTS: At CCC IMA, the mean age was 49.7 years (SD=18.3); most patients were male (48.1%), white (61.2%; black: 13.2%; asian: 6.9%, other: 10.5%), and commercially insured (50.5%). At CCC CHC, the mean age was 43.0 years (SD=12.7), most were male (70.6%), Hispanic (34.6%; white: 15.4%, black: 7.4%, asian: 1.4%, other: 37.3%) and received Medicaid (71.0%). Using ICD-9/10 codes from patient visit data, diagnoses were classified for patients at both sites. The prevalence of musculoskeletal and connective tissue diseases (ICD10 710-739) and respiratory system diseases (ICD9 460-519) was significantly higher for patients seen at the IMA clinic ($p<0.005$; z-test). In terms of longitudinal experience, the average number of visits per patient during this period was different between clinics with 1.7 visits (SD=1.7) at IMA and 3.01 visits (SD=2.2) at CHC with no significant association between the number of visits, type of insurance, gender, or race.

CONCLUSIONS: Understanding the populations served and diagnoses treated at student-faculty collaborative clinics is important both for assessing the service these evening clinics provide to the larger hospital system and the clinical experience students gain from volunteering. The two clinics studied offer volunteers experience with different patient populations, clinical diagnoses, and longitudinal care. Future work could explore how these differing experiences influence things like student specialty choice or healthcare utilization by CCC patients.

ADMISSION PRACTICES, COST AND THERAPIES OFFERED AT RESIDENTIAL ADDICTION TREATMENT PROGRAMS IN THE US: A NATIONAL AUDIT SURVEY

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BACKGROUND: Residential treatment ("rehab") programs are a common setting for treating opioid use disorder and frequently highlighted in policy proposals to improve access to addiction care, though their clinical effectiveness compared to standard outpatient care is uncertain. Concerns have also been raised about high costs, substandard quality and patient exploitation in these settings, particularly at for-profit programs. Together, questions about the effectiveness of residential treatment and reported lapses in accountability call for further assessment of the conduct of these programs nationally, but little data are available.

METHODS: We performed an audit survey of residential treatment programs in the US identified from public databases. Three trained research assistants called 613 randomly sampled programs posing as 27-year old individuals seeking care who actively use heroin and lack insurance. Callers inquired about paying for treatment, treatment offered

at the program, and when admission was possible. Main outcomes included admission acceptance and wait time, types of recruitment techniques used, treatment cost, availability of opioid agonist therapy (OAT, e.g. buprenorphine), and anti-OAT messaging. We stratified outcomes by nonprofit vs. for-profit ownership, and presence of external accreditation (e.g. The Joint Commission) or state licensure. We tested differences across groups using z-tests for proportions, t-tests and chi-squared tests.

RESULTS: We obtained data from 368 of 453 in-sample programs (81% response rate), representing 26% of all non-federal programs nationally. Beds were available for admission the same or following day at 202 (64%) programs and 122 (33%) of programs offered admission to callers by phone. Recruitment techniques (e.g. offering paid transportation) were used frequently by for-profit, but not nonprofit, programs (146 [65%] vs. 13 [9%], p<0.001). The average daily cost for treatment was $758 at for-profit and $357 at nonprofit programs (p<0.001), with 264 (74%) programs requiring upfront payment on average totaling $17,434 and $5,712 at for-profit and nonprofit programs respectively). Nationally, 107 (29%) programs offered OAT with the option to continue maintenance while 78 (21%) actively discouraged callers from using OAT. Rates of OAT availability and anti-OAT messaging were similar regardless of programs' external accreditation or state licensure.

CONCLUSIONS: Residential programs offered rapid treatment access, though with frequent use of inducements for recruitment and substantial upfront cost, particularly at for-profit programs. A minority of programs offered OAT as maintenance therapy, the standard of care for OUD, while many actively discouraged the use of OAT to callers. These findings raise concerns about the quality of care offered by residential treatment programs and the adequacy of state licensure and accreditation to provide program accountability and protect vulnerable patients.

ADVANCE CARE PLANNING BY AN EMBEDDED SOCIAL WORKER FOR PATIENTS WITH ADVANCED HEART FAILURE DESIRING HEART TRANSPLANT

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BACKGROUND: Patients with advanced heart failure desiring the most technically advanced and aggressive cardiac care are at risk for severe adverse events and long hospital stays leading to death. We embedded a social worker within a Cardiomyopathy service to implement timely advance care planning (ACP) with patients considered for mechanical circulatory support and/or heart transplant and evaluated the impact on goals of care (GOC) conversation documentation and inpatient utilization.

METHODS: After developing a shared mental model with cardiologists, surgeons and the transplant team, an ACP social worker implemented disease-targeted discussion with all patients admitted to the hospital for transplant evaluation or potential mechanical support to (1) clarify understanding of their condition and treatment options, (2) identify and document appropriate proxy decision makers, (3) conduct conversations about and document GOC including preferences concerning disease- and procedure-specific adverse outcomes, and (4) ensure proxies are aware of patient preferences. A structured visit note reflected discussions, decisions and obstacles to decision making. We evaluated whether patients receiving the intervention had documented GOC including goals for future health states and an advance directive (AD), and compared inpatient utilization after an index hospitalization among all patients before (4/2013-5/2015) and after (6/2015-9/2019) the ACP intervention.

RESULTS: The ACP social worker approached 556 of 638 admitted cardiomyopathy patients and documented GOC and a designated surrogate for every patient; 71% of patients were about to effectively explore preferences concerning future health states and 68% completed a valid AD. Compared to the 390 patients admitted during the 26 months pre-intervention, index admission length of stay (25d post v 26d pre) and inpatient mortality (13% post v 14% pre) were similar. However intervention period length of stay in the hospital (26d v 43d, p<0.001) and ICU (21d v 35d, p<0.01) was shorter among decedents.

CONCLUSIONS: Implementing an ACP program on a Cardiomyopathy inpatient service is feasible even among inpatients desiring the most aggressive treatment. This ACP intervention facilitated most patients to meaningfully consider GOC and may decrease hospital use among decedents.

ADVANCED APPROACH TO THROUGHPUT: ADVANCED PRACTICE CLINICIAN (APC) AND PHYSICIAN COLLABORATION IN EARLY DISCHARGE OF A HIGH VOLUME HOSPITALIST SERVICE

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BACKGROUND: The timing of discharges of admitted patients has a significant impact on hospital efficiency and throughput. Earlier discharges are associated with improved boarding times, admissions arriving to inpatient units earlier in the day, and decreased length of stay. Discharges that occur later in the day creates a bottleneck effect, causing emergency room congestion, overcrowding, and higher inpatient mortality. This project was developed to address a high volume hospitalist service challenged with meeting early discharge goals. Our goal was to have 25% of discharge orders placed by 9am, and 40% placed by 11am.

METHODS: This retrospective study was developed as a targeted initiative to improve throughput by increasing the rate of early discharges before 9 and 11am in an acute community-based academic medical center. Our model implemented a staffing model change of an Advanced Practice Clinician (APC) to standardize the discharge process of hospitalized patients. An APC-assisted discharge assessment was launched for all clinicians on the Hospital Medicine service. On each calendar day, an APC was designated as the Discharge APC. The day prior to expected discharge, the hospitalists compiled a list of potential discharges and outlined any anticipated barriers. On the day of discharge, the APC reviewed and assessed these patients, determined if any barriers could be resolved and prepared necessary discharge documentation. Those patients determined clinically appropriate for discharge by the APC were reported to the hospitalist, and the plan of care was finalized. When the discharge planning was complete, the discharge order was submitted in the EHR. The rate of early discharge orders electronically submitted were analyzed through a 6 month period during the initiative and compared to the same 6 month period the year prior to the launch of the study.

RESULTS: Prior to the staffing model change, the hospitalist group averaged 28.8% of discharge orders placed before 11am. After the initiative, the discharge orders before 11am rose above our goal to 43.2%, and continues to be successful. This study continues to be at an early stage and represents preliminary data that was gathered to ensure that our intervention is yielding positive improvement to discharge rates. Data analysis is ongoing to obtain the rate of discharges prior to 9am, which are expected to be above our goal for this time period.

CONCLUSIONS: The collaboration of our APC and Physician discharge initiative has resulted in significant improvements in the rate of early discharge orders. Our data has shown promising results for discharge orders placed prior to 11am. Future goals will analyze length of stay to ensure that our early discharge intervention does not compromise length of stay. Although still in early stages, our team-based approach to discharge planning has

demonstrated an efficient model to improve hospital throughput by overcoming challenges associated with timely discharge of patients.

ADVANCE DIRECTIVES AND HEALTH SURROGACY IN LOW INCOME AND UNINSURED POPULATIONS

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BACKGROUND: Advance directives (ADs) allow patients express their preferences for medical treatments and to choose healthcare surrogates so that they can continue to control their healthcare in the event they lose the capacity to make decisions. Belonging to a racial minority group, having a low income, and being less educated strongly reduces the likelihood that adults will have an AD. For lower income and uninsured adults, little has been done to investigate the unmet needs concerning their end of life planning and effective strategies to meet those needs. Our goal was to evaluate the utility of giving low income and uninsured adults over 50 years of age in-person advance directive counseling at a free student-run clinic in Gainesville, Florida.

METHODS: All patients that presented to the Equal Access clinic who were over 50, spoke English, and had the capacity to make medical decisions were asked to participate in the study. Consented subjects were given a pre- survey and 'part one' of a two-part questionnaire to assess knowledge of ADs. Subjects were then educated about ADs using the UF Health AD forms. Subjects were then given the opportunity to complete an AD in clinic, take AD forms home, or decline taking or completing an AD. Participants then completed 'part two' of the two-part questionnaire as well as a post-survey. Participants who filled out an advance directive were given a copy of their directive. The original was scanned in to their electronic medical record.

RESULTS: We found that 94.12% of study participants lacked health insurance for an average of 3.08 years. The prevalence of ADs in study participants was 5.88% prior to intervention, with 35.29% of subjects knowing what ADs were by name. Most participants, 70.58%, had never previously discussed ADs with a medical professional. Following intervention, 12% of subjects chose to complete an AD (health surrogate form) in clinic, and the remaining 88% of subjects chose to take an AD home with the intention of completing it. Additionally, 58.82% of participants chose to take home an AD packet for a community member.

CONCLUSIONS: Results suggest that a single intervention may raise awareness about ADs but may not be as effective at increasing AD completion. Follow up interventions are likely needed to increase AD adoption in patients who choose to complete ADs at home.

ADVANCING RESEARCH EQUITY: ENHANCING RESEARCH PARTICIPATION AMONG AFRICAN AMERICANS THROUGH A CONFERENCE-BASED WORKSHOP

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BACKGROUND: African Americans (AAs) and other racial/ethnic minority groups continue to be underrepresented in medical research and clinical trials. Failure to create more racially diverse research cohorts can exacerbate existing health disparities among these groups. There is a critical need for innovative and culturally-sensitive approaches to enhance AA participation in research.

Objective: To evaluate the impact of a preconference workshop focused on best practices and strategies for enhancing the participation of AAs into medical research among attendees of a faith-based public health conference. We hypothesized that our 3-hour workshop would positively influence the views of workshop attendees on medical research and engagement in the research process.

METHODS: Twenty-one attendees (95% of total attendance) of a preconference workshop held at the 2017 Healthy Churches 2020 National Conference participated in semi-structured interviews one year following the workshop. The culturally tailored workshop was led by AA researchers with a content focus on the current state of underrepresentation of AAs in medical research, and barriers and facilitators to research participation through community engagement. Message retention of the workshop learning objectives and perspectives on research participation were assessed. Interviews were audio-recorded, transcribed verbatim and reviewed using thematic analysis.

RESULTS: The majority of workshop attendees (71% women, mean age 56 years [range 34-72]) reported they were more likely to participate in medical research as a result of the workshop and felt it increased their knowledge of the topics presented. Salient workshop learning points reported by attendees demonstrated attainment of the workshop objectives. These included the implications of AA underrepresentation in research and key techniques for recruiting AAs into medical research. The most common reported barriers preventing AAs from participating in medical research were fear/lack of trust, lack of knowledge/information, and not being approached to participate. The most common facilitators reported for AA participation in medical research were researchers clearly communicating the benefits of participation, being equipped with necessary information to make informed decisions on participation, and trust in the researchers. Almost all participants (20/21; 95%) stated they were likely or highly likely to recommend this workshop to a friend or colleague, and would disperse what they learned to their local communities.

CONCLUSIONS: Perceptions of a conference-based community workshop aimed to address the underrepresentation of AAs in medical research were largely positive and the workshop showed clear impact on attendees' willingness to participate in medical research. Our culturally-tailored approach to disseminate knowledge of the research process could extend to other national conferences prioritizing AAs and other racial/ethnic minority populations to improve research participation.

AFTER HOURS OUTPATIENT CRITICAL LAB MANAGEMENT: VARIATION IN PROVIDERS' RESPONSES AND ASSOCIATED PATTERNS OF HEALTHCARE UTILIZATION

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BACKGROUND: Managing critical laboratory values is a fundamental part of outpatient clinical practice. However, little is known about how providers currently handle these values after they are called and how this may impact healthcare utilization. Moreover, when the test is completed outside of normal working hours, the covering provider is often unfamiliar with the patient and may default towards sending the patient to the emergency department (ED). The purpose of this study is to explore providers' responses to common critical laboratory values and associated patterns of healthcare utilization.

METHODS: The laboratory at the Louis Stokes Cleveland Veterans Affairs Medical Center (VAMC) processes blood samples from 14 outpatient phlebotomy clinics. Off-hour (4pm-8am weekdays, weekends) outpatient critical values are communicated to a designated hospitalist, as opposed to the ordering provider, who then calls the patient. We retrospectively studied patients with outpatient critical lab values reported off- hours between 6/1/18 – 6/1/19 at our VAMC. We identified documentation of these telephone encounters and reviewed each encounter to evaluate successful provider-patient communication, recommended plans of care, and patient disposition. We excluded anticoagulation, point-of-care and ED tests, which are managed separately.

RESULTS: During the study period, 811 telephone encounters were documented encompassing 896 off-hour critical test results, successfully reaching a patient or caregiver 71% (579/811) of the time. Of the telephone encounters that resulted in contact, urgent evaluation in an ED was recommended for 33% (191/579). Within 7 days of the encounter, 18% (143/811) of the patients presented to an outside hospital ED (OSH), 16% (126/811) to the Cleveland VAMC's ED of which 67% (85/126) were admitted. The most commonly called critical lab values were abnormal glucose (227/896), potassium (187/896), and platelet (102/896) levels. Among the most common critical lab tests, anemia (Hct<20%) was the most likely to result in an ED visit (VAMC: 37%, 23/62, OSH: 23%, 14/62) and hypoglycemia (glucose <50 mg/dL) was the least likely (VAMC: 2%, 2/111, OSH: 5%, 5/111). We also found significant variation in the hospitalist's recommendation based on the type of critical lab value reported. For hypoglycemia, only 3% (2/75) were advised to go to the ED whereas for anemia, it was 56% (29/52); at a lower threshold (Hct<18%), it was 71% (12/17).

CONCLUSIONS: We found significant variation in the way outpatient critical lab values are managed clinically. Management of critical values with high variation, such as anemia, not only present a clinical decision-making challenge, but may be associated with higher emergency healthcare utilization, making it an attractive target for further investigation. Other critical values, such as hypoglycemia, have low variation and low rates of ED referral, encouraging future efforts to better define what is truly "critical" in the outpatient setting.

AFTER-HOURS PRIMARY CARE IN THE VHA NOT ASSOCIATED WITH REDUCED EMERGENCY DEPARTMENT USE: A LONGITUDINAL ANALYSIS

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BACKGROUND: The majority of Emergency Department (ED) visits occur outside of regular business hours. Extending primary care hours may shift care into the outpatient clinic and reduce ED use. The Veterans Health Administration (VHA) has required most clinics at VA Medical Centers (VAMCs) to extended hours of care; however, the impact upon ED use remains unknown.

METHODS: We performed a longitudinal analysis of extended hours at 101 primary care clinics at VAMCs with established EDs over a 15-month period from July 2017 to September 2018. We identified all primary care face-to-face encounters completed during regular (8:00AM-4:30PM), morning (12:00AM-8:00AM), evening (4:30PM-12:00AM), and weekend hours from the VHA Corporate Data Warehouse. Outcomes included all ED visits, after-hours ED visits, and time-concordant ED visits occurring during mornings, evenings, or weekends. We used negative binomial multilevel regression with time fixed effects and applied between- within approach to determine association of extended hours with ED visits between and within VAMCs. Models adjusted for time-variant clinical factors, including clinic size and panel fullness based upon 1200 patients per full-time provider, and clinic-level aggregated patient factors, including age, race/ethnicity, patient risk based upon health care costs (Nosos score), drive time, and rurality.

RESULTS: Of the 101 clinics, 99 offered extended hours primary care, encompassing an average of 2.8% of all primary care appointments with an average of 47% of appointments occurring in mornings, 14% evenings, and 39% on weekends over the study period. On average, 76 per 1000 primary care patients presented to the ED each month with 49% of these visits occurring after-hours (i.e., 9.1% mornings, 17.9% evenings, and 22.2% weekends). In adjusted analyses, changes in extended hours primary care appointments within individual clinics over this timeframe was not associated with overall, extended hours, or time-concordant ED visits. However, between clinics, more extended hours primary care encounters was associated with higher incidence of overall (IRR 1.009, 95% CI 1.006-1.013, p <0.001), extended hours (IRR 1.008, 95% CI 1.005-1.012, p <0.001), and time-concordant morning (IRR 1.002, 95% CI 1.001-1.003, p <0.002) and weekend (IRR 1.004, 95% CI 1.002-1.007, p <0.001) ED visits.

CONCLUSIONS: VHA clinics with extended hours primary care did not experience a significant change in ED utilization; however, some clinics may be more likely to refer patients to the ED, particularly in mornings and weekends, for evaluation and treatment.

ALCOHOL, TOBACCO, BUT NOT FIREARMS: NATURAL LANGUAGE PROCESSING OF MEDICAL RECORDS TO CHARACTERIZE CLINICAL PRACTICE AT HEALTH SYSTEM SCALE

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BACKGROUND: Many professional health organizations and medical societies in the US assert that physicians have the right and, in many cases, a responsibility to discuss firearm safety with patients. Existing small studies suggest that these conversations are uncommon.

METHODS: We developed a token matching natural language processing algorithm to identify documentation in the electronic health related to firearms. This included the presence of firearm or related words (for example, gun, handgun, shotgun, rifle, pistol, revolver). As positive controls and points of comparison we developed similar algorithms to identify documentation of tobacco and alcohol. This work builds on our prior work using token matching as an interpretable and scalable approach to characterization of difficult to quantify healthcare concepts. We extracted demographic and clinical meta data from the electronic health record for all in-patient hospitalizations at two large academic medical centers in Boston, Massachusetts between January 1, 2017 and December 31, 2017. We selected this year as all data were available in our research data repository, and all inpatient documentation occurred in the electronic system (as opposed to prior years when some documentation still occurred on paper). Using each hospitalization as the unit of analysis, we used descriptive statistics to report the frequency of documentation related to firearms, tobacco, and alcohol and multivariable regression to identify predictors of the presence of firearm-related documentation.

RESULTS: Encounters for a total of 80,447 hospitalizations for 59,858 unique patients were included in the study cohort. The mean age at hospitalization was 58 years; 45% of the cohort was male; 77% were white, and 47% had private insurance. 63% of admissions were to Medicine services, 13% to Obstetrics/Gynecology, 10% to Surgery, 8% to Orthopedics, 5% to Neurology, 0.9% to Psychiatry and 0.3% to Pediatrics.

Among the 80,447 hospitalizations, alcohol was mentioned in 55,415 (69%) encounters; tobacco was mentioned in 40,478 (50%). Firearms were identified in 425 encounters (0.5%). In the multivariable analysis, those who had mention of a firearm in the electronic health record were more likely to be male (OR 3.2, 95% CI 2.5-4.0, p<0.001), admitted to a psychiatry service (OR 9.7, 95% CI 7.2-13.0, p<0.001) and less likely to be White (OR 0.8, 95%CI 0.6-0.99, p=0.037) or have private insurance (OR 0.5 95% CI 0.4-0.7, p<0.001).

CONCLUSIONS: Documentation related to firearms rarely appears in hospitalized patients' electronic health records. This may represent important missed opportunities to implement screening and to have conversations with patients about firearm safety. Whether observed variation in this documentation stemmed from relevance to the specific encounter or reflects implicit or explicit bias requires further study.

ALCOHOL-RELATED MORTALITY AND SERVICE UTILIZATION AMONG PEOPLE EXPERIENCING HOMELESSNESS IN SAN FRANCISCO

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BACKGROUND: More than 8,000 people experience homelessness on any given night in San Francisco; over half (63%) report use of alcohol or other substances. Unintended overdose is a leading cause of death among people experiencing homelessness, with higher mortality in cases with mixed toxicology. We evaluated alcohol-related deaths among people experiencing homelessness in San Francisco to better understand service utilization patterns and circumstances of their mortality as to inform future prevention strategies.

METHODS: We conducted a descriptive analysis of people (n=84) who died between 2016-2018 while experiencing homelessness in San Francisco with a toxicology report on autopsy that was positive for alcohol. We utilized data from death reports by the Office of the Chief Medical Examiner, the integrated Coordinated Care Management System database, and electronic health records to assess demographics, location at time of death, medical and psychiatric co-morbidities, and care utilization histories. To further examine needs among individuals engaged in care, we conducted pilot case reviews (n=11) of individuals determined to comprise top 1% High Utilizers of Multiple Systems (HUMS) within the year of their death.

RESULTS: Among 84 deaths, 93% were among men, 55% white, 20% African-American, and 17% LatinX. The median age was 49 years (IQR 21, 74). Over one-third (35%, n=25) of deaths with available housing records (n=72) experienced homelessness for more than a decade, while 24% (n=17) were homeless less than a year prior to death. Of the 60 cases with autopsy results, 37% (n=22) died of acute intoxication, 28% (n=17) from accidental trauma, and 35% (n=21) from complications of underlying medical problems. Over half (63%, n=53) of people used medical services during their last year of life in highly variable patterns, predominantly in emergency settings. Poly-substance related deaths were more common than alcohol alone (77%, n=65 with mixed toxicology versus 23%, n=19 with mono alcohol). Concurrent methamphetamine use was common (35%, n=29). In review of HUMS cases, we noted discrepancies between documented substance use histories versus toxicology at time of death, particularly for opioid and sedative use.

CONCLUSIONS: Toxicology reports of people who died while experiencing homelessness show deaths involving alcohol often occurred with concurrent use of other substances. Despite frequent documentation of alcohol use disorder in health records, there is a paucity of documented polysubstance use. Healthcare utilization patterns vary; some individuals engage in many services often while others use no services. A Homeless Death Review process in San Francisco may better identify what factors impact substance-related deaths. Medical outreach to newly homeless individuals may help reduce the utilization gap while creation of safer environments for acutely intoxicated individuals, with focus on chronic disease management, may mitigate harm.

AMBULATORY CARE FRAGMENTATION AND SUBSEQUENT HOSPITALIZATION AMONG VETERANS WITH DIABETES

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BACKGROUND: Ambulatory care fragmentation occurs when an individual's care is distributed across multiple providers, with no single provider accounting for a substantial proportion of visits. With recent legislation (Choice Act of 2014 and MISSION Act of 2018) requiring the Veterans Health Administration (VHA) to offer more care in the community to Veterans, the risks of fragmented care among Veterans has increased, which may lead to greater risk of hospitalization.

The objective was to determine if highly fragmented ambulatory care and use of both Veterans Health Administration (VHA) and non-VHA as usual providers of care (UPC) increased the risk of hospitalization among Veterans with diabetes. This will serve as a baseline to understand how Veterans use multiple providers within and outside the VHA for ambulatory care prior to the recent legislations.

METHODS: We selected Veterans with diabetes enrolled in VHA and Medicare from 2004-2010 and examined the associations among care fragmentation, usual provider of care (VHA vs. non-VHA) and hospitalization. We linked VHA and Medicare data from 2004 to 2010. A Veteran in each year (2004 - 2009) was followed until first hospitalization or end of subsequent year (2006-2010). Fragmentation was defined using the Bice Boxerman Index, a validated measure of dispersion of ambulatory care. Longitudinal Generalized Estimating Equation (GEE) models were used to test if ambulatory care fragmentation (high (defined as top quartile) vs. low) and UPC (VHA vs. non-VHA as dominant provider) in the baseline year warer associated with hospitalization in the following year. The adjusted Odds Ratios (AOR) and their 95% confidence intervals (CI) are reported.

RESULTS: Among Veterans with diabetes, having fragmented healthcare in any given year was associated with an 11% increase in the odds of hospitalization in the following year. Separately, having a non-VHA UPC in any given year was associated with a 5% increased odds of hospitalization in the following year. Having both highly fragmented care

and a non-VHA UPC in any given year was associated with a 19% increased odds of hospitalization in the following year (Table).

CONCLUSIONS: Highly fragmented ambulatory care and having usual providers of care outside the VHA were independent risk factors for subsequent hospitalization, among Veterans with diabetes enrolled in both VHA and Medicare.

A MIXED METHODS APPROACH TO UNDERSTANDING DISPARITIES IN CANCER SCREENING BETWEEN ADULTS WITH AND WITHOUT SERIOUS MENTAL ILLNESS

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BACKGROUND: Persons with serious mental illness (SMI) die 10-20 years earlier than the general population, primarily due to physical health conditions; cancer is the second leading cause of death. Yet differences and perceptions towards cancer screening between SMI and non-SMI populations are not well understood. We used a mixed methods approach to (1) describe the likelihood of receipt of cancer screening among individuals with versus without SMI and (2) explore clinicians' perceptions around cancer screening for people with SMI.

METHODS: We used MarketScan commercial insurance administrative claims data from 2010-2016 to identify eligible sub-populations for cervical, breast, prostate, and colorectal cancer screening based on USPSTF guidelines. We defined SMI as schizophrenia or bipolar disorder. We estimated the likelihood of screening for people with or without SMI using multivariate logistic regression analyses, adjusted for demographic characteristics, major depression, substance use disorder, comorbidity, healthcare utilization, calendar year, time in cohort, and clustered by individual across years. Between February-April 2019, we conducted semi-structured interviews with 17 primary care providers (PCPs) and 15 psychiatrists across 3 primary care and 4 psychiatry clinics. Interviews were analyzed using an inductive approach to identify barriers to cancer screening among people with SMI.

RESULTS: We identified 32,224,180 individuals for inclusion in the cervical cancer sub-population, 12,050,595 individuals for breast cancer, 7,189,649 individuals for prostate cancer, and 22,784,006 individuals for colorectal cancer. Per sub-population, 0.5-0.9% had a diagnosis of SMI. Individuals with SMI (versus without SMI) were less likely to receive screening for cervical cancer (adjusted Odds Ratio [aOR] 0.81; 95% CI:0.80-0.82), breast cancer (aOR 0.80; 95% CI:0.80-0.81), colorectal cancer (aOR 0.90; 95% CI:0.89-0.91), or prostate cancer (aOR 0.85; 95% CI:0.85-0.87). During the qualitative interviews, PCPs and psychiatrists identified potential barriers to cancer screening including access to care, physical accessibility to services, available support, follow-up, communication, comorbidity, and patient concerns. While respondents felt these barriers were not specific to those with SMI, they expressed concern that they presented a disproportionate burden for individuals with SMI. Additional barriers that were specific for the SMI population included mental health symptoms, concerns over capacity to engage in shared-decision making, and provider-bias.

CONCLUSIONS: People with SMI were less likely to receive recommended cervical, breast, colorectal, and prostate cancer screening. Improving cancer screening rates in the SMI population will likely require a multi-disciplinary approach to overcome the multiple barriers that providers report.

ANALGESIC SAFETY RISKS IN OLDER VETERANS - TRUE VS. ANALYTIC RISK

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BACKGROUND: Previous studies have compared the safety profiles of alternative analgesics, yet the conclusions vary greatly.

METHODS: Observational, national cohort of US Veterans (≥50 years) with osteoarthritis receiving an outpatient analgesic prescription (acetaminophen, NSAIDs, opioid, or topical analgesic) after being 180+ days analgesic naïve according to VHA pharmacy records. Inverse probability of treatment weights (IPTW) were used to adjust for selection bias. We used survival analyses to assess the risk of composite safety events (cardiovascular, gastrointestinal, fracture, hepatotoxicity, respiratory) across medication groups 365 days post-analgesic receipt, with subsequent analgesic prescriptions and death as competing risks.

RESULTS: From 2010-2018, 271,505 Veterans (mean age=64.3 years; 93.5% male) were balanced across 47 confounders (max absolute mean standardized difference=0.09). Veterans prescribed acetaminophen and opioids had an increased risk of cardiovascular (HR 1.32 and 1.23; p<0.001), gastrointestinal (HR 1.51 and 1.52; p<0.001), fracture (HR 1.86 and 1.57; p<0.001), and respiratory events (HR 1.51 and 1.39; p<0.001) compared to those prescribed NSAIDs. Hepatotoxicity risk was greatest with opioids and topicals (HR 1.77 and 1.49; p<0.001) compared to NSAIDs.

CONCLUSIONS: Early findings show the comparative safety of analgesics varies depending on the outcome event in question. The estimated effects of acetaminophen with this analytic approach indicate higher risks for certain safety events relative to other analgesic types, counter to presumed clinical practice. Caution should be taken when interpreting these results as residual, unobserved confounding across groups likely remains.

ANALYSIS OF PRIMARY CARE PROVIDER ELECTRONIC HEALTH RECORD NOTES FOR DISCUSSIONS OF PREDIABETES USING NATURAL LANGUAGE PROCESSING METHODS

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BACKGROUND: Prior studies using structured EHR data suggest that patients with prediabetes are not receiving evidence-based care, but prediabetes may be discussed in unstructured data. Natural language processing (NLP) methods can evaluate unstructured data in EHR notes and provide insight into PCP practices. Our objective was to develop and

validate an NLP tool to identify discussions about prediabetes in EHR notes.

METHODS: We included adult patients without diabetes with an in-person office visit at any general medicine clinic at a single academic center and at least one HbA1c 5.7-6.4% between 7/1/2016 and 12/31/2018. In phase 1, the authors devised an initial keyword search strategy based on clinical experience.

We extracted notes matching to at least one of the keywords within the inclusion/exclusion criteria. Two expert annotators manually annotated the notes to determine whether they represented clinical discussions of prediabetes (We did not consider keywords pulled in simply as a diagnosis under past medical history, problem list, or chief complaint without additional discussion). Any disagreements were resolved between annotators. We then used the annotated notes to train and evaluate multiple machine learning (ML) and deep learning classifiers to replicate human annotation. To reduce overfitting and classification bias, we applied 10-fold cross-validation to shuffle the training and test sets. In phase 2, we applied a similar annotation process and machine learning method on notes from a different group of clinic practices.

We analyzed notes from phase 2 to describe the content of prediabetes discussions: labs ordered or reviewed (HbA1c or fasting glucose); lifestyle counseling; diabetes prevention program (DPP) discussion/referral; nutrition referral/discussion; and metformin discussion or ordering/continuation. Our denominator was the number of patients with a documented discussion about prediabetes. Our numerator was the number of patients with a documented discussion about prediabetes who had each outcome above.

RESULTS: We identified 269 patients with prediabetes discussions in phase 2. Most commonly, PCPs provided lifestyle counseling (80%), reviewed current labs (63%) and ordered follow-up labs (60%). PCPs discussed/referred to a nutritionist infrequently (4%). We did not find any discussions/referrals to a DPP. Metformin was discussed, ordered or continued in <2% of patients.

NLP and ML classification, including Logistic Regression and Bi- directional Recurrent Neural Network, provided promising results, close to human performance.

CONCLUSIONS: We developed and validated an NLP tool that identifies clinical discussions about prediabetes in the EHR. PCPs most commonly provided lifestyle counseling in the office and infrequently placed referrals to nutrition or DPPs, which have strong evidence for preventing progression to diabetes.

AN AMBULATORY INTENSIVE CARE UNIT ("A-ICU") FOR PATIENTS IMPACTED BY SOCIAL DETERMINANTS OF HEALTH IMPROVED MENTAL HEALTH FUNCTIONING, PATIENT WELL-BEING, AND OUTPATIENT ENGAGEMENT AT 6-MONTHS: INTERIM RESULTS OF SUMMIT RANDOMIZED CONTROLLED TRIAL

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BACKGROUND: People experiencing homelessness, co-morbid chronic medical conditions, and substance use disorder (SUD) make up a disproportionate number of high-cost, high-need patients at risk of frequent acute care utilization. Intensive ambulatory care unit ("A-ICU") interventions aim to improve patient engagement, quality of care, and reduce excess hospitalizations.

METHODS: This is an updated analysis of a randomized trial of SUMMIT, an A-ICU for high-utilizers at a federally qualified health center that serves patients with high rates of homelessness and poverty. SUMMIT is a stand-alone team consisting of care coordinators, an addictions-boarded physician, social workers, complex care nurse, pharmacist, and team manager, with a low staff-to-patient ratio and increased appointment flexibility. Patients were eligible to be referred to SUMMIT if they had 1+ hospitalizations in the prior six months, or had 2+ chronic medical conditions and/or active substance use or a mental health condition. Patients were randomized to enroll in SUMMIT immediately or to remain in a treatment as usual patient centered medical home model. We assessed functional status using the 12-item short form survey (SF-12) at six months, and wellbeing question from the Edmonton Symptom Assessment System (ESAS). We also examined primary care visits (PCP), mental health visits (MH), and hospital admissions at 6 months.

RESULTS: Of 139 patients enrolled, 52% (n=73) were randomized to SUMMIT immediately. Average age was 54.7 years (+/-10.1), with the majority male (62.6%) and Caucasian (77.7%); a majority (60.4%) had high school education or less, 84.2% had very low income (<$1000/month), 27.3% reported having an opioid use disorder, and 51.1% reported being homeless within the past year. In the six months prior to enrollment, participants averaged 7.3 (+/-1.2) PCP visits and 2.6 (+/-1.7) hospitalizations. At six month follow up, SUMMIT patients had higher SF-12 Mental Health scores (46.5 vs 42.0, P<0.01), and higher self-reported wellness rating (ESAS 6.3 vs 4.9, P<0.01); while SUMMIT patients had higher number of PCP visits (12.3 vs 4.9, P<0.01) and MH visits (7.8 vs 6.4, P<0.01), hospital admissions did not differ between the groups at six month follow-up (1.94 vs 1.91, P=0.72).

CONCLUSIONS: Patients referred to the SUMMIT A-ICU are adversely impacted by social determinants of health including poverty, homelessness, and SUD. SUMMIT improved mental health functional status and well-being, perhaps mediated through increased engagement in outpatient primary and behavioral health care. Though we did not see differences in hospitalizations at follow-up, six months may be too soon for the intervention to have an impact. Both groups experienced decreases in hospitalizations, suggesting evidence of regression to the mean. These findings suggest A-ICUs may improve key patient-reported health outcomes.

A NATIONAL EVALUATION OF RACIAL/ETHNIC INEQUITIES IN INTERHOSPITAL TRANSFER

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BACKGROUND: While there are numerous examples of racial/ethnic health inequities in our healthcare system, their presence in interhospital transfer (IHT) has not been well-characterized. We sought to determine if there are racial/ethnic inequities in IHT among patients with select medical conditions previously associated with mortality benefit from transfer.

METHODS: We performed a cross-sectional analysis of 2013 Center for Medicare and Medicare Services (CMS) 100% Master Beneficiary Summary and Inpatient claims merged with 2013 American Hospital Association data. Patients with age ≥ 65 and a primary diagnosis of acute myocardial infarction, stroke, sepsis or respiratory disease who were continuously enrolled in Medicare A/B and had an acute care hospitalization claim in 2013 were included. The outcome was IHT, as previously defined by having corresponding transfer and admission/discharge claims in two different acute care hospitals. The primary predictor was race, as

categorized in the CMS dataset (White, Black, Hispanic, Other). We examined patient and hospital characteristics by race, then calculated crude and adjusted odds of transfer by race using univariable then multivariable logistic regression models adjusting for patient age, sex, Medicaid co- insurance, median income for zip-code, diagnosis-related group weight, hierarchical conditional category (HCC) comorbidity score, admissions in previous year, season of admission, and accounting for fixed-effects by hospital.

RESULTS: Of the 899,557 unique hospital admissions included in the cohort, 20,171 (2.7%) of White, 1,913 (2.3%) of Black and 1,062 (2.2%) of Hispanic patients underwent IHT. Patient characteristics differed by race; most notably, compared to White patients, Black and Hispanic patients had a high frequency of Medicaid co-insurance (17.9% vs. 47.1% and 62.1%, respectively). In unadjusted analyses, Black patients had lower odds of transfer to compared to White patients (OR 0.92, 95% CI 0.89-0.95); there was no difference for Hispanic patients. After adjusting for patient characteristics and hospital fixed effects, compared to white patients, Black patients had lower adjusted odds of transfer (aOR 0.87, 95% CI 0.81-0.92) while Hispanic patients had higher adjusted odds of transfer (aOR 1.14, 95% CI 1.05-1.24).

CONCLUSIONS: In this nationally representative study of hospitalized Medicare patients, we found that Black patients had lower odds and Hispanic patients had higher odds of transfer for diseases associated with mortality benefit from transfer, after accounting for patient and hospital characteristics. There are several potential explanations for these findings, including provider bias (implicit or explicit), different likelihood of request for transfer among minority patients, or unmeasured confounding. Given these results, more research into transfer decision-making and transfer processes is necessary to further understand these observed inequities in IHT.

A NATIONAL SURVEY ON SERIOUS ILLNESS CONVERSATIONS DURING MEDICINE RESIDENCY: WHERE DO WE STAND AND WHERE DO WE GO NEXT?

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BACKGROUND: While formal serious illness conversation (SIC) and palliative care (PC) training have become routine in some graduate medical education (GME) programs, they have yet to become standard. A national shortage of PC specialists underscores the importance that all clinicians feel comfortable having SICs. We aimed to better understand the current attitudes, comfort levels and interest experienced by medicine residents towards SIC and PC training, to identify areas that may be worthwhile addressing when implementing PC curricula during residency.

METHODS: Eligible participants were current internal medicine residents in a US-based ACGME accredited program. A twelve-item online survey that encompassed different aspects of SICs was administered after a demographic questionnaire that explored the subjects' prior medical and SIC training. Subjects were asked to rank their answers on a five-point "strongly disagree" to "strongly agree" scale. Chi- square analysis was performed and p-values <0.05 were considered significant.

RESULTS: Data from 158 surveys represented a mixed group of US and international medical graduates (IMG) training in 23 different US states from 28 different originating countries. Sixty-five percent of subjects had not received SIC or PC training in medical school. More than a third of respondents felt uncomfortable having SICs with emotional patients and families. When discussing code status, US-trained females had the highest comfort levels (p=0.004) as did those training in an urban setting (p=0.003 for males; p=0.04 for females). Allopathically trained females also identified as more confident (p=0.004). When delivering serious news, however, community trained residents were more comfortable (0.004 for males, 0.03 for females) as were men who had received prior PC training (p=0.018). Surprisingly, nearly 20% of respondents did not feel supported by their senior residents and attendings to hold SICs. Eighty-five percent of respondents agreed that they would want formal PC training integrated into their program, yet less than half (40%) already have it included.

CONCLUSIONS: Amongst US medicine residents, integrating SIC training into GME would be well received and address gaps in medical school training. Focusing on emotional response training may further prepare residents. Males self-identify as less confident in these skills overall, but our data suggests that when exposed to formalized training this improves significantly, underscoring the importance of male engagement in curricula. Both urban and community training settings have their strengths and gaps in SIC preparation. Support surrounding SICs from senior residents and attendings should be more demonstrative to encourage junior house staff. A limitation of our study is its low survey response rate, though it is the first survey of its class to collect data from such a diverse pool of subjects.

AN EFFECTIVE WEIGHT LOSS INTERVENTION FOR INDIVIDUALS WITH FOOD INSECURITY AND DIABETES: RESULTS FROM THE REAL HEALTH RANDOMIZED CLINICAL TRIAL

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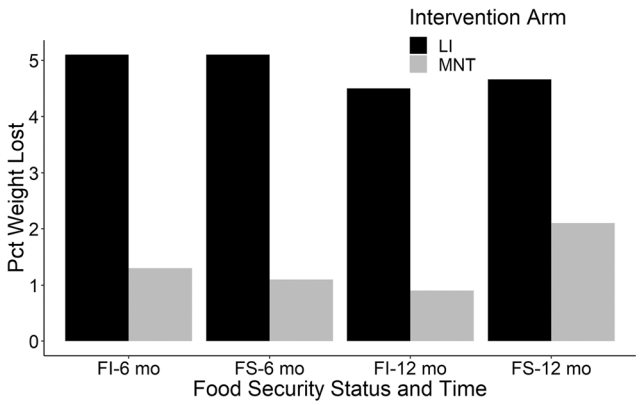
BACKGROUND: Food insecurity (limited access to nutritious food owing to cost) is associated with increased risk for type 2 diabetes (T2D) complications. Lifestyle interventions (LI) are recommended for management of T2D. However, LI may be ineffective for individuals with food insecurity, as food insecurity could impede weight loss. In a pre-planned subgroup analysis of the REAL HEALTH-Diabetes randomized clinical trial (NCT02320253), we tested the effectiveness of LI for individuals with food insecurity and T2D.

METHODS: The study included adults (age ≥ 18 years) with T2D, body mass index ≥ 25 kg/m^2 (or ≥ 23 kg/m^2 if of self-reported Asian ancestry), hemoglobin A1c of 6.5 to 11.5%, blood pressure < 160/100 mm Hg, and who were willing to lose 5-7% body weight. We assessed food insecurity with the 6-item USDA Food Security Survey Module (≥2 affirmative responses indicated food insecurity). Participants were randomized to medical nutrition therapy (MNT), the standard of care, or a pragmatic group LI delivered in- person or by telephone. The outcome was percentage weight change from baseline. We tested, using linear mixed effects models, whether the intervention effect varied by food security status using an interaction term, adjusting for age, gender, race/ethnicity, education, language, income, and health insurance.

RESULTS: Of 208 participants, 13% were food insecure. Those with food insecurity were more likely to be racial/ethnic minorities (p<0.001) and have lower education (p<0.001). LI, versus MNT, led to greater weight loss at 6 months (5.1% lost vs. 1.1% lost, p<.0001) and 12 months (4.7% lost vs. 2.0% lost, p=0.0005). The intervention effect was similar regardless of food security status (5.1% bodyweight lost vs. 1.1% in food secure participants and 5.1% bodyweight lost vs. 1.3% in food insecure participants at 6 months; 4.7% bodyweight lost vs. 2.1% in food secure participants and 4.5% bodyweight lost vs. 0.9% in food insecure participants at 12 months, p-for-interaction = 0.99) (*Figure*).

CONCLUSIONS: The REAL HEALTH-Diabetes lifestyle intervention led to meaningful weight loss at 6 and 12 months for individuals with food insecurity and T2D.



ANEMIA AT DISCHARGE AND RISK OF READMISSIONS IN ELDERLY PATIENTS

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BACKGROUND: Anemia is defined by the World Health Organization (WHO) as hemoglobin (Hb) concentration less than 12.0 gm/dL for females and less than 13.0 gm/dL for males. Objective of this quality improvement initiative was to test if anemia independently is associated with readmission in elderly patients discharged from the medicine service of a community teaching hospital.

METHODS: We conducted a retrospective cohort study declared exempt by our Institutional Review Board involving electronic medical record data from patients at least 65 years old hospitalized between September 2009 and June 2019 discharged not to hospice care. Severity of anemia classified by the WHO was applied for Hb concentrations obtained at hospital discharge for females as mild (11.0 – 11.9 gm/dL), moderate (8.0 –10.9 gm/dL), severe (<8.0 gm/dL); and males as mild (11.0 - 12.9 gm/dL), moderate (8.0 - 10.9 gm/dL), severe (<8.0 gm/dL). Time to readmission after index hospitalization within 30d, 90d, and 180d with mild, moderate, severe, or no anemia were compared using Kaplan Meier survival curves with covariates (age; sex; multiple chronic conditions; length of stay; APR-DRG Severity of Illness and Risk of Mortality; and discharge destination) controlled using Cox regression. Readmission after 180d was considered a new index hospitalization. Continuous variables are summarized using median (interquartile range) contrasted using Kruskal-Wallis analysis of variance. Categorical variables are summarized as proportions compared using chi square or Fisher exact test. Statistical tests were two-tailed with $p<.05$ considered significant.

RESULTS: Among 13,526 inpatients with 18,793 discharges median age was 78 (14) years statistically similar by sex (49% females) exhibiting an anemia distribution of no (31.0%), mild (20.5%), moderate (47.1%) and severe (1.4%). Race distributed as 89.9% white; 5.9% African American or Black; and 4.2% Other. Females differentiated distribution across anemia spectrum at no (95.7%) ($p<0.001$), mild (26.4%) ($p<0.001$), moderate (51.0%) and severe (43.5%). No, mild, moderate and severe anemia corrected for putative confounders impacted ($p<0.001$) respectively cumulative risk of readmission at 30d (7.0%, 7.9%, 17.2%, 21.3%), 90d (12.0%, 15.3%, 28.1%, 34.8%) and 180d (16.4%, 20.7%, 34.4%, 42.6%).

CONCLUSIONS: An essential patient-centric question is whether anemia in elderly inpatients affects poor outcomes and/or whether anemia is a surrogate marker for underlying overt and/or subclinical disease(s). Although present quality improvement initiative was not designed to unravel mechanisms of anemia, we controlled for putative severity of illness confounders while demonstrating readmission risk escalating with severity of anemia. Moreover, our findings herald readmission risk associated with "no anemia" as defined by the WHO. Tailored anemia care could offer clinical advantages to mitigate risk for readmission.

AN EVIDENCE MAP OF GENETIC THERAPIES

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BACKGROUND: Genetic therapies replace or inactivate disease-causing genes or introduce new or modified genes. These therapies have the potential to cure in a single application rather than treating symptoms through repeated administrations. This evidence map provides a broad overview of the genetic therapies that have been evaluated in randomized controlled trials (RCTs) for efficacy and safety.

METHODS: We searched PubMed, EMBASE, Web of Science, clinicaltrials.gov, and grey literature to November 2018. Two independent reviewers screened publications using predetermined eligibility criteria. Study details and data on safety and efficacy were abstracted from included trials. Results were visualized in an evidence map.

RESULTS: We identified 119 RCTs evaluating genetic therapies for a variety of clinical conditions. On average, samples included 107 participants (range: 1-1,022), and were followed for 15 months (range: 0-124). Interventions using adenoviruses (40%) to treat cardiovascular diseases (29%) were most common. In RCTs reporting safety and efficacy outcomes, most genetic therapies (60%) were associated with improved symptoms but in nearly half (45%) serious adverse events (SAEs) were also reported. Improvement was reported in trials treating cancer, cardiovascular, ocular, and muscular diseases. However, only 19 trials reported symptom improvement for at least one year. SAEs reported in intervention and control groups included death, stroke, myocardial infarction, and infections. The evidence map shows the distribution of evidence to date.

CONCLUSIONS: This evidence map provides a broad overview of research studies that allow strong evidence statements regarding the safety and efficacy of genetic therapies. Most interventions improve symptoms, but serious adverse events are also common. More research is needed to evaluate genetic therapies with regard to the potential to cure diseases.

AN INNOVATIVE APPROACH TO IMPROVING IN-TRAINING EXAMINATION SCORES THROUGH THE UTILIZATION OF AN ADAPTIVE LEARNING QUESTION BANK

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BACKGROUND: Internal Medicine (IM) In-Training Exams (ITEs) are annual markers of resident progress and strong predictors of passing the American Board of Internal Medicine (ABIM) certification exams. While low standardized ITE percentiles correlate with increased risk of board failure, literature is limited with regards to specific tools that can be utilized to enhance ITE scores and increase the likelihood of passing the ABIM exam.

Identifying innovative strategies IM programs can employ to improve annual ITE scores is critical for optimizing ABIM exam pass rates. With evolving technology, learners are utilizing multiple platforms for preferred study techniques, including mobile applications. Additionally, question banks are increasingly utilizing adaptive learning as an interactive model of spaced repetition theory for long term retention of material. However, the effectiveness of these new technologies is poorly understood.

This study evaluated the effectiveness of a novel board review question bank in improving resident performance in annual ITE scores and ABIM examination performance.

METHODS: A novel board review question bank that utilizes adaptive learning was provided to IM residents, including combined IM-Pediatrics and Emergency Medicine-IM programs (N=85) for three academic years to enhance ITE preparation in addition to standard study materials. Residents were encouraged to complete a minimum of 50 questions per 2 week elective rotation, and 100 questions per 4 week elective rotation. The number of questions completed was tracked at time intervals prior to each ITE. Multiple regression analysis evaluated how resident question completion predicted ITE scores and ABIM scores controlling for baseline ITE scores from year one of residency.

RESULTS: Number of questions completed during the first year of product use showed improvement in scores; for every 200 questions completed during that academic year, there was a predicted one percent increase in ITE score (p=.014). During the second year of utilizing the product, there was no effect of number of questions completed with overall score improvement of the ITE. ITE score data from the third year of product use is still pending. There was no significant relationship between questions completed and improvement in ABIM 3-digit scores (p=.855), although these data were only available for a small subset of residents (n=47).

CONCLUSIONS: Residents who utilized this novel question bank during the first year that it was available demonstrated improvement in ITE scores. As ITE scores are predictive of passing the ABIM examination, this new question bank could help improve residency program pass rates. Further research can focus on use of the metacognitive aspect of the adaptive learning tool to develop tailored individualized learning plans or referrals for psychodiagnostic testing for residents at risk of failing the ABIM certification exam.

AN INTENSIVE HIGH UTILIZER INTERVENTION DOES NOT REDUCE HOSPITAL READMISSIONS: THE CHAMP RANDOMIZED CONTROLLED TRIAL

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BACKGROUND: A small number of patients account for a disproportionate number of hospital readmissions. The Complex High Admission Management Program (CHAMP) is designed to improve care and reduce hospitalizations for frequently readmitted patients. Non-randomized studies of CHAMP found reductions in readmission but may be subject to regression to the mean. We conducted a randomized trial of CHAMP compared with usual care to accurately assess the program's effect on hospital readmissions.

METHODS: The CHAMP team consists of 2.0 FTE social workers, 0.6 FTE physicians, 0.1 FTE program administrator, and support from pharmacy residents, a psychologist, and a pre-existing transitional care clinic. The study had three inclusion criteria: A) 3 or more 30-day inpatient readmissions to Northwestern Memorial Hospital in a 12-month period, B) 2 or more readmissions plus referral from a care team member, or C) 2 readmissions plus 3 observation stays. Patients already followed by a multidisciplinary team (i.e. oncology, transplant) were excluded. Eligible patients were randomized to CHAMP or control (delayed-enrollment, eligible for CHAMP in 18 months). The primary outcome was number of inpatient 30-day readmissions at 180 days after enrollment; secondary outcomes included number of inpatient 30-day readmissions at 30 and 90 days, total hospital admissions, and time to third inpatient 30-day readmission. Results were stratified by presence of sickle cell disease.

RESULTS: We randomized 75 eligible patients to CHAMP and 76 to control. CHAMP and control patients were similar in age, sex, demographics; 7 CHAMP and 6 control patients had sickle cell disease. Both groups had fewer readmissions at 180 days after enrollment compared to 180 days prior to enrollment [baseline CHAMP mean 2.7 (95% CI 2.3-3.0) vs. control 2.7 (95% CI 2.4-3.1), p=0.87]. However, CHAMP-enrolled patients had more inpatient 30-day readmissions at 180 days [CHAMP mean 1.3 (95% CI 0.9-1.8) vs. control 0.8 (95% CI 0.5-1.1), p=0.04]. Readmissions were concentrated among patients with sickle cell disease [CHAMP mean 4.8 (95% CI 2.4-9.5) vs. control 1.7 (95% CI 0.4-6.4), p=0.17]; there were no differences in readmissions among patients without sickle cell disease [CHAMP mean 0.9 (95% CI 0.6-1.2) vs. control 0.7 (95% CI 0.5-1.0), p=0.31]. There were no differences in number of 30-day readmissions at 30 and 90 days, total hospital admissions, or in time to third inpatient readmission between the groups.

CONCLUSIONS: In a randomized study, frequently hospitalized patients enrolled in CHAMP experienced reductions in utilization over time, similar to observational studies. However, CHAMP did not reduce readmissions compared to a control group. Though CHAMP may affect other critical aspects of patient care, such as patient-reported outcomes, interventions targeting specific medical or social needs may be more successful in reducing hospital readmissions

AN OUNCE OF PREVENTION: IMPROVING MEDICAL STUDENT EDUCATION IN PREVENTIVE CARE THROUGH AN INTEGRATIVE APPROACH

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BACKGROUND: Preventive care training is important in undergraduate medical education. Our medical school has an integrated curriculum where 1st and 2nd-year students are exposed to ambulatory care concurrently with basic science education. To improve students' preventive care experience, we conducted a quality improvement project to assess gaps in our 1st and 2nd-year curriculum and identify opportunities to integrate prevention across the curriculum. We involved key stakeholders, including students, faculty, community preceptors, and curricular subcommittees.

METHODS: We conducted a needs assessment survey of third-year medical students (MS3) and ambulatory clinic preceptors. We asked MS3 how often they performed preventive care tasks at their ambulatory

clinics and how knowledgeable and important they felt about 15 preventive care topics on a 3-point Likert care scale (very, somewhat, none). We asked the preceptors how often prevention was discussed and students' performance on 15 preventive care topics on a 5-point Likert scale (5=strongly agree). Preventive care topics were selected based on clinical learning objectives set by the medical school.

RESULTS: The response rate for the MS3 survey was 41.0%(41/100). Students most often performed both obesity counseling and screening for metabolic conditions (Avg=69.7%). They felt all topics were important to their training, and reported feeling very knowledgeable in screening for substance misuse, depression, and metabolic conditions. Students least performed smoking cessation counseling (43.4%) and included smoking cessation in their patient presentations (Avg=36.8%). They felt least knowledgeable in post-partum depression and lung cancer screening. The response rate for the preceptor survey was 44.8%(13/29). The majority of preceptors discussed preventive care at every clinical session (61.5%) and expected students to include prevention in their patient presentations (Mean=3.7 on a 5-point Likert scale). They felt the students performed well on screening for nicotine use (M=4.1,SD=0.8), obesity (M=4,SD=0.9), and complications of diabetes (M=4,SD=0.8), but did not perform well on nutritional assessment (M=3.1,SD=1.1), screening for domestic violence (M=3.2,SD=1.2) and assessing patients for safety (M=3.2,SD=1.2).

CONCLUSIONS: Medical students and preceptors identified gaps in the preventive care curriculum. Based on discussions with curricular subcommittees, the next steps to improve preventive care education are adding prevention-focused learning objectives to existing didactics, integrating prevention with problem- based learning and clinical reasoning sessions, adding new topics on human trafficking, trauma-informed care, and nutrition based on students' requests, and introducing a new case-based preventive care session during medicine clerkship. An integrative approach can be helpful in learning prevention and a multiple stakeholder approach can identify unique opportunities to integrate and improve preventive care education effectively.

AN RCT TO INCREASE MOBILITY AND FUNCTION AFTER HOSPITAL DISCHARGE – THE MOVE IT STUDY

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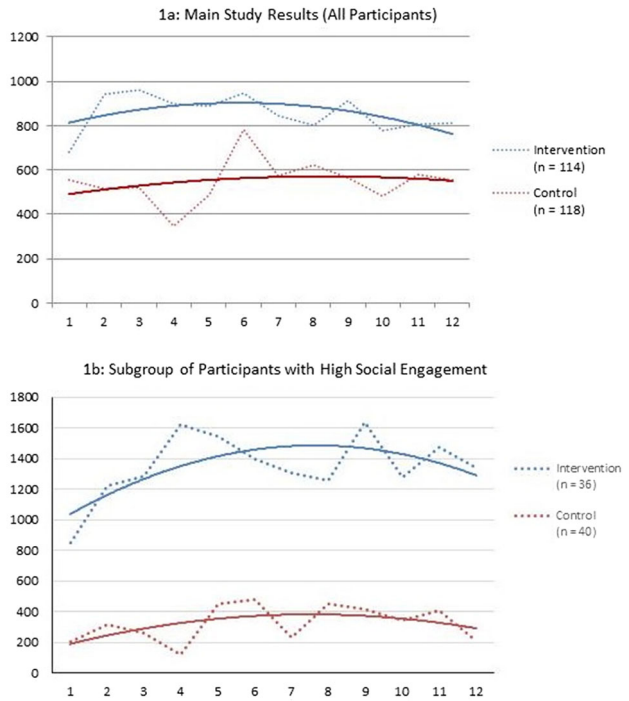
BACKGROUND: Gamification and social incentives, such as family/peer engagement in goal-setting and feedback, are increasingly used by health plans to promote physical activity in community settings but have not been used to improve mobility and reduce functional decline after hospitalization.

METHODS: 12-wk RCT of gamification with social incentives for general medicine/oncology patients at academic medical center. All participants recieved wearable device to track daily steps. Control group (n=118) received feedback from device only; intervention group (n=114) entered into a 12-week game with points/levels for achieving step goals reinforced by social incentives from a support partner (family/peer) who provided encouragement. Primary outcome was mean change in daily steps from baseline. Secondary outcomes were change in functional status (difficulty with ADL/IADLs and walking) and acute care utilization (ED visits and readmissions). Covariates were patient-reported characteristics such as sleep, quality of life, and social network size/strength (social engagement).

RESULTS: We recruited a diverse sample (N=232): 57% non-White; 61% female; 44% annual income <$50k; mean age, 40. Intervention arm had greater change in mean daily step count which did not reach statistical significance (adjusted difference, 270; 95% CI, -214, 754; p=0.27); however, subgroup analyses of participants with higher social engagement showed marked improvement in step counts (adjusted difference, 1,124; 95% CI, 409, 1841; p=0.002) – FIGURE 1. Participants in this subgroup also had less functional decline (4% compared to 12% control) and fewer 30-day readmissions (8.3% vs. 15% control). Intervention participants age 50-65 also had less functional decline (16% vs. 19% control).

CONCLUSIONS: Gamification with social incentives was effective in promoting higher mobility and reducing functional decline in patients with higher social engagement. Patients with lower social engagement may need additional support to benefit from such interventions.

Figure 1: Primary Outcome: Mean Step Increase above Baseline by Week after Discharge



ANTIMICROBIAL DE-ESCALATION PRACTICES ACROSS HOSPITALS FOLLOWING NEGATIVE CULTURES IN PATIENTS WITH PNEUMONIA

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BACKGROUND: For patients at risk for multidrug-resistant organisms, IDSA/ATS guidelines recommend empiric therapy against methicillin-resistant *Staphylococcus aureus* (MRSA) and *Pseudomonas*. Following negative cultures, the guidelines recommend antimicrobial de-escalation. We assessed antibiotic de-escalation practices across hospitals and their

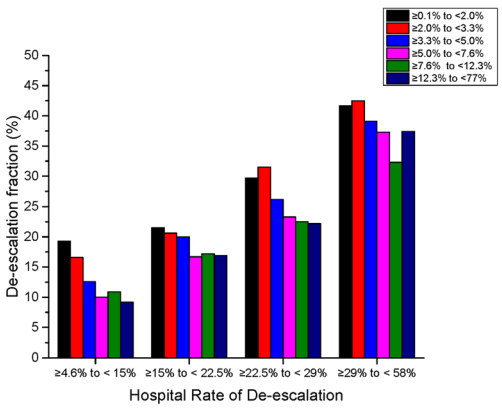
associations with outcomes in hospitalized pneumonia patients with negative cultures.

METHODS: We included adults admitted with pneumonia in 2010-2015 to 164 US hospitals if they had negative blood and/or respiratory cultures and received both anti-MRSA and antipseudomonal agents other than quinolones. De-escalation was defined as stopping both empiric drugs by day 4 while continuing another antibiotic. We compared adjusted outcomes (in-hospital 14-day mortality, late deterioration [ICU transfer], length-of-stay and costs) across hospital de-escalation rate quartiles. We also examined the likelihood of de- escalation based on the patient's predicted mortality risk across hospital de-escalation quartile.

RESULTS: Of 14,170 patients, 1924 (13%) had both initial empiric drugs stopped by hospital day 4. Hospital de-escalation rates ranged from 2%-35% with a median of 13%. De-escalation was more common in hospitals with >400 beds compared to hospitals with <200 beds (9.7% vs. 5.9%); in teaching institutions compared to others (9.7% vs. 6.3%); and in urban compared to rural hospitals (8.2% vs. 6.9%). There were no discernible trends in 14-day mortality, late ICU transfer or median length of stay across the quartiles of de- escalation. Within each quartile of hospital de-escalation rate, patients at higher predicted risk for mortality were less likely to be de-escalated. At hospitals in the top quartile of de-escalation, even among patients at lowest risk for mortality, the de-escalation rates were < 50% (Figure).

CONCLUSIONS: A minority of eligible pneumonia patients had antibiotics de-escalated by hospital day 4 following negative cultures and de-escalation rates varied widely among hospitals. The decision to de-escalate therapy was more strongly related to local practice than to patient predicted mortality. No hospital de-escalated even 50% of low risk patients. To adhere to recent guidelines will require substantial changes in practice.

Bar chart of hospital rates of day 4 de-escalation (y-axis), grouped by hospital de-escalation quartile and further stratified by sextiles of predicted mortality (x-axis).



APPROPRIATENESS OF ANTICOAGULATION THERAPY FOR PRIMARY CARE PATIENTS WITH ATRIAL FIBRILLATION

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BACKGROUND: When making decisions about oral anticoagulation for patients with atrial fibrillation, physicians must weigh stroke risk reduction against bleeding risk. The Atrial Fibrillation Decision Support Tool (AFDST) is a decision analytic model that predicts the optimal anticoagulation strategy for specific individuals. Our objective was to describe the appropriateness of anticoagulant therapy (as judged by the AFDST) in a large primary care population.

METHODS: This retrospective cohort study used data from the Cleveland Clinic Health System. Primary care patients were included if they had a diagnosis of atrial fibrillation or flutter between 2015 and 2018. Patients co-managed by cardiologists were excluded. The AFDST model uses CHA2DS2-VASc and HAS- BLED to estimate the optimal anticoagulation strategy for each patient. We compared AFDST model-recommended anticoagulation to each patient's actual anticoagulation. Using mixed effects logistic regression, accounting for clustering by primary care physician, we estimated the adjusted odds of 1) receiving any oral anticoagulation if the AFDST model recommended anticoagulation, and 2) being on the model's optimal drug. Regression models adjusted for patient race, marital status, and insurance type. The first model also adjusted for estimated benefit of optimal anticoagulation versus nothing, as measured in quality adjusted life years. We assessed anticoagulation rates for individual physicians with at least 10 patients recommended to receive it.

RESULTS: The sample included 12,308 patients and 3,894 physicians. The median CHA2DS2-VASc score was 4 (Interquartile Range (IQR):2-5); the median HAS-BLED was 2 (IQR:1-3). The AFDST recommended anticoagulation for 93% of patients, most frequently with apixaban (85%) or dabigatran (9%). Of patients recommended to receive anticoagulation, 41% did, and of these, 29% were receiving the model- recommended drug. Of 804 patients recommended not to receive anticoagulation, 44% were anticoagulated, most commonly with warfarin (43%). Anticoagulation was largely insensitive to CHAD2DS2-VASc scores; anticoagulation was given to 38% of patients with a score of 2, 42% with a score of 5 and 33% with a score of 8. In adjusted analyses, relative to white patients, black patients were less likely to receive any anticoagulant (aOR:0.68; 95%CI:0.57-0.81). Patients with greater predicted benefit of anticoagulation were not more likely to receive it. For individual physicians, the proportion of patients expected to benefit who received anticoagulation ranged from 25-71%.

CONCLUSIONS: In this primary care population, less than half of patients predicted to benefit from oral anticoagulation were receiving it, and less than a third were receiving the specifically recommended agent. Anticoagulation was unrelated to predicted stroke risk, and optimal use of anticoagulation varied widely among individual physicians.

A PRAGMATIC RANDOMIZED CONTROLLED TRIAL TO EXAMINE THE EFFECTS OF A PREDIABETES DIAGNOSIS AND BRIEF COUNSELING ON PATIENT ENGAGEMENT IN STRATEGIES TO PREVENT DIABETES

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BACKGROUND: A potentially important opportunity to engage patients in strategies to prevent type 2 diabetes mellitus (T2DM) is when they are screened for T2DM and found to have prediabetes. Yet, little is known about the effects of a prediabetes diagnosis and brief counseling on patient engagement in evidence- based strategies to prevent T2DM (e.g., participation in a weight management program like the Diabetes Prevention Program or use of metformin).

METHODS: In a 12-month pragmatic randomized controlled trial, 315 non-diabetic patients from the Ann Arbor Veterans Affairs Medical

Center (AAVA) who had a major risk factor for T2DM, no hemoglobin A1c (HbA1c) test to screen for T2DM in the previous 12 months, and an upcoming primary care appointment at the AAVA were randomly assigned to one of two treatments at that primary care visit: (1) undergo an HbA1c test to screen for T2DM and receive brief standardized telephone and written counseling about their HbA1c results based on VA and American Diabetes Association guidelines; or (2) review a VA brochure about recommended screening tests and immunizations (attention control). The primary outcome was weight change after 12 months, measured using VA administrative data. Secondary outcomes included reported participation in a weight management program, use of metformin, attempted weight loss, change in physical activity, and level of motivation to prevent T2DM. Data for secondary outcomes were collected from surveys administered before randomization and at 2 weeks, 3 months, and 12 months after the baseline primary care appointment. Difference-in-differences analyses compared changes in outcomes between participants in the HbA1c test arm found to have prediabetes and participants in the brochure arm.

RESULTS: The 106 participants in the Hb1Ac test arm who were found to have prediabetes (out of the 252 participants in that arm) had no greater change in weight, participation in a weight management program, use of metformin, weight loss attempts, or physical activity after 12 months than the 63 participants in the brochure arm. Participants with prediabetes had a greater increase in their level of motivation to prevent T2DM (measured on a 0-10 scale) at 2 weeks (mean 1.0; $P < 0.001$) and 3 months (mean 0.8; $P = 0.004$), but not at 12 months, than participants in the brochure arm.

CONCLUSIONS: Using an HbA1c test to identify patients with prediabetes and providing them with brief standardized counseling increased their short-term level of motivation to prevent T2DM. However, this increased motivation was not sustained and, in the absence of longitudinal supports, did not translate into more engagement in evidence-based strategies to prevent T2DM. New approaches are needed in primary care to help patients who are diagnosed with prediabetes translate their short-term heightened motivation to prevent T2DM into effective engagement in preventive strategies.

A PREDICTION MODEL TO GUIDE LEGIONELLA TESTING FOR PATIENTS HOSPITALIZED WITH COMMUNITY-ACQUIRED PNEUMONIA

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BACKGROUND: *Legionella pneumophila* is a rare cause of community acquired pneumonia. Thus, routine testing of all patients is not cost-effective. Guidelines recommend that Legionella testing should be reserved for severe pneumonia, and in cases associated with an outbreak or recent travel. We sought to develop a predictive model for Legionella infection to aid in diagnostic testing.

METHODS: We conducted a large retrospective cohort analysis using the Premier Hospital Database from 2010-2015. We included adults who had an ICD-9 code for pneumonia as principal diagnosis (or as a secondary diagnosis paired with a principal diagnosis of respiratory failure or sepsis), received antibiotic treatment for pneumonia by hospital day 1, and had any test for Legionella. We used multivariable logistic regression group LASSO variable selection to identify characteristics associated with a positive test from candidate patient demographics, co-morbid conditions present on admission, markers of disease severity, season (June-Oct vs. Nov-May), US census region, and presence of a local outbreak (2 or more cases in the current month or at least one case in the previous month). The model was developed using a random 80% of hospitalizations and validated on the remaining 20%.

RESULTS: Of 166,689 eligible patients, 43,070 (25.8%) were tested for Legionella at 165 hospitals, and 642 (1.5%) tested positive. Compared to negative tests, positive tests were more likely to occur during a local outbreak (50% vs. 18%, p<0.001), from June-Oct vs. Nov-May (70% vs. 35%, p<0.001), and to be accompanied by hyponatremia (36% vs. 14%, p<0.001). In the logistic regression model, a positive test was linked most strongly to a local outbreak (OR 3.0), summer months (OR 2.4), hyponatremia (OR 2.6), diarrhea (OR 1.4), and smoking (OR 1.6). Patients with risk factors for other causes of pneumonia were at decreased risk, including those with chronic lung disease (OR 0.8) and admission in the past 6 months (OR 0.8). Admission to intensive care and other markers of severe pneumonia were not selected for inclusion in the model, which had a c-statistic of 0.78 in the validation set. Predicted risk ranged from 0.3% to 21%, and 82% of patients with a positive test were in the top 3 deciles of predicted risk. In the dataset, physicians tested 21% of patients in the lowest risk decile and 37% of patients in the highest risk decile. In contrast, testing the 20% of patients at highest risk in the entire sample would be expected to identify 1143 cases, using only 33,338 tests (3.4% positivity rate).

CONCLUSIONS: Although incidence of Legionella in this pneumonia cohort was low, information available at the time of admission could be used to predict infection with reasonably high discrimination. Risk varied by 70-fold. Use of a predictive model to guide testing should allow clinicians to detect more cases while ordering fewer tests.

A QUALITATIVE ANALYSIS OF PRIMARY CARE CLINICIANS' JUSTIFICATIONS FOR ORDERING OPIOIDS

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BACKGROUND: The CDC has issued guidelines to improve opioid use by using non-opioid alternatives, avoiding transitioning to chronic opioid use, and reducing chronic, high-dose opioid use. In this pilot, we deployed electronic health record (EHR) nudges informed by behavioral economic principles to improve primary care clinicians' guideline adherence. One part of the intervention was to require a justification for prescribing an opioid medication at the time of ordering. Our objective was to qualitatively describe these clinician justifications.

METHODS: For 41 primary care clinicians at three primary care clinics at one academic medical center, three different clinical decision support (CDS) alerts were triggered within the EHR when clinicians opened an opioid order that was for a) an opioid-naïve patient, b) a second opioid prescription within 90 days, or c) a chronic, high-dose opioid renewal. These CDS reminded clinicians that safer alternatives or doses should be prescribed and encouraged the clinician to change or cancel the order. If the clinician persisted with the order, a "justification alert" appeared that asked the clinician to enter a free-text rationale for the order and informed them if the text field was left blank, "No justification was given for ordering an opioid" would be entered in the encounter report visible to other clinicians. We reviewed all clinician justifications that were captured within the EHR and organized them into major themes. The pilot study ran from March-November 2019.

RESULTS: During the pilot, the justification alert fired 388 times. Clinicians usually entered a unique justification as opposed to the default language (347/388; 89%). There were seven major themes to documented justifications: 1) description of patients' acute or chronic pain (e.g., "Intractable back pain" and "Pain for zoster"); 2) post-operative pain; 3) prolonged cough; 4) failure of alternative treatments (e.g., "Persisting pain, alternatives not helpful" and "Have exhausted alternatives"); 5) balancing risks and benefits (e.g., "Acceptable risk"); 6) mentioning a short term supply (e.g., "Short term, acute pain"); or 7) including details that another approach to pain management was pending (e.g., "Bridging pain control until sees Spine" and "To see pain specialist in August").

CONCLUSIONS: When asked to provide a justification for ordering opioids, most clinicians added unique entries to patients' charts. These entries provided contextual details and often reflected that the clinician was aware of the risks of opioids and despite this felt the prescription was necessary. Additional studies are needed to understand if displaying clinicians' justifications to patients will influence prescribing.

A QUALITATIVE STUDY OF VIOLENT POLITICAL RHETORIC AND HEALTH IMPLICATIONS FOR SPANISH AND CHINESE SPEAKING IMMIGRANTS

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BACKGROUND: Violent political rhetoric regarding immigrant populations in the U.S. often incites the discriminatory treatment of immigrants at both interpersonal and institutional levels, shaping both their health and healthcare experiences. Given the rise in anti-immigrant rhetoric since 2016, this qualitative study explores and compares how Spanish- and Chinese-speaking immigrant populations in Chicago make sense of violent political rhetoric, utilize coping strategies to maintain their sense of belonging, and experience downstream health consequences.

METHODS: In 2019, we conducted, recorded, and transcribed 14 semi-structured focus groups with adults (N=80), ages ≥ 35 years, who immigrated to the U.S. Participants were recruited from four community sites in either predominantly Hispanic/Latino or Chinese neighborhoods in Chicago. Focus groups were conducted by racially- and linguistically-concordant interviewers in Spanish, Mandarin, or Cantonese. The research team developed a codebook iteratively and analyzed transcripts using grounded theory and the constant comparison method. Each transcript was coded by two research members; discrepancies were resolved using a standard of intercoder agreement.

RESULTS: The mean age of participants was 61.4±13.1 years; the majority were female (62%), unemployed (68%), and attained less than a high school diploma (53%). Almost two-thirds (61%) were Chinese-speaking and one-third (39%) were Spanish-speaking. While most Spanish-speaking participants (93%) indicated some level of stress due to rhetoric against immigrants, less than half of Chinese-speaking participants (39.6%) reported some stress due to rhetoric. Approximately one-third (32%) of Spanish-speaking participants screened positive for PTSD, compared to only 4% among Chinese-speaking participants. Participants described several ways by which violent political rhetoric increased discrimination against immigrants: "They think we're fifth class citizens, not second or third, but fifth." Another woman said: "They've always got a foot against our necks, you know? The police just antagonize the worker." Many participants responded to these experiences by using coping strategies like self-blame, helplessness, and propagating model minority expectations: "We should look to integrate into society, speaking like society, getting educated like society, being useful." Downstream consequences included impacts on mental health ("I would like to be at peace, without the fear of always thinking what's going to happen tomorrow") and physical health ("There are people who don't sleep. Maybe at the beginning, they're able to deal with it. But with time, they lose a lot of sleep and they wind up sick.")

CONCLUSIONS: Participants often described experiences of violent political rhetoric toward immigrants in the U.S. and formulated coping mechanisms to maintain a sense of self. These experiences were often linked to increased experiences as victims of acts of hate, with impacts on mental and physical heath.

A QUANTITATIVE ANALYSIS OF PATIENT RISK FACTORS FOR GUN POSSESSION IN CHICAGO

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BACKGROUND: Recent growth in gun violence and high-profile mass shootings have elevated discussions about gun possession to the forefront of national debate. While gun possession may enhance feelings of safety and protection from harm, it may also increase risk of suicide or interpersonal violence. Some advocates have called for healthcare professionals to screen and intervene on high-risk patients. However, few studies have examined the patient characteristics and types of neighborhood violence exposures associated with gun possession, and patients' self-described reasons for gun possession.

METHODS: A sample of 504 adult patients were recruited from primary care clinics in two epicenters of violent crime in Chicago. Surveys were administered by trained research assistants using computer-assisted personal interviewing software. Patients anonymously self-reported gun possession status through a series of validated items. Lifetime exposure to neighborhood violence was measured using the Brief Trauma Questionnaire (BTQ), which included items for being a victim of violence, or being the witness, close friend, or relative of someone who died violently. BTQ items were also adapted to assess exposure to police violence as a victim, witness, or close friend/relative. Logistic regression models were used to examine gun possession as a function of patient characteristics and violence exposures, adjusting for age, gender, race/ethnicity, education, insurance status, and employment status.

RESULTS: The majority of patients were aged >50 years (77%), female (71%), and non-Hispanic Black (75%). Of the 454 patients who responded to the gun possession items, 83 (18%) reported possession of any firearm and 54 (12%) reported carrying a gun outside the home. The majority (78%) of those who disclosed carrying a gun reported "protection" as the primary reason for doing so. Male gender (AOR=2.47, 95% CI, 1.51-4.05), exposure to community violence (AOR=1.83, 95% CI, 1.02-3.26) and exposure to police violence (AOR=2.11, 95% CI, 1.22-3.64) were associated with higher adjusted odds of gun possession. Hispanic/Latino race/ethnicity (AOR=0.24, 95% CI, 0.07-0.78), uninsured status (AOR=0.11, 95% CI, 0.01-0.84), and living alone (AOR=0.45, 95% CI, 0.25-0.84) were associated with lower adjusted odds of gun possession. There were no significant differences in gun possession between non-Hispanic white and non-Hispanic black patients, or among those diagnosed with mental health conditions.

CONCLUSIONS: Prior exposure to neighborhood violence, especially police violence, had strong associations with gun possession in this sample of urban-dwelling adults in high-crime areas. There was no difference in gun possession between black and white patients. Self-

protection was overwhelmingly reported as the primary reason for carrying a gun. It is imperative for healthcare professionals to understand and address prior experiences with violence when screening patients for gun possession and assessing for safety in clinical settings.

A RANDOMIZED CONTROLLED TRIAL FOR MEDICATION RECONCILIATION VIA SECURE MESSAGING TO REDUCE MEDICATION DISCREPANCIES AFTER HOSPITAL DISCHARGE

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BACKGROUND: Medication discrepancies, defined as unintentional differences found between patients' medical records and patients' reports of medications they are taking, occur frequently after hospital discharge, predisposing patients to adverse drug events, emergency department (ED) visits, and readmissions. Medication reconciliation is a Joint Commission National Patient Safety Goal and is required at every care transition. However, high discrepancy rates suggest the need to develop strategies to improve medication reconciliation after discharge. One potential solution is to leverage online patient portals that allow interactive, asynchronous electronic communication for review of medications. The objective of this study was to test the effect of an electronic tool we previously developed for medication review, known as the Secure Messaging for Medication Reconciliation Tool (SMMRT), which we hypothesized would reduce medication discrepancies (primary outcome measure) and the combined outcome of ED visits plus readmissions, compared to usual care.

METHODS: In a randomized controlled trial at one Veterans Affairs Medical Center, we enrolled 240 Veterans hospitalized in the acute inpatient and sub-acute rehabilitation units. Participants were randomized to receive the SMMRT intervention (n=118) or usual care (UC; n=122). Veterans in the SMMRT group were enrolled in the patient portal, trained to use both secure messaging and the SMMRT tool, and contacted by a clinical pharmacist to review medications and reconcile discrepancies in the 2-week period following hospital discharge. Contact with the participant occurred preferentially by secure messaging via SMMRT but also by telephone if necessary. We used telephone interviews and medical records to ascertain the presence of each outcome measures within 30 days of hospital discharge. We used linear regression to compare mean discrepancies and chi-square tests to compare rates of ED visits and admissions (combined) in the two groups.

RESULTS: At baseline, SMMRT and UC groups were similar with respect to patients' demographic and clinical characteristics, although the mean age in the SMMRT group (63 years) was slightly younger than in the UC group (66 years; p=0.07). Thirty days after discharge, there were fewer medication discrepancies in the SMMRT group (4.4 per person) than in the UC group (6.4 per person; p<0.001), a 34% reduction. There was no difference in the rates of the combined endpoint of 30-day readmissions and ED visits between the SMMRT group (30%) and the UC group (34%; p=0.51).

CONCLUSIONS: An intervention to promote asynchronous medication review after hospital discharge reduced medication discrepancies by 34% but did not appear to reduce ED visits and readmissions. This approach may be incorporated in post-discharge communication to improve patient safety. Future study should explore additional methods of asynchronous medication review after hospital discharge, such as through mobile apps and text-messaging.

A RAPID NATIONAL NEEDS ASSESSMENT OF VA OPIOID DISPOSAL PROCESSES AND INFRASTRUCTURE

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BACKGROUND: Opioid diversion, referring to opioids diverted from legitimate prescriptions to illegal circulation was 5x higher in 2017 compared to 2002 (Kurtz 2019). In partnership with the VA pain program office, we undertook a rapid national needs assessment to understand how sites handle proper disposal of unused opioid medications and identify opportunities for intervention.

METHODS: We interviewed key stakeholders on perceptions of VA opioid disposal programs, including communication with providers and patients, law-enforcement-run disposal days, mail-back envelops, secure bins located at VA and other pharmacies, and buy-back programs. We utilized a combination of snowball and purposive sampling to connect with geographically dispersed stakeholders. Interviews were conducted Nov- Dec 2019 with 12 VA stakeholders (8 sites; representation from surgery, pain, ambulatory care, pharmacy, and VA police). We employed Stanford lightning report rapid qualitative analytic techniques.

RESULTS: Theme 1: There is limited VA standardization of opioid disposal advice and practices. Many providers are unaware of best practices or even current options locally. Providers do not routinely discuss opioid disposal, and documentation provided with prescriptions does not necessarily include disposal information. One exception is long-term opioid therapy where the patient consent does include generic information about disposal.

Theme 2: Providers identified three ideal patient types/situations for opioid disposal intervention: acute situations (post-surgery), tapering or changing prescriptions (long-term pain patients), and bereaved families (post-palliative care). One post-operative buy-back program was locally successful in a rural setting. Other providers were open to implementing buy-back at their locations, but named barriers related to cost, resources (pharmacy FTE), and complexity/location (eg. distance to pharmacies for patients).

Theme 3: Frequently implemented interventions included blue bins located by pharmacies for secure disposal of medications, and mail-back envelopes given to patients by physicians or pharmacists. There were barriers to implementing these interventions, namely cost perceptions (e.g. pre-marked postage to facilitate use could incur significant costs with larger volume).

CONCLUSIONS: Opioid disposal efforts are underway across the nation's VA. Buy-back programs, secure disposal (bins and mail-back envelops), and potential policies are three promising avenues for future intervention. Overall, providers were motivated to address this issue of removing unused opioids from circulation, but acknowledged barriers of cost, resources, and competing priorities. Future efforts should coalesce disparate interventions into a centralized program that includes

communication to patients/providers, interventions tailored to specific settings/populations, and layered interventions so that every veteran can access disposal.

A RARE CASE OF EOSINOPHILIC MYOCARDITIS IN A PATIENT WITH HYPEREOSINOPHILIC SYNDROME

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BACKGROUND: Hypereosinophilic Syndrome (HES) is a disorder marked by sustained eosinophilia in which infiltration of eosinophils cause damage to multiple organs. Presentation varies widely, but dermatologic and pulmonary clinical manifestations are among the most common presenting symptoms. Cardiac involvement (i.e. eosinophilic endocarditis/myocarditis), while rare, is among one of the major causes of morbidity and mortality among HES patients.

METHODS: We present the case of a 38 year old female who initially presented with severe dyspnea on exertion and petechial rash. Patient found to be thrombocytopenic on admission with elevated absolute eosinophil count (present on prior admissions and persistently elevated on subsequent admissions as well). CT chest revealed diffuse bilateral infiltrates. TTE performed due to concerns for heart failure revealed right sided cardiac strain with apical thrombus concerning for Eosinophilic Myocarditis (Loeffler's Endocarditis). Patient was started on IVIG for thrombocytopenia, with improvement in platelet count. After normalization of platelets, patient was also initiated on anticoagulation and high dose steroids for Eosinophilic Myocarditis.

Subsequent admissions revealed patient had developed diffuse lymphadenopathy. IgE was found to be significantly elevated. Genetic testing revealed the patient to be FIP1L1-PDGFRA negative; a tyrosine kinase mutation associated with myeloproliferative variant of HES. Patient was scheduled for follow up with Hematology/Oncology for biopsy and further management.

RESULTS: In the setting of diffuse lymphadenopathy, elevated IgE, along with dermatologic and pulmonary findings, it was suspected that our patient had a Lymphocytic or Myeloproliferative variant of HES. One study found that therapy with Imatinib in patients with myeloproliferative features of HES variants had a 54% response rate, even in FIP1L1-PDGFRA negative patients.

CONCLUSIONS: Despite extensive evaluation, as many as 75 percent of cases of HES reveal no identifiable etiology. Guidelines for the identification and treatment of such patients has not been well established in the literature, and the wide variety of clinical presentations often results in delayed diagnosis.

HES is a rare condition with incidence rate of 0.35 cases per 1,000,000 individuals per year. Cardiac involvement in HES was first described by Loeffler in 1936. Since then, numerous case reports have documented cardiac involvement in both children and adults. Treatment for Loffler's Endocarditis typically involves high dose steroids, +/- anticoagulation and treatment of the underlying cause if identified.

AREA DEPRIVATION INDEX PREDICTS 10-YEAR ALL-CAUSE MORTALITY FOLLOWING CABG SURGERY

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BACKGROUND: Living in a disadvantaged neighborhood can impact a patient's long-term health. Area Deprivation Index (ADI) is a comprehensive measure of neighborhood socioeconomic status that includes such indicators as median income, employment status, housing, English language proficiency, and poverty rate. While living in more disadvantaged neighborhoods has been associated with higher rates of diabetes and early death, few studies have examined the relationship between ADI and mortality among patients with cardiovascular conditions. We addressed this question among a cohort of patients who enrolled in a NIH- funded trial to treat depression following coronary artery bypass graft (CABG) surgery.

METHODS: Between 3/04 and 9/07, we enrolled 453 post-CABG patients from eight Pittsburgh-area hospitals (302 depressed (inpatient PHQ-2(+)/2-week outpatient PHQ-9 ≥10) and 151 non-depressed control subjects (PHQ-2 (-)/PHQ-9 <5). We used the University of Wisconsin's Neighborhood Atlas (www.neighborhoodatlas.medicine.wisc.edu) to determine ADI for each patient's home address at the time of surgery and then classified ADI into four categories: Very Advantaged (ADI: 1-25); Advantaged (26-50); Disadvantaged (51-75); and Very Disadvantaged (76-100). We then confirmed patient vital status as of 12/31/2018, and used Kaplan-Meier analyses to determine 10-year mortality incidence with cox proportional hazards models to assess statistical significance.

RESULTS: We were able to determine ADI for 446 (98%) patients, including 297 (67%) who met the criteria for post-CABG depression. Their mean age was 65 (SD:11), 60% were male, 88% were White, 83% had hypertension, and 41% had diabetes. Patient distribution by ADI category was as follows: 8% Very Advantaged, 22% Advantaged, 40% Disadvantaged, and 30% Very Disadvantaged. This distribution did not differ by baseline depression status. The 10-year incidence of all cause mortality was 37%, and compared to Very Advantaged (reference group), the mortality hazard ratio was 1.26 (95% CI: 0.60-2.64) for Advantaged, 1.27 (0.63-2.57) for Disadvantaged, and 1.98 (0.98-3.99) for Very Disadvantaged (P=0.04).

CONCLUSIONS: ADI is predictive of 10-year all-cause mortality following CABG surgery. While our findings need to be confirmed for other cardiovascular conditions and in other communities, we strongly encourage policymakers and elected officials to consider neighborhood ADIs when making allocation decisions for limited public and private resources to address the social determinants for better health.

ARE AGE AND RACE ASSOCIATED WITH PRESCRIPTION OF SMOKING CESSATION PHARMACOTHERAPY IN HOSPITALIZED VETERANS?

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BACKGROUND: A minority of hospitalized smokers are prescribed nicotine replacement therapy (NRT) or other FDA-approved medications for smoking cessation in Veterans Health Administration (VHA) hospitals. Disparities in cessation pharmacotherapy may be especially salient in older and nonwhite inpatients (inpts), possibly related to patients'

misconceptions about cessation medication, level of nicotine dependence, and physicians' concerns regarding competing comorbid conditions. The aim of this study is to determine the association between patient age, race, and prescription of cessation pharmacotherapy in hospitalized veterans who smoke.

METHODS: We conducted a secondary analysis of data from a guideline implementation trial involving 849 hospitalized smokers (>1 cigarette/day) on the medicine inpatient wards at four University-affiliated VHA medical centers. We identified all inpt orders for cessation medications and used medical record review and face-to-face interviews to collect data on potential confounders of cessation medication prescribing, including age, race, educational attainment, primary admission diagnosis (by ICD-9 category), presence of a smoking- related condition, cigarettes per day (cpd), readiness to quit (Contemplation Ladder), and withdrawal symptoms (Minnesota Nicotine Withdrawal Scale). As the % of inpts for whom cessation medication had been prescribed was similar before and after the study intervention, data from both periods were combined. Multivariable risk adjusted logistic regression models were created using generalized estimating equations to assess the association between age, race, and any prescription of cessation pharmacotherapy, with adjustment for patient covariates, intervention period, hospital, and clustering by inpatient physician.

RESULTS: Mean age of inpts was 59 years and 12% were nonwhite; 68% had a smoking-related condition and 44% were admitted with a primary cardiopulmonary diagnosis. Median cpd was 15 (interquartile range 10-20), and 55% were ready to quit. Cessation pharmacotherapy was ordered for 36% of inpts (92% were prescriptions for NRT). Bivariable analysis showed that 42, 39, and 29% of patients aged <50, 50-64, >65 were prescribed cessation pharmacotherapy, respectively (p=.003 by Score test for trend). Compared to inpts <50 years, elderly inpts (>65 years) were significantly less likely to be prescribed cessation medication (aOR=0.40, 95% CI= 0.23, 0.70). Compared to Caucasian inpts, cessation medication was less likely to be prescribed for nonwhites (aOR=0.49, 95% CI=0.29, 0.81).

CONCLUSIONS: There is a significant opportunity to provide more hospitalized veterans with cessation pharmacotherapy, as recommended by The Joint Commission. Further research is needed to explore patients' treatment preferences and health beliefs, clinicians' prescribing attitudes, and system-related factors that may explain age- and race-related disparities in prescription of tobacco treatments.

ARE ALL NON-RESOLVING LACTATES THE SAME IN SEPSIS? THE ASSOCIATION BETWEEN LACTATE TRAJECTORY AND OUTCOMES AMONG SEPTIC PATIENTS WITH ELEVATED LACTATE AFTER 24 HOURS

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BACKGROUND: Serum lactate is a common prognostic marker incorporated into treatment guidelines for fluid administration in sepsis. Little is known about the clinical characteristics and outcomes of patients with non-resolving lactate. We sought to determine differences in characteristics and outcomes of sepsis patients according to relative changes in lactate between 24-48 hours after presentation.

METHODS: Electronic medical record data from adults presenting to a large urban academic emergency department between 2012-2018 that met sepsis-III criteria and had a lactate level >2 in the first 24 hours were included. Lactate trajectory was defined as ($lactate^{peak\ 0\text{-}24h}$-$lactate^{peak\ 24\text{-}48h}$)/$lactate^{peak\ 0\text{-}24h}$. Patients were divided into three groups based on lactate trajectory: "resolvers" had a trajectory of ≥0.25, "nonresolvers" had a trajectory of >-0.24 and <0.24, and "worseners" had a trajectory of ≤-0.25. Using bivariate tests, we compared clinical characteristics and outcomes between groups.

RESULTS: Of 5,446 patients, 5,027 (92.3%) were resolvers, 315 (5.8%) were nonresolvers, and 104 (1.2%) were worseners. The groups had similar triage vitals, demographics and received similar amounts of fluid within the first 24 hours (Table). Cancer and liver disease were increased among nonresolvers and heart failure was increased among worseners. Mortality was 16% in resolvers, compared to 27% in nonresponders and 49% in the worseners (p<0.001). A similar pattern was observed for mechanical ventilation, ICU admission rates, and vasopressor requirement (Table).

CONCLUSIONS: Lactate trajectory after presentation is associated with differences in clinical characteristics and outcomes in sepsis. While patients with nonresolving and worsening lactate after 24 hours had worse clinical outcomes, underlying differences in comorbidities may explain some of the differences in lactate metabolism and adverse sepsis outcomes. More work is needed to determine whether additional fluids would be of benefit in these patients.

Table. ASA Scores Assigned by Internal Medicine and Anesthesiology Physicians

Anesthesiology ASA Scores	Internal Medicine ASA Scores: 1	2	3	4	Total
1	0	0	0	0	0
2	6	10	2	0	18
3	9	73	50	0	132
4	0	2	11	0	13
Total	15	85	63	0	163

ARE CLINICIANS ADHERING TO THE 2018 USPHTF PSA SHARED DECISION-MAKING GUIDELINES? CHART REVIEW OF PSA DISCUSSION DOCUMENTATION

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BACKGROUND: Although the prostate-specific antigen (PSA) test is widely used to screen for prostate cancer, USPSTF recommendations have historically advised against routine screening, and the most recent guidelines issued in 2018 emphasize the importance of shared decision making (SDM) between the patient and the clinician. The aim of this study was to describe the frequency and ways SDM making is currently being documented in the charts of age-appropriate males.

METHODS: This was a retrospective medical record review of a random sample of 100 male patients. A Brigham and Women's Hospital (BWH) electronic data repository was queried to find males aged 55-70 years who had made a routine office visit to one of the primary care clinics at or affiliated with BWH between 6/1/18-5/31/19, a one-year period following the release of the 2018 USPSTF guidelines. Patients diagnosed with prostate cancer prior to 6/1/18 and those who had a PSA test completed during the specified timeframe were excluded from the sample. Charts from the routine visits were reviewed for evidence of SDM regarding PSA in primary care visit notes. We considered SDM documentation present

when the note contained some language indicating a PSA relevant discussion occurred.

RESULTS: Of the 100 charts reviewed, 33% had documentation of PSA-related SDM. Language used to document decision making varied and included 1) a standardized 3-sentence institutional macro-smart phrase (N=6, 18% of the shared decision-making notations) stating the patient understood testing implications, a discussion of benefits and risks, and a patient's final decision, 2) provider templated text (N=7, 21%) containing other descriptive language related to risks and benefits and 3) a free text (N=20, 61%) description of a SDM discussion. In an additional 23 charts there was some reference to either a prior PSA test result (free text or templated lab results) or a plan to discuss PSA in the future, but none mentioned any SDM conversation during the visit.

CONCLUSIONS: Findings from this study suggest that, despite recent recommendations from the USPSTF to conduct patient-clinician discussions regarding PSA testing, documentation of SDM occurred with only 33% of eligible patients. Given that prostate cancer is the leading (non-skin) cancer and 2nd leading cause of cancer death in men, failure to document such shared decision making poses both clinical and malpractice risks. Our study is limited by a small sample size and a somewhat broad definition of the SDM documentation (making our conclusions conservative). Further research is needed to investigate the scope of the problem across clinical settings and reasons for poor SDM documentation. Understanding how and when PSA-related SDM is being documented can help inform development of tools and strategies that improve adherence to guidelines, simplify the workflow, and enhance proper documentation.

A REMOTE DIGITAL TRIAL FOR INSIGHTS ON NOVEL CONTEXTS OF AMBULATORY BLOOD PRESSURE MEASUREMENTS

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BACKGROUND: Outpatient blood pressure (BP) monitoring is key in the diagnosis and management of hypertension. With advances in wearable BP devices and technologies the ability to gain insight into BP in novel contexts has expanded greatly. Here we wanted to explore the usability of a novel wrist-worn BP cuff monitor for outpatient data collection with participants following digital cues rather than in person instruction. Transmitted measurements were subsequently used to evaluate BP variation with the time of day and day of week, BP variation with mood, and orthostatic measurements.

METHODS: After virtual informed consent participants were supplied with the BP monitor and asked to download a customized study application to their smartphone. They were instructed to wear the wrist cuff and take BP measurements for at least two days per week for a 4-week monitoring period, capture orthostatic BP at least twice during the trial, and record at least two BP readings each week associated with the extremes of emotional state - calm and stressed.

RESULTS: Fifty participants, 25 women and 25 men, with a mean age of 44.5 years were enrolled and received the BP monitor. 82% of the participants transmitted data via the study app. The median wear time of the device during the study was 11 days (IQR 8-17). Wednesday was associated with the highest average systolic BP (133 mmHg, SEM 1.3) and Saturday was associated with the lowest average systolic BP (129 mmHg, SEM 1.8). 32 participants attempted orthostatic measurements, with 78% successfully measuring at least one set of orthostatic vitals according to study guidelines with only 2 individuals recording positive orthostatic vital signs. 24 participants measured BP in association with mood at least once during the study. The difference between the average calm and stressed BP was statistically significant ($p<0.005$) with a corresponding 5 mmHg increase in systolic BP associated with stress when compared to daily average BP, and a 5 mmHg decrease in systolic BP associated with calm when compared to daily average BP.

CONCLUSIONS: This prospective digital study showed that wearable BP technology combined with an easy to use smartphone application is an attractive option when monitoring BP in the outpatient setting. This is one of the first studies to evaluate the usability of digital cues to perform orthostatic measurements, with the results showing that the majority of those who attempted orthostatic BP following cues on their smartphone did so correctly. The statistically significant change in BP between calm and stressed emotional states underscores the role of mindfulness and stress relief when targeting BP control. When sequentially monitored in the outpatient setting, BP varies based on a number of different potentially modifiable factors and continued efforts to improve BP monitoring strategies using novel devices should be explored.

A RESIDENT-LED INTERDISCIPLINARY QUALITY IMPROVEMENT INITIATIVE TO INCREASE OSTEOPOROSIS SCREENING IN AN URBAN CLINIC

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BACKGROUND: Osteoporosis is a major cause of morbidity and mortality in the United States. The USPSTF recommends screening all women age 65 and older or younger women with risk factors for osteoporosis.[2] Unfortunately, osteoporosis screening rates remain low nationwide.[3] In our residency clinic, the baseline screening rate for women age 65 and older was 47%. We aimed to increase this rate by 10% over a three month period.

METHODS: Our root cause analysis identified provider, patient, and system level barriers to osteoporosis screening. Plan-Do-Study-Act (PSDA) cycle 1 targeted provider knowledge through didactic education and posters in the clinic space. PDSA cycle 2 identified patient barriers. We collaborated with an institutional nurse-led program called "Strong Bones" that has existing initiatives in place to detect and treat osteoporosis. We used a health registry embedded within our electronic medical record to identify patients from our clinic who were eligible for osteoporosis screening. A Strong Bones nurse then reached out to each patient to explain the need for screening and to help navigate barriers. We then tracked the rate of osteoporosis screening between PDSA cycles through the health registry and manually reviewed patient level data during a three month patient outreach period.

RESULTS: After PDSA cycle 1, we saw a slight increase in our screening rate from a baseline of 46% (101/216) to 49% (106/216). During PDSA cycle 2, we identified and chose 138 patients eligible for osteoporosis screening to be contacted. 71 of these patients were called during the outreach period, and 11 scans were completed. Our screening rate at the beginning of cycle 2 was 34% (111/322) and increased to 36% (122/338). The most common barrier identified during this period was patient disinterest, though many were unreachable.

CONCLUSIONS: Results from PDSA-1 showed that resident education alone increased the number of DEXA scans ordered, but did not substantially increase completed screenings due to patient barriers. Furthermore, relying on "inreach" interventions targeting only the patients present at the office visit missed a large proportion the patient panel. PDSA cycle 2 addressed both of these issues. There was a substantial increase in DEXA

completion and we were also able to quantify the barriers our patients faced in the process. Limitations included difficulty in obtaining reliable data. Additionally, ongoing changes to the health registry's patient attribution characteristics led to a lower rate of completed screening even though the total number of screenings increased. Although our intervention led to more patients having their screening completed, it was very time-intensive and would be difficult to sustain moving forward. Next steps consist of identifying ways to decrease system level barriers, such as through streamlined scheduling and same day appointments.

ARE SOCIAL NETWORK CHARACTERISTICS OF PEOPLE WITH SERIOUS MENTAL ILLNESS ASSOCIATED WITH QUANTITY OF CIGARETTES SMOKED OR READINESS TO QUIT?

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BACKGROUND: Nationally, 53% of adults with serious mental illness (SMI) are estimated to smoke cigarettes, which contributes to reduced life expectancy. In general populations, social networks influence smoking habits through behavior modeling and social norms, yet the networks of people with SMI differ in ways that may affect network influence on smoking (e.g., predominantly family). Our objective was to 1) characterize the social networks of people with SMI who smoke, and 2) identify whether network-level factors were associated with quantity of cigarettes smoked and readiness to quit.

METHODS: We performed a secondary analysis of baseline data collected as part of the TRIUMPH randomized controlled trial, which assessed the effectiveness of a smoking cessation intervention for people with SMI who receive care at community mental health centers. A subsample (n=75; 34.1%) reported characteristics of 10 social network members, including gender, relationship type, and smoking status. Network variables are represented as the median [IQR] proportion of a participant's network members perceived to have a given attribute. We also determined connections between network members to calculate network density – a property associated with behaviors. We conducted bivariate analyses examining the association between number of cigarettes smoked (dichotomized to ≤10 cigarettes/day versus >10 cigarettes/day) or readiness to quit smoking in the next month (dichotomous) and social network characteristics using Wilcoxon-Mann-Whitney non-parametric tests.

RESULTS: Participants' mean age was 50 years (SD 11), 52% male, 48% Black, and 49% White. Social network members were 53% [40%, 70%] women, 50% [28%, 70%] friends, and 40% [10%, 60%] family. Nearly half of network members were active smokers (40% [20%, 50%]). Structurally, the average network had a density of 61.9% (SD 25.7%). Participants reported smoking regularly for an average of 32 years (SD 12), and we found that 53% reported smoking ≤10 cigarettes/day and 68% were ready to quit smoking in the next month. In bivariate analyses, no social network characteristics were significantly associated with baseline number of cigarettes smoked or readiness to quit.

CONCLUSIONS: Interestingly, the network characteristics of this subsample of adults with SMI from community mental health centers were different than other studies in this population – participants reported networks compromised with a higher proportion of friends than family, which may related to social connections formed at the community centers. We did not find an association between network characteristics and baseline cigarettes smoked or readiness to quit, possibly due to the RCT study design; however, given social networks' importance in smoking cessation interventions in general populations, future research should explore whether baseline network factors influence cessation among adults with SMI.

ARE SPECIFIC ELEMENTS OF ELECTRONIC HEALTH RECORD USE ASSOCIATED WITH CLINICIAN BURNOUT MORE THAN OTHERS?

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BACKGROUND: Over the past decade, researchers, physicians, and, increasingly, the public have focused their attention on burnout among healthcare workers. Stress related to health information technology is both measurable and common, with two-thirds of physicians and half of advance practice providers reporting in one survey that electronic health records (EHRs) add to the frustration of their workday. In a large national study, investigators found low satisfaction with EHRs generally and computerized physician order entry in particular; use of computerized physician order entry was associated with a 30% increase in the risk of burnout among survey respondents. In light of the evidence demonstrating that clerical and administrative tasks and inbox management consume a substantial proportion of clinicians' total EHR time, we set out to identify whether certain components of work within the EHR contribute more to burnout than others, with particular attention to measures of workload and efficiency within the EHR system itself. Specifically, the aim of this study is to examine the association between clinician burnout and measures of EHR workload and efficiency, using EHR user action log data. We hope that by identifying individual EHR work elements that are associated with burnout, we can then more effectively direct interventions to improve well-being among physicians and other providers.

METHODS: We merged data from a statewide clinician survey on burnout with Epic EHR data from the ambulatory sites of two large health systems; the combined dataset included 422 clinicians. We examined whether specific EHR workload and efficiency measures were independently associated with burnout symptoms, using multivariable logistic regression and controlling for clinician characteristics.

RESULTS: Clinicians with the highest volume of patient call messages had almost four times the odds of burnout compared to clinicians with the fewest (adjusted OR 3.81, CI 1.44-10.14, p=0.007). No other workload measures were significantly associated with burnout. Among the efficiency variables, none were significantly associated with burnout in the main analysis; however, in a subset of clinicians for whom note entry data were available, clinicians in the top quartile of copy and paste use were significantly less likely to report burnout, with an adjusted OR of 0.22 (CI 0.05-0.93, p=0.039).

CONCLUSIONS: We found that high volumes of patient call messages were significantly associated with clinician burnout, even when accounting for other measures of workload and efficiency. In the EHR, "patient calls" encompass many of the tasks occurring outside of face-to-face visits and likely represent an important target for those seeking to improve clinician well-being. Our results suggest that increased workload is associated with burnout and that EHR efficiency tools are not likely to reduce burnout symptoms, with the possible exception of copy and paste.

ARE THERE RACIAL/ETHNIC DIFFERENCES IN THE EFFECTS OF PHYSICIAN RECOMMENDATION TO EXERCISE ON PHYSICAL ACTIVITY LEVELS OF U.S. ADULTS WITH ARTHRITIS? AN ANALYSIS OF THE NATIONAL HEALTH INTERVIEW SURVEY, 2002, 2006, 2009, AND 2014

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BACKGROUND: Although the prevalence of arthritis is similar among Whites and African Americans (AAs) and lower among Hispanics, arthritis-associated symptoms are more severe among AAs and Hispanics, compared to Whites. Exercise is recommended for persons with arthritis to reduce symptoms, and physician recommendation to exercise may increase patients' exercise levels. This study examined the effects of receipt of physician recommendation on physical activity (PA) levels, and whether these effects differ by race/ethnicity.

METHODS: This was a retrospective, cross-sectional analysis focused on U.S. adults ages ≥18 with self- reported doctor-diagnosed arthritis, using data from the National Health Interview Survey, waves 2002, 2006, 2009 and 2014. The two outcomes were met aerobic or strengthening PA guidelines (yes vs. no) based on the 2008 Physical Activity Guidelines for Americans. Predictors included self-reported race/ethnicity (AA, Asian, Hispanic, or White), ever receiving a physician recommendation to exercise to relieve arthritis symptoms (yes vs. no), and a race/ethnicity x receipt of exercise recommendation interaction term. Covariates included age, gender, marital status, education, smoking status, body mass index, self-reported health status, number of comorbid conditions, having a usual source of care, psychological distress level, employment status, income and region of the country. Multivariate logistic regression models, applying NHIS sampling weights, assessed the independent association of race/ethnicity and physician recommendation on the odds of meeting aerobic and strengthening PA guidelines.

RESULTS: Total sample was 27,887 (72.4% White, 15.4% AA, 10.1% Hispanic and 2.2% Asian). Mean age was 60.9 years (SD=15.1). AA (62.0%), Hispanics (61.3%) and Asians (60.4%) were slightly more likely than Whites (55.1%) to report receipt of physician recommendation to exercise ($p<0.001$). AA (73.8%) and Hispanics (73.9%) were more likely than Whites (63.5%) to meet PA guidelines for aerobic activity ($p<0.001$). AA (86.5%) and Hispanics (88.8%) were slightly more likely than Whites (82.5%) to meet PA guidelines for strengthening activity ($p<0.001$). Controlling for covariates, receipt of recommendation to exercise was associated independently with meeting aerobic (OR=1.12; 95% CI 1.04, 1.22) and strengthening (OR=1.15, 95% CI 1.05, 1.27) guidelines, regardless of race/ethnicity. Compared to Whites, Asians had lower odds of meeting aerobic (OR=0.80; 95% CI 0.64, 0.99) and strengthening activity guidelines (OR=0.77; 95% CI 0.61, 0.99), and AA had greater odds of meeting strengthening activity guidelines (OR=1.21; 95% CI 1.05, 1.39).

CONCLUSIONS: AAs, Hispanics and Asians with arthritis were slightly more likely than whites to receive a physician recommendation to exercise to relieve arthritis symptoms. Receiving a physician recommendation to exercise to relieve arthritis symptoms can improve physical activity levels in all racial/ethnic groups.

A RISK-STRATIFIED APPROACH TO CREATING A SAFE AND EFFECTIVE LOW-TOUCH INTERVENTION TO CONTACT PRIMARY CARE PATIENTS AFTER VISITS TO THE EMERGENCY DEPARTMENT

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BACKGROUND: Timely follow-up by a patient's primary care office after discharge from the Emergency Department is believed to improve patient outcomes and is required by the CMS Comprehensive Primary Care Plus (CPC+) program. Prior to the rollout of this initiative, post-ED outreach varied across the University of Pennsylvania Health System's (UPHS) Primary Care Service Line (PCSL) practices based on available resources. Patients were contacted as staffing allowed by a nurse care manager or via the EHR patient portal. The goals of this initiative included: 1) developing a standardized and equitable workflow to reach out to all patients after ED discharge 2) testing the ability of a UPHS risk score to guide the level of post-ED contact, 3) testing the safety and efficiency of portal messages and non-RN staff for ED outreach.

METHODS: First, a standardized workflow was developed to contact patients after ED discharge, escalate their care to clinical staff when necessary, and capture data about the outcome of the outreach in our EHR. Next, low risk patients (risk score <6) enrolled in the portal were contacted using bulk messaging. Finally, high risk patients (risk score ≥ 6) OR who were not enrolled in the portal were called by non-clinical staff. All patients with clinical questions were referred to an RN and/or offered an appointment. A pilot project was completed in three practices (two academic, one community).

RESULTS: The pre-period (10/1/2018 - 3/1/2019) included 2,124 discharges (1,764 unique patients). The post-period (4/2/2019-9/1/2019) included 2,281 discharges (1,832 unique patients). Patients were much more likely to be contacted within 7 days of ED discharge (56% vs. 79%), and the mean time to contact decreased (3.8 vs. 2.6 days, $p =<0.001$). Patients were more likely to open a message than respond to a phone call (69% vs. 41%, $p =<0.001$). Of the 683 discharges with a response, 69 (10%) required an escalation to a clinical staff member. We did not see a significant increase in 30-day returns to the Emergency Department, hospital admissions, or readmissions.

CONCLUSIONS: We developed a standardized workflow that met the needs of multiple practices, and found improvements in patient safety, quality, and resource management. The relatively low proportion of patients who required escalation to a clinical staff member reassures us that use of non-clinical staff and electronic communication can safely be the first point of contact for patients. Moreover, lack of significant change in returns to the ED or inpatient settings suggests that this lower touch strategy did not have a negative impact on patient care. The project was deemed successful: the new workflow is resource-saving for the PCSL while simultaneously improving our communication with patients. It was rolled out across the PCSL in July 2019.

ASA PHYSICAL STATUS DETERMINATION BY INTERNAL MEDICINE PHYSICIANS AND IMPLICATIONS FOR CARDIAC RISK ASSESSMENT

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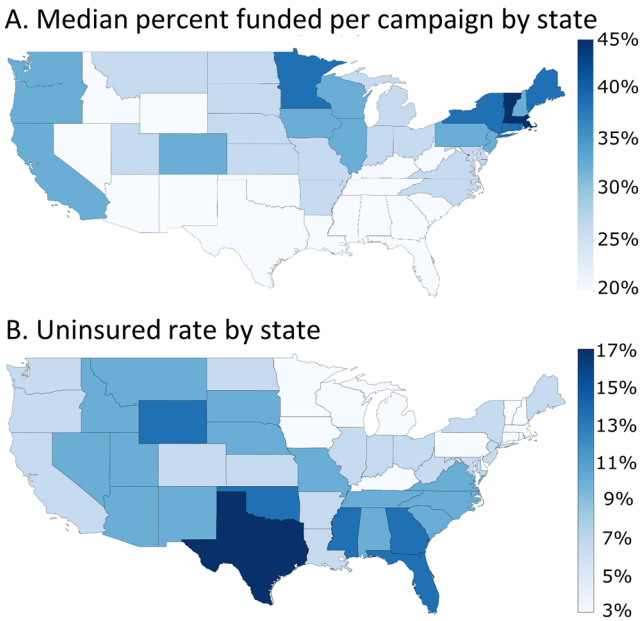
BACKGROUND: Estimating cardiac risk is an important aspect of preoperative evaluation. Several widely used risk calculators incorporate

the American Society of Anesthesiologists (ASA) performance status score. However, internists are not typically trained in determining ASA scores, and how well they make that determination is uncertain. The aim of this study was to compare ASA scores assigned by internal medicine physicians and anesthesiologists, and determine the implications of discrepancies on cardiac risk predictions.

METHODS: This was an observational cohort study of Veterans being evaluated in a preoperative evaluation clinic at a single center. ASA scores were recorded by internal medicine physicians performing preoperative medical consultations between April 2017 and April 2018 as part of a quality improvement initiative. For patients who went on to have surgery in the proceeding 90 days, ASA scores assigned by anesthesiology on the day of surgery were retrieved from the medical record. We compared mean ASA scores between the two groups using a paired t-test, and assessed interrater agreement using a weighted kappa. Gupta (also known as MICA) cardiac risk scores incorporating alternative ASA scores were calculated. Analyses were performed using STATA 15.

RESULTS: Data was collected on 216 patients, of whom 163 had surgery in the next 90 days. Among included patients, mean age was 67, 94% were male, 63% underwent orthopedic operations, and 23% underwent urologic operations. ASA scores assigned by anesthesiology and internal medicine are shown in the Table. ASA scores were concordant in 60 cases (36.8%). ASA scores by internal medicine were lower in 101 cases (62.0%) and higher in 2 cases (1.2%). The mean ASA scores were 2.97 by anesthesiology and 2.29 by internal medicine ($p < 0.0001$). The weighted kappa was 0.08. Gupta cardiac risk score was able to be calculated in 160 patients, and was >1% in 14 patients using the anesthesiology ASA score, compared to 5 patients using the internal medicine score.

CONCLUSIONS: ASA scores assigned by internal medicine physicians were systematically lower than those assigned by anesthesiologists. These differences are important because current guidelines recommend consideration of preoperative cardiac testing when the predicted cardiac risk is >1%. Anesthesiologists should be aware of these differences when preoperative evaluations are performed by internal medicine physicians.



A SEAT AT THE TABLE FOR COMMUNITY SOCIAL SERVICE AGENCIES: PERSPECTIVES ON IMPROVING THE PARTNERSHIPS WITH THE HEALTHCARE SYSTEM IN THE WHOLE PERSON CARE-LOS ANGELES (WPC-LA) PROGRAM

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BACKGROUND: Whole Person Care-Los Angeles (WPC-LA) is a 5-year California Section 1115 Medicaid Waiver implemented by the Los Angeles County Department of Health Services (LAC DHS) to address the unmet health and social needs of high-risk populations experiencing homelessness, justice involvement, substance use disorder, complex mental health, medical conditions and/or pregnancy. WPC-LA initiated cross-sector community social service partnerships to integrate services. Although health and social service collaborations are increasingly common, there is limited evidence on effective management of partnerships and their implementation seldomly incorporates perspectives of social service organizations. To address this gap we aimed to solicit community social service perspectives.

METHODS: Using a partnered approach, we conducted a brief survey and in-depth semi-structured interview with employees of community social service agencies partnered with WPC-LA. We used purposive, snowball, and diversity sampling to recruit participants. Surveys solicited demographic characteristics about the respondent and agency. Interviews elicited perspectives about the agency's clients, care delivery process, and impact of WPC-LA. Surveys were analyzed using descriptive statistics. Interviews were analyzed using the Rapid Assessment Process, a qualitative inquiry that incorporates the Consolidated Frameworks for Implementation Research, triangulation, and iterative data analysis. Preliminary results were disseminated to participants through voluntary in-person and virtual conferences for verification of themes.

RESULTS: We conducted 65 interviews with key informants from 36 community social service agencies collectively serving all regions of LAC and high-risk WPC-LA populations. Key informants, on average, had 12.4 years (SD 9.5) of social services experience and 35.4% had a shared-lived experience with their clients. We categorized their perspectives into themes: 1) holistic understanding of their clients' circumstances (*"[clients have] the ability to take nothing and make it something, even if it's just surving in hostile environments"*); 2) relational client-centered care delivery process dependent on partnerships with other agencies; 3) appreciation for WPC-LA's work across silos despite various implementation challenges; and 4) recognition that their expertise should be incorporated into evolving health and social service partnerships (*"we need dialogue, inclusion… a seat at the table…to share a prespective from the frontlines"*).

CONCLUSIONS: Community social service agencies bring important expertise to providing integrated clinical and social care through their understanding of high-risk populations, their ability to meet individuals *"where they are"*, and connection with varied service networks. Our findings suggest opportunities and strategies to develop policies that build more effective and sustained linkages between healthcare systems and social service agencies that care for vulnerable populations.

A SPATIAL EXPLORATION BETWEEN HEALTHCARE COVERAGE AND MEDICAL CROWDFUNDING IN THE UNITED STATES

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BACKGROUND: Americans have increasingly turned to medical crowdfunding to finance rising personal healthcare-related costs. This growing reliance is primarily attributed to the lack of a publicly funded healthcare system and resultant gaps in healthcare access and coverage. We explore the effect of healthcare coverage on medical crowdfunding in the United States.

METHODS: We conducted a cross-sectional spatial analysis of all active medical GoFundMe (the largest charitable crowdfunding platform globally) campaigns in the United States between September 1, 2018 and August 30, 2019. Through web scraping, we extracted all text available from each campaign's webpage and used the location of the campaign to label state-level characteristics including Medicaid expansion status and uninsured rate. We explored descriptive statistics for numerical variables extracted and evaluated spatial representations of medical crowdfunding by state.

RESULTS: We studied 120,310 campaigns, which raised more than $2.4 billion over the course of the last year. Yet, only 11.3% of all campaigns met their funding goal. While 36.1% of the American population resides in non-Medicaid expansion states, 39.1% of campaigns were in non-Medicaid expansion states (p<0.001). However, campaigns in non-Medicaid expansion states raised substantially less (median, $1,325; interquartile range [IQR], $565 to $3,310) than those in Medicaid expansion states (median, $1,636; IQR, $655 to $3,895) (p<0.001). They also met less of their funding goal (median 24.4%; IQR, 9.5% to 55.7% vs. median 30.2%; IQR, 11.5% to 67.0%) (p<0.001). States with higher uninsured rate tended to meet less of their funding goal as well (Figure 1).

CONCLUSIONS: These findings support concerns that medical crowdfunding does not adequately bridge gaps in healthcare coverage, but rather, further maligns those with less socioeconomic privilege. Further research is needed to understand the social, ethical, and economic implications of medical crowdfunding in the United States.

Characteristics of 5,446 patients stratified by lactate clearance

	Responders (n=5027)	Nonresponders (n=315)	Worseners (n=104)	*P* value
Demographic characteristics				
Age, years	66.1 (18.0)	66.8 (16.8)	62.8 (18.6)	0.15
Female gender	2160 (43.0%)	132 (41.9%)	44 (42.3%)	0.93
Race/ethnicity				
White	2036 (40.5%)	118 (37.5%)	41 (39.4%)	
Asian	1399 (27.8%)	92 (29.2%)	23 (22.1%)	
Black	592 (11.8%)	42 (13.3%)	15 (14.4%)	0.77
Hispanic/Latino	564 (11.2%)	36 (11.4%)	16 (15.4%)	
Other	436 (8.7%)	27 (8.6%)	9 (8.7%)	
Limited English proficiency	1127 (22.4%)	70 (22.2%)	20 (19.2%)	0.74
Lactate and clearance				
Lactate, mmol/L	3.9 (2.8)	3.6 (2.4)	3.2 (1.8)	0.005
Lactate trajectory[a], %	-59.1 (16.9)	-6.9 (13.2)	102.1 (122.1)	<0.001
Illness course				
SOFA[b]	6.5 (3.5)	8.0 (4.1)	9.9 (5.0)	<0.001
Fluids in first 24 hours, liters	3.1 (2.2)	3.4 (2.5)	3.00 (2.4)	0.20
Mechanical ventilation	893 (17.8%)	92 (29.2%)	45 (43.3%)	<0.001
Admitted to ICU	2096 (41.7%)	174 (55.2%)	74 (71.2%)	<0.001
Length of ICU stay, days	5.4 (6.8)	8.2 (11.1)	5.8 (7.2)	<0.001
Length of hospital stay, days	8.3 (9.9)	12.3 (15.4)	8.9 (9.0)	<0.001
In-hospital mortality	792 (15.8%)	85 (27.0%)	51 (49.0%)	<0.001
Comorbidities				
Hypertension	1508 (30.0%)	109 (34.6%)	36 (34.6%)	0.14
Diabetes	1548 (30.8%)	91 (28.9%)	28 (26.9%)	0.55
Cancer	1060 (21.1%)	97 (30.8%)	25 (24.0%)	<0.001
Renal failure	1143 (22.7%)	86 (27.3%)	29 (27.9%)	0.09
Liver disease	1005 (20.0%)	92 (29.2%)	24 (23.1%)	<0.001
Heart failure	948 (18.9%)	75 (23.8%)	37 (35.6%)	<0.001
Triage vital signs and laboratory test results				
Temperature	37.1 (1.3)	37.0 (1.2)	36.9 (0.9)	0.08
Glasgow Coma Scale	12.9 (3.5)	13.4 (3.3)	12.8 (3.7)	0.12
Heart Rate	105 (25)	103 (26)	103 (24)	0.37
Mean arterial pressure, mmHg	89 (21)	88 (19)	86 (19)	0.32
Respiratory rate	21 (6)	20 (6)	21 (6)	0.25
SpO2:FiO2 ratio	351 (139)	360 (136)	341 (148)	0.39
Leukocytes, x 10^9/L	13.9 (10.9)	13.6 (9.4)	13.6 (14.4)	0.88
Platelets,	225 (130)	215 (149)	205 (129)	0.13
Creatinine, mg/dL	1.7 (1.5)	1.8 (1.6)	2.0 (1.7)	0.08

All continuous measurements are presented as mean (SE) and categorical as n (%).
[a] Defined as percent change from the peak lactate on day 1 to the peak on day 2
[b] Sequential Organ Failure Assessment

ASSESSING APPROPRIATE ASPIRIN (ASA) USAGE IN ELDERLY PATIENTS: A QUALITY IMPROVEMENT INITIATIVE

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BACKGROUND: A recent study indicated nearly 25% of patients aged > 40 without CVD take daily aspirin (ASA) for primary prevention, and almost half of adults in the US over age 70 take low dose ASA daily. However, recent publications on the risks/benefits of low-dose ASA to prevent cardiovascular events led the AHA/ACC to recommend against routine ASA use in persons > 70 or increased bleeding risk. We aimed to describe the use of ASA in our elderly patients, and deprescribe when appropriate.

METHODS: This quality improvement project was conducted in our interprofessional (IP) training clinic. We sought to identify scheduled patients > 65 taking ASA in a preclinical huddle, review ASA indications, discuss ASA risks/benefits and conduct shared decision making with the patient. Members of our IP team (physician assistant, pharmacy, and medical students) reviewed the EMR indications for daily ASA: diabetes mellitus (DM), stent placement/coronary artery bypass grafting (CABG), myocardial ischemia (MI), stroke/transient ischemic attack (TIA), acute coronary syndrome (ACS), and peripheral artery disease (PAD). ASCVD score was also reviewed. The student determined if the patient had significant risk of fall or bleeding. Indications, risk factors, and adherence to daily ASA were confirmed during a discussion with the patient. We recorded overall patterns of ASA use in our elderly patients and tracked the number of patients de-prescribed ASA from March through August of 2019.

RESULTS: 44 patients >65 years were seen during the project period. 17 (39%) were found to have ASA on their medication list. Of 17 patients taking ASA 9 had risk factors (DM, stent placement or CABG, MI, TIA or stroke, ACS, or PAD). One patient was prescribed ASA by oncology to prevent cancer recurrence. The remaining 7 patients (41%) did not have an evidence-based indication for ASA. Aspirin was deprescribed in these patients via shared decision making. Of the 7 deprescribed, 1 patient restarted ASA in the follow up period. Of note, 2 of 44 (7%) patients not on ASA had cardiovascular risk factors and were prescribed ASA.

CONCLUSIONS: 41% of patients > 65 in our sample taking ASA did not have an evidence-based indication and were receptive to discontinuing ASA after risks and benefits were discussed. Unexpectedly, review of cardiovascular risk led to *initiating* ASA in 2 patients. This highlights the importance of medicine reconciliation and focused patient education on ASA risks/benefits. Team discussions of the risks and benefits of daily ASA underscored the complexity of applying new treatment guidelines, particularly in patients with diabetes and higher ASCVD scores. Our project was limited by a small cohort of elderly patients, with a low percentage of ASA use (38%) compared with recent data, possibly due to the unique patient population in our IP clinic. Additional, longitudinal, research using larger samples is needed to refine recommendations for "right-prescribing" daily aspirin regimens in primary care.

ASSESSING CLINICIAN EDUCATOR PROFESSIONAL IDENTITY AT AN ACADEMIC MEDICAL CENTER

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BACKGROUND: Professional Identity (PI) is a dynamic construct that relates to how individuals perceive and conceptualize their professional roles. A strong PI is associated with improved motivation, job satisfaction, and academic productivity. Understanding the PI of clinician-educators (CE) is challenging because most have a variety of roles. But academic centers tend to prioritize clinical and research roles over educational responsibilities. We sought to understand the CE of PI specifically in their educator role. To assess and conceptualize PI we used the Professional Identity Essay (PIE), a writing framework based on Kegan's stage theory of identity development that has previously been used to assess PI in lawyers, dentists, and medical students.

METHODS: Study subjects were all participants in the Education for Educators (E4E) program, a yearlong faculty development program offered within the Department of Medicine that is available to all physicians who self-identify as a CE. At the first session all participants completed the PIE, a series of nine narrative prompts focusing on CE personal and professional expectations as educators, their response to failure, and their professional role models. Two faculty (MD and graduate student) reviewed all submissions and completed an initial content analysis of the PIE to assess themes and qualities of CE PI.

RESULTS: Twenty-four CEs completed the baseline PIE, 43% were women. Participants included 14 hospitalists and 9 subspecialists in practice an average of 3 years (range 1-17 years). Four themes were identified: (1) Understanding their role as an educator. Roles described ranged from simply imparting clinical knowledge and running teaching sessions, to the belief that being an educator was a vital role central to being a physician. (2) Experiencing conflicts between teaching and other professional and personal roles. All reported struggling with finding time to teach. Many reported taking time away from family to prepare for teaching. (3) Feeling misunderstood at institutional and societal levels. Many felt that their teaching efforts were not valued and their struggles not addressed. (4) Differences between the descriptions of professional exemplars and CE expectations for themselves. Descriptions of exemplars emphasized acceptance, availability, support and sponsorship. In contrast, many participants described their own roles simply as distributors of knowledge without mentioning the traits of exemplars.

CONCLUSIONS: This group of mostly junior CE had wide variability in their descriptions of their roles as educators and in their view of exemplary educators. However, they shared similar struggles regarding time, inter-role conflicts, and many expressed a sense of feeling misunderstood or undervalued. Understanding the PI of CE may help us support educator development, mitigate burnout, further the mission of faculty development and ultimately enhance medical education.

ASSESSING FOOD INSECURITY IN ADULT PATIENTS WITH DIABETES

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BACKGROUND: Food insecurity, the lack of consistent access to enough food for a healthy, active life, affected 12.9% of U.S. and 15.5% of Kentucky households in 2016. A 2018 pilot survey of patients in the internal medicine resident clinic (IMRC) demonstrated that 39% of patients were food insecure.

Medical literature shows an association between food insecurity and many chronic medical conditions, including diabetes mellitus (diabetes). To determine the next steps, we explored perceptions of health and biometric data in patients with diabetes and food insecurity in our IMRC.

METHODS: A convenience sample of IMRC patients (N=32) with diabetes were invited to participate while at their appointment. Patients consenting to the study completed the 2-question hunger vital signs survey, a brief quality of life questionnaire, 2 questions about the use of the food pantry, and demographic information. Patient chart review collected biometric data including body mass index (BMI), weight, hemoglobin A1C (A1C), and blood pressure (systolic-SBP and diastolic-DBP).

RESULTS: The mean age of the study population was 57.8 (SD = 12.7), 59% were male, 40% divorced, 63% had a high school degree or less, and 50% lived in a house. A majority were unemployed (62.5%), and 47% reported a monthly family income of $1,000 or less. Overall, 50% (n=16) were food insecure. In the past 12 months. 43.8% (n=14) worried whether the food would run out before they got money to buy more, and 43.8% (n=14) worried that the food they bought just didn't last and they didn't have money to get more. Patients had a mean of 9.8 days a month where their physical health was not good and a mean of 5.8 days monthly where their mental health was not good. The mean A1C, BMI, SBP, and DBP results were 7.9 (SD = 2.01), 33.5 (SD = 8.2), 132.3 (SD = 20.1), 77.1 (SD = 9.1), respectively.

CONCLUSIONS: In a convenience sample of patients with diabetes in an IMRC, 50% were food insecure, and patients indicated significant numbers of days with poor physical and mental health. These results stress that further enrollment and analyses are important to better understand the extent that food insecurity has on quality of life, diabetes biomarkers, BMI, and blood pressure in adults with diabetes over time. Future research studies can evaluate the effectiveness of interventions to address food insecurity and improve health outcomes in this population.

ASSESSING MENTAL HEALTH DIAGNOSES AND MENTAL HEALTH SERVICE UTILIZATION AMONG HIGH-RISK WOMEN VETERANS

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BACKGROUND: Women veterans (WVs) exhibit higher mental healthcare utilization than male veterans, suggesting high care needs. To address the unique needs of WVs, the Veterans Health Administration (VHA) implemented women's health primary care. Characteristics of women's health primary care clinics (WH- PACT) include designated women's health providers, chaperoned gender-specific exams, secure treatment areas, and access to mental health care. While preliminary evidence suggests positive impacts of WH-PACT, no known work examines how WH-PACT affects mental health treatment seeking. Using data from a high- risk sample, the current study aims to a) describe gender differences in mental health diagnosis and care utilization, and b) assess the effects of WH-PACT on VHA mental health clinic utilization.

METHODS: We used data from participants in the PACT Intensive Management (PIM) demonstration, a pilot intensive outpatient management program for high-risk patients. We used administrative data to extract mental health conditions, history of military sexual trauma (MST) diagnosis, and mental health utilization during the 12 months prior to study assignment.

We used chi-squared analyses to compare rates of mental health diagnoses between men and women veterans. We conducted negative binomial

regression analyses with mental health clinic visit counts during the 24-month study period as dependent variables. We used past-year WH-PACT attendance (0=no,1=yes) as the independent variable. Age, ethnicity, and Gagne Comorbidity Index scores were included as covariates.

RESULTS: The sample included 3,995 PIM participants from five geographically diverse sites (*M* age=66.58, 10% female). Eligibility requirements included 1) a risk score in the 90th percentile for 90-day hospitalization as determined by a validated algorithm and 2) a recent hospitalization or emergency department visit.

WVs showed higher rates of PTSD (p<.01), depression (*p*<.01), psychoses (*p*<.01), anxiety (*p*<.01), and bipolar disorder (*p*<.01) than men. Thirty percent of women reported MST, compared to 3% of men (*p*<.01). Fifty-seven percent of the sample visited a VHA mental health clinic during the study period. A higher proportion of women (79%) than men (56%; *p*<.01) visited a VHA mental health clinic. Regarding specific clinics, WVs showed higher rates of individual (*p*<.01), group (*p*<.01), primary care-mental health integration (PC-MHI; *p*<.01), and telephone mental health (*p*<.01) utilization than men.

Sixty-five percent of women in the sample (n=399) utilized WH-PACT during the previous year. WH-PACT attendance was associated with higher VHA mental health visit counts. Regarding specific clinics, PC-MHI visit counts were higher among women who utilized WH-PACT.

CONCLUSIONS: Effective healthcare for high-risk WVs requires prioritization of mental health service availability. This study provides preliminary evidence in support of WH-PACT as a strategy for improving mental health care access.

ASSESSING PROFESSIONAL IDENTITY FORMATION AND REFLECTIVE CAPACITY IN MEDICAL STUDENTS: CORRELATED, BUT NOT THE SAME

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BACKGROUND: A mature medical professional identity (PI) is a fundamental outcome of medical education (Irby and Hamstra, 2016) and medical schools across the country are developing approaches to support professional identity formation (PIF) in students. Reflective capacity, not just in the moment but as a broad skill, is key to core professional competency and may underlie PIF (Wald, 2015). Yet the relationship between reflective capacity and PIF is not well understood. Do these two concepts assess the same developmental capacity? Is reflective capacity a prerequisite for professional identity development? This pilot study is an initial attempt to explore this issue and to examine the relationship between written reflective capacity and professional identity development.

METHODS: As part of a professionalism curriculum medical students complete the Professional Identity Essay (PIE) at three time points: upon entrance to the school, after basic science courses, and after clinical rotations. The PIE (Bebeau and Lewis 2004), based on Kegan's developmental model (1982), requires responses to 9 prompts which elicit conceptions of the professional role. It is scored on a 5-point scale reflecting Kegan's 5 stages, with transitional stages captured by half-points.

For this study, we randomly selected 20 PIE protocols from the 100 completed by the Class of 2020 after their basic science curriculum. These were scored by three raters (VM, AK, LA). Interrater reliability was established by reaching 100% agreement within one half stage on the PIE. The same raters scored the PIE protocols with the Reflection Evaluation for Learners' Enhanced Competencies Tool (REFLECT), following the scoring criteria (Wald 2010, Wald 2012). For both the PIE and REFLECT we averaged the three raters into a single score. A Pearson two-tailed correlation was then computed between the two scales.

RESULTS: Completed scores on both measures were available for 19 of the 20 PIES. The range of PIE scores was 2.5-4, as would be expected of students at this point in their careers (Kalet 2018). REFLECT scores ranged 2-4. There was a statistically significant moderate positive correlation between the PIE and REFLECT (r=.628, *p*=.004), with REFLECT scores explaining 39% of the variance of PIE scores.

CONCLUSIONS: The correlation between PIE scores and REFLECT ratings suggests that the PIE captures and reflects some elements of learners' reflective capacity. However there remains a large component of the PIE score not explained by reflective capacity, which suggests that the PIE, as a standalone measure of PIF, demonstrates qualities beyond reflective capacity. Further investigation is warranted in order to tease out the interplay between these two concepts. Understanding the relationship between PIF and reflective capacity can inform educators in promoting a more nuanced and sophisticated PI development in students.

ASSESSING THE IMPACT OF TIME OF COMPLETION ON EVALUATION RESULTS IN GRADUATE MEDICAL EDUCATION

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BACKGROUND: Competency based medical education as implemented in the Next Accreditation System (NAS) of the Accreditation Council for Graduate Medical Education (ACGME) relies upon frequent, criterion based assessments of resident performance (Holmboe 2010). It is unclear how the variable of timing that evaluations are completed influence rating patterns. We aim to assess the influence of timing of evaluations on rating score patterns.

METHODS: This is a retrospective review of faculty evaluations of Internal Medicine resident performance from inpatient general medicine rotations from 2013-2017. Evaluations were collected from the residency management system and de-identified with respect to faculty and trainees. Quantitative analysis, including regression modeling, was conducted with the assistance of a statistician.

RESULTS: Data included 3,777 evaluations of 436 residents by 235 faculty. Of these evaluations, 436 (11.5%) were submitted more than 90 days after rotation end, termed Late Evaluations, with a mean time to submission of 217.2 days. The mean time to submission in the on time group was 23.7 days. Of the 235 faculty, 70 (28.8%) submitted at least one late evaluation with a mean 6.2 late submissions among this group. Using 1 to 5 scale, the composite competency score was similar for on-time evaluations and late evaluations (mean [SD] 4.58 [0.45] vs. 4.65 [0.39]) for late evaluations. Controlling for resident's baseline, using IM - In Training Examination Score, we found that late evaluation status was not a significant variable in terms of rating score variability (composite competency score p = 0.42). Similar findings were seen in the six core competency scores.

CONCLUSIONS: The NAS framework requires frequent, direct-observation based assessments of resident performance by faculty. We found that 28% of faculty were responsible for the late evaluations in our study suggesting the practice of late evaluations is a faculty-specific trait.

We found that competency rating patterns were similar for on-time evaluations and late evaluations. Our findings suggest that once an evaluators' perception of a resident is formed, it is stable and consistent, even with significant delays in reporting those impressions.

Reasons for our findings are unclear as it stands to reason that delays in completing evaluations would influence rating patterns. One possible

explanation for this phenomenon is that faculty impressions of residents may be informed by encounters outside of the residents' performance on the ward rotation. In addition, clustering around the mean and ceiling effect of ratings may limit the ability to detect differences in ratings.

This is the first study to assess impact of the timing of evaluation completion on evaluation results. Future study in competency based medical education in graduate medical education should consider the influence of key variables such as timing of evaluation completion and its impact on the validity of evaluation results.

ASSESSING THE READINESS OF PEDIATRIC HEMATOLOGY CLINICS TO IMPLEMENT A SOCIAL NEEDS SCREENING AND REFERRAL INTERVENTION PROGRAM FOR PATIENTS WITH SICKLE CELL ANEMIA

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BACKGROUND: WE CARE is a screening and referral intervention assessing and providing resources for families with unmet social needs that has been successfully demonstrated in the pediatric primary care setting to connect families in need with resources and is now being tested in specialty settings. This aim of this study was to assess pediatric hematology clinics' receptiveness and readiness to implement a social needs screening and referral program for patients with sickle cell anemia (SCA).

METHODS: Six focus groups were held at four pediatric hematology clinics in New England in late 2019. The WE CARE screening domains were discussed: childcare, food insecurity, housing, parental employment and high school education status, and utilities. Discussion questions were designed around the revised Promoting Action of Research Implementation in Health Services implementation science framework. Participants represented all members of the SCA clinical team including from providers to front-desk staff.

RESULTS: Participants reported that the majority of their patients and families have unmet social needs. While there is no standard screening for social needs, SCA clinic staff described that needs often come up during visits given the longitudinal relationships established between families and team members. Participants reported that established workflows existed to address social needs, oftentimes led by a social worker that is shared within joint hematology-oncology clinics. They expressed frustration with the limited availability of clinic resources to address needs for their SCA patients, particularly noting the disparity compared to their pediatric oncology patients. Participants felt that WE CARE could be an acceptable intervention to apply within this clinic setting, particularly in assessing needs on a routine basis. However, they cautioned against assessing parent education and employment, as they felt that their priorities were to address needs directly affecting the child rather than the parent. They also emphasized that assisting with patients' school medical exemptions was a necessary but missing social need domain for the SCA patient population. Finally, participants readily identified places within existing workflows to implement WE CARE, mostly via handing paper screens to parents upon check-in with social workers assigned to review responses and distribute resources for identified needs.

CONCLUSIONS: Pediatric hematology clinic staff acknowledged the prevalence of unmet social needs for their SCA patients and disparity in available clinic resources compared to oncology patients. They were receptive to implementing a social needs intervention like WE CARE in their practice setting and highlighted key areas of expansion relative to the unique needs of children with SCA.

ASSESSING THE RISK OF OPIOID OVERDOSE AFTER OPIOID TAPER: A RETROSPECTIVE COHORT STUDY

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BACKGROUND: Evidence of risks after an opioid taper, including potential opioid overdose, is emerging. Currently, limited evidence exists to ascertain prevalence of opioid overdose after tapering. We sought to evaluate whether a taper was associated with increased risk of opioid overdose in a retrospective study of patients on chronic opioid therapy (COT) who did and did not undergo a taper.

METHODS: We conducted a retrospective cohort study of patients on COT at the major university health system in the Bronx, New York between 2008 and 2014. Adult patients on COT with a stable dose of at least 25 daily morphine milligram equivalents (MME) over a baseline year were included. Patients with any history of cancer before the baseline year were excluded. Patients were considered to have experienced an opioid taper if they had a reduction of at least 30% from their baseline dose throughout the year after the baseline year (the exposure year). Patients who had a stable dose or increased dose were controls. The primary outcome was opioid overdose after the exposure year, ascertained from the hospital electronic health record by ICD-9 codes (965.00-965.02, 965.09, E850.0-E850.2). Descriptor statistics were tabulated, and, where feasible, t-tests, median tests, or chi-square tests were used to measure differences between tapered and control groups. Multivariate analyses were not conducted due to small cell sizes.

RESULTS: Of 1,338 patients on COT, 207 (15.5%) experienced opioid tapers and 1,131 (84.5%) did not. Average age was 51.6 years, 54.6% were female, 83.5% were non-White, and 13.3% had a diagnosis of opioid use disorder at baseline. Median follow-up time was 4.4 years. There were 4 tapered patients with opioid overdoses (1.9%) and 36 non-tapered patients with opioid overdoses (3.2%), which did not reach statistical significance (OR 0.60, 95% CI 0.21-1.70). One overdose in the non-tapered group was fatal. Median dose change in the taper group was -73.6% versus +9.1% in the non-taper group; these were not significantly different in patients who experienced overdoses compared to those who did not.

CONCLUSIONS: In this sample of patients on COT, we found no statistical difference in opioid overdose over the course of 4 years of follow-up. However, the number of events detected was small and limited by ascertainment in only our hospital system. Nonetheless, our results are among the first to attempt to quantify the risk of opioid overdose after a taper. Further research should be conducted with larger sample sizes to ascertain a more accurate measure of prevalence of opioid overdose after a taper.

ASSESSMENT OF PATIENT NAVIGATION PROGRAMS ACROSS AN ENTIRE CITY

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BACKGROUND: In Boston, Massachusetts, as in most other US cities, inequities in breast cancer mortality have persisted and increased among Black, non-Hispanic women compared to women of other racial/ethnic groups. Well documented systems issues contribute to disparities in breast cancer outcomes, including fragmented access, insurance coverage, and competing social barriers to care. Patient navigation is a widely cited systems-based approach to improving outcomes among under-served populations. Despite such programs existing in all major Boston hospitals, disparities have not been reduced. The objective of this study was to conduct a baseline assessment of navigation processes in six hospitals in preparation for a city-wide implementation trial of standardized navigation.

METHODS: A mixed methods approach was used to capture information from stakeholders who were directly involved in the oversight and/or implementation of breast cancer treatment-focused navigation programs in the six hospitals that provide the majority of treatment to breast cancer patients in Boston. These included patient navigators, their supervisors, and clinicians providing oncology care. Workflow assessments guided by a semi-structured interview guide were conducted in-person to understand site-specific implementation processes.

Interviews assessed dimensions such a staffing and administrative infrastructures and funding, navigation processes across treatment phases, navigation workflow, and barriers to the implementation of patient navigation programs. This project targeted providers from the six hospitals identified as providing treatment to the vast majority of patients with breast cancer in the City of Boston.

RESULTS: All of the hospitals offer patient navigation services to their patients undergoing treatment for breast cancer. Results indicate that the navigation programs at each hospital are heterogeneous in terms of who delivers navigation services, the type of services provided, and the timing of those services relative the patient's cancer treatment. There is heterogeneity across the sites with respect to phases of treatment during which navigation services are provided – with some starting at diagnosis, while others beginning only with chemotherapy, and different navigators for diagnostic care, surgical care and oncology care – and patients for whom these services are offered, with differing algorithms to identify women at risk of delays in care. Sites utilize both lay and/or professional navigators, who contact patients primarily through telephone at some sites versus in person at clinic visits at others. Navigators are funded through grants and/or hospital operating budgets.

CONCLUSIONS: While all hospitals offer navigation programs, services provided to patients varies widely within and across sites, with internal fragmentation of navigation services in each hospital. This may account for the lack of impact of navigation on breast cancer disparities.

ASSOCIATION BETWEEN ACUTE INPATIENT BED AVAILABILITY AND RISK OF SUICIDE FOR PSYCHIATRIC PATIENTS

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BACKGROUND: Lack of acute medical services (e.g., emergency department, intensive care unit) has been associated with adverse clinical outcomes, including mortality. The association between acute psychiatric inpatient beds and suicide has not been well described. In the Veterans Health Administration (VHA), suicide rates among veterans have increased despite mental health care investments. Our objective was to examine the relationship between veteran suicide risk and availability of acute inpatient psychiatric beds in VHA and the community, as well as other community and patient-level factors.

METHODS: Retrospective cohort study using VHA administrative data and publicly available data sources for Veterans enrolled in VHA primary care between Jan 2003 and Dec 2016. Data sources included the VHA Support Service Center (VHA inpatient psychiatric beds and occupancy rates), VHA Clinical Data Warehouse (patient-level factors), Area Health Resources Files (civilian inpatient psychiatric beds), State Mental Health Agency (county-level data on mental health spending), and the National Death Index Suicide Registry. Community-level analyses, including the hospital and surrounding area, were conducted using generalized linear mixed models with random intercepts for hospital, modeling number of suicides per quarter. VHA bed availability was categorized into quintiles from lowest to highest occupancy.

RESULTS: Of 10,119,845 Veterans identified, 26,105 (0.26%) died by suicide. From 2003 to 2016, the rate of veteran suicide increased while the number of acute mental health beds in VHA hospitals decreased, per 100,000. Compared to hospitals in the lowest occupancy quintile, rate ratio (RR) of suicide increased in quintile 2 (RR=1.13; 95% confidence interval [CI] 1.01-1.27), quintile 3 (RR=1.19; 95%CI 1.05-1.34), quintile 4 (RR=1.20; 95%CI 1.06-1.35), and quintile 5 (RR=1.24; 95%CI 1.10-1.41). Of the community-level contextual variables, lower suicide risk was observed for each additional 25 community psychiatric beds/100,000 population (RR=0.89; 95%CI 0.85-0.94) and each additional $50 spent on mental health per capita (RR=0.95; 95%CI 0.93-0.97).

CONCLUSIONS: Lack of acute inpatient psychiatric bed availability in VHA hospitals was associated with higher suicide risk, while additional community mental health investment was associated with lower suicide risk. This novel study used occupancy data and not just numbers of beds to assess the potential risk of bed availability and suicide. Future work should clarify optimal levels of bed availability and mental health spending to reduce suicide rates. Hospital occupancy, as a measure of access, should be considered with other performance metrics to ensure adequate access to acute care.

ASSOCIATION BETWEEN ACUTE KIDNEY INJURY AND SERUM PROCALCITONIN LEVEL

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BACKGROUND: Bacterial infections are associated with increased morbidity and mortality in patients with renal failure. PCT can be used as a helpful adjunct to clinical judgment for resolving diagnostic uncertainty in patients with known or suspected bacterial infections. PCT is

barely detectable in serum under normal conditions, however, during systemic inflammatory response or bacterial infection, it is produced by various organs and released into the blood. Studies have shown that PCT levels are higher in patients with various degrees of kidney disease compared to a patient with no signs of renal impairment. Only limited data is available about the diagnostic value of serum PCT during bacterial infection in patients with acute kidney injury (AKI). This study aimed to assess the diagnostic usefulness of serum PCT as a marker of bacterial infection in patients with AKI and to assess the correlation of serum creatinine to serum PCT level.

METHODS: This retrospective case-control observational study involved all patients admitted to the hospital and had PCT checked during admission. Patients were categorized into three groups, patients with proven bacterial infection, no bacterial infection and possible bacterial infection. Proven bacterial infection was defined by positive blood, urine culture or PCR/cultures of respiratory tract secretion, no infection was defined by negative blood culture and no clinical suspicion of bacterial infection and possible infection was defined as negative cultures but clinical suspicion of bacterial infection based on clinical signs and radiologic studies. We compared serum PCT in patients with AKI and proven bacterial infection to patients with AKI and no bacterial infection and calculated the correlation between creatinine and PCT level. Patients with end- stage kidney disease and other causes of elevated PCT (pancreatitis, cancer, severe burns), were excluded from the study.

RESULTS: 197 were analyzed in the study, of which 152 patients met the inclusion criteria. 38 patients could be classified into "The AKI group" and 87 into the "non-AKI group"(n=125). There were 35 patients in the proven bacterial infection group. Patients with proven bacterial infections were found to have significantly higher mean serum PCT level 5.49±8.75 compared to patients with non-confirmed bacterial infection (1.79±4.88, $p<0.001$). PCT levels were significantly higher in the AKI group (10.99 ±12.24) than in the non-AKI group (2.39±2.93, $p>0.001$) in patients with a proven bacterial infection. Patients with no infection had much higher PCT levels in the AKI group as compared to the non-AKI group (5.76 ±14.67 vs 0.7±1.39, $p=0.003$). The study also showed that there is a weak positive correlation between creatinine and serum PCT level(0.125, $p=0.15$)

CONCLUSIONS: Higher cutoff levels of PCT are needed in patients with AKI to use it as a marker of infection. Specificity of PCT may decrease in patients in AKI if current reference cutoff values are used to guide clinical decisions

ASSOCIATION BETWEEN DIETARY QUALITY AND HOSPITAL UTILIZATION IN FOOD- INSECURE INDIVIDUALS

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BACKGROUND: Food insecurity is linked to increased acute care utilization, but the role that dietary quality plays in the connection between food insecurity and adverse health outcomes is unclear. Using data on low-income participants of the National Health and Nutrition Examination Survey (NHANES), we studied whether food insecurity was associated with hospitalization and whether lower dietary quality was associated with increased hospital utilization in food-insecure individuals.

METHODS: We included non-pregnant adults (age≥18) with family income below 300% of the federal poverty level from NHANES 2009-2014. Participants in NHANES were assigned one of four household food security levels using the US Food Security Survey Module, which we recategorized as food-secure, marginally food-secure, and food-insecure. We examined whether food insecurity was associated with any self-reported hospitalization over the past 12 months using multiple logistic regression. Among food-insecure individuals, we assessed dietary quality using quartiles of participants' Healthy Eating Index-2015 (HEI) scores (Q1<38, Q2=38-46, Q3=47-55, Q4>55) calculated from 24-hour dietary recall data. We assessed whether HEI quartile was associated with hospital utilization using multiple logistic regression. Analyses were adjusted for age, sex, race/ethnicity, education level, health insurance, and family income and accounted for the complex survey design of NHANES.

RESULTS: The study sample included 11,707 adults, of whom 3,291 (weighted percentage, 24.8%) were food-insecure and 1,713 (13.6%) were marginally food-secure. In the past 12 months, 13.8% of food-insecure, 11.7% of marginally food-secure, and 11.5% of food-secure participants had been hospitalized. In multivariable analyses, food-insecure participants had higher odds of hospitalization (aOR=1.32, 95% CI: 1.09, 1.60) compared to food-secure participants. In the food-insecure group, individuals with the least healthy diets were more likely to be younger, non-Hispanic white, and have at least some high school education. Food-insecure participants with the least healthy diets (HEI Q1) had significantly higher odds of being hospitalized in the past 12 months (aOR=1.58, 95% CI: 1.07, 2.35) compared to those with the healthiest diets (HEI Q4). Individuals with intermediate dietary quality did not have significantly increased odds of hospitalization compared to those with the healthiest diets (HEI Q2 aOR=1.22, 95% CI: 0.81, 1.82; HEI Q3 aOR=1.21, 95% CI: 0.83, 1.77).

CONCLUSIONS: Food insecurity was associated with inpatient hospitalization among low-income NHANES participants. Among the food-insecure group, those with the least healthy diets were more likely to be hospitalized than those with the healthiest diets. Despite the limitations of cross-sectional data, these results suggest that community and healthcare efforts to improve health outcomes by addressing food insecurity should integrate education and resources to improve dietary quality.

ASSOCIATION BETWEEN EMERGENCY DEPARTMENT CROWDING AND PATIENT PERCEPTIONS OF INTERPERSONAL CARE

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BACKGROUND: Emergency department (ED) crowding has been associated with numerous healthcare issues, including treatment delays, medication errors, increased morbidity and mortality, and higher costs of care. Less is known about the impact of ED crowding on the psychosocial aspects of patient-physician interactions, or "interpersonal care". This includes clear and effective communication, responsiveness to patient needs, emotional support, and cultural sensitivity. We examined whether ED crowding as measured by the Emergency Department Work Index (EDWIN score) was associated with patient perceptions of interpersonal care among those presenting to the ED with suspected acute coronary syndrome (ACS).

METHODS: We enrolled a cohort of English- and Spanish-speaking patients presenting to an urban academic medical center ED with suspected ACS from 2014-2016. ED crowding was measured using the EDWIN score, a validated method that incorporates patient volume, triage category, physician staffing, and bed availability. Scores <1.5 indicate an active but manageable ED, 1.5-2 a busy ED, and >2 an overcrowded ED.

EDWIN score was calculated at the time of presentation and every hour thereafter to produce an "admission EDWIN score" and an "average EDWIN score" over the duration of a patient's ED visit. During the index admission, patients completed the 18-item short form Interpersonal Processes of Care (IPC) survey, which measures sub-domains of patient-physician communication, shared decision-making, and interpersonal style. IPC questions were asked in reference to patients' emergency care and answered on a 5-point Likert scale, with total scores <72 considered suboptimal. Linear regression was used to examine the association between EDWIN score and IPC score, adjusting for age, sex, race, ethnicity, education, health insurance status, depression, primary language, and patient-physician language concordance.

RESULTS: The 933 included subjects had a mean age of 60 (SD 13) years, 46% were women, 56% were Hispanic, and 48% were Spanish speakers. Mean EDWIN score at the time of admission was 1.37 (SD 0.51), while mean EDWIN score averaged over the entire ED visit was 1.50 (SD 0.39). Mean IPC score was 76.01 (SD 11.6, range 18-90). In linear regression models, higher EDWIN score on admission was associated with lower mean IPC score, even after adjusting for covariates (β = -1.58, p = 0.03). No significant associations were found between EDWIN score averaged over the entire ED visit and IPC score.

CONCLUSIONS: Our findings show that increased ED crowding at the time of presentation is associated with poorer patient perceptions of interpersonal care received in the ED. Ineffective patient-physician interactions often lead to decreased patient satisfaction with care, lower adherence to recommended therapy, and worse physical and psychological outcomes. In the hectic ED environment, improving both crowding and communication between patients and physicians may be effective strategies to address these quality issues.

ASSOCIATION BETWEEN LINGUISTIC ACCULTURATION AND CARDIOVASCULAR MEDICATION ADHERENCE AMONG HISPANICS

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BACKGROUND: Despite having a higher prevalence of cardiovascular disease (CVD) risk factors, Hispanics have lower rates of CVD-related and all-cause mortality as well as higher life expectancy compared to non-Hispanic whites – a phenomenon known as the "Hispanic health paradox." However, this survival benefit attenuates as Hispanics become increasingly acculturated to Western lifestyles, potentially due to the adoption of unhealthy behaviors. In this study, we examined whether greater linguistic acculturation as assessed by English proficiency was associated with lower electronically-measured adherence to cardiovascular medications among Hispanic patients presenting with suspected acute coronary syndrome (ACS).

METHODS: We enrolled a cohort of English- or Spanish-speaking patients presenting to an urban academic medical center emergency department with suspected ACS from 2014-2016. Patient ethnicity and native language were assessed through self-report. English proficiency was determined by asking those whose native language was Spanish to rate how well they spoke English on a 5-point Likert scale (from 1 = "very well" to 5 = "not at all"). Patients who were discharged on at least one CVD-related medication were asked to take that medication for one month post-hospitalization using an electronic pill bottle that recorded the date and time of each bottle opening. Medication adherence was defined as the percentage of monitored days with the correct number of bottle openings. Binary generalized estimating equations with a logit link were used to examine the association between Hispanic ethnicity, English proficiency, and odds of adherence to daily CVD medication, adjusting for age, sex, Charlson comorbidity index, discharge diagnosis (ACS or other), and dosing frequency of the monitored medication.

RESULTS: The 332 included subjects had a mean age of 62 (SD 12) years, 43% were women, and 63% were Hispanic. Among Hispanics, 80% identified Spanish as their native language. Mean English proficiency score among native Spanish-speakers was 3.79 (SD 1.25, range 1-5 with higher numbers indicating lower English proficiency). Overall, patients took their cardiovascular medications as prescribed on 75% of monitored days. Hispanics had significantly higher odds of medication adherence than non-Hispanics (adjusted OR 1.28, 95% CI 1.06-1.56, p = 0.01). Among native Spanish-speakers, increasing English proficiency was associated with lower odds of medication adherence (adjusted OR 0.81 per 1-point increase in English proficiency, 95% CI 0.76-0.87, p < 0.001).

CONCLUSIONS: While Hispanics generally had higher rates of medication adherence than non-Hispanics, among native Spanish-speakers, greater linguistic acculturation was associated with lower medication adherence. Non-adherence to recommended medical therapy is therefore one plausible mechanism that may help to explain the observed worsening of cardiovascular outcomes among Hispanics as they become increasingly acculturated to living in the United States.

ASSOCIATION BETWEEN MILD COGNITIVE IMPAIRMENT AND SELF-REPORTED MEDICATION ADHERENCE AMONG BLACK BELT AFRICAN AMERICANS WITH PERSISTENTLY UNCONTROLLED HYPERTENSION

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BACKGROUND: The southeastern US includes predominately African American communities with high prevalence of hypertension (HTN), contributing to cognitive impairment and dementia. Even mild cognitive impairment (MCI) may increase risk for medication nonadherence, which requires numerous cognitive processes. We investigated the relationship between MCI and self-reported barriers to medication adherence among enrollees in the NHLBI-funded *Southeastern Collaboration to Improve Blood Pressure (BP) Control (SEC) Trial* in an effort to understand the complexity behind persistently uncontrolled HTN.

METHODS: The ongoing SEC Trial is enrolling African American Black Belt residents with persistently elevated HTN to test two strategies to improve BP control - practice facilitation and peer coaching. Patients with diagnosed dementia are excluded. In this observational cross-sectional analysis, the exposure was MCI (missing 3+ questions on the validated Six Item Screener). [MMS1] Candidate outcomes were 15 self-reported barriers to medication adherence; sometimes, often, or very often reporting trouble indicated the presence of a barrier. Barriers associated with MCI with bivariate p<0.10 were included in a count variable.

The association between the count and MCI was examined using ordinal logistic regression, adjusting for sociodemographics, mental and physical functioning, social isolation, and total number of medications. Limitations: This is a sample from a trial population in a rural Southeastern US region, possibly impacting generalizability. The study was underpowered to detect potentially important differences in SBP.

RESULTS: We studied 1,061 patients; 51 (5%) had MCI. Mean age was 58 years and 60% were women. Patients with MCI were more likely to be

older, male, less educated, impoverished, socially isolated, have lower mental functioning, and have nonsignificantly higher mean SBP (159 mm Hg) compared with participants without MCI (156 mm Hg, p=0.26). Overall, 64% reported 1+ barrier to medication adherence, and 22% reported 3+. The most common barriers were forgetting to fill prescriptions on time (33%) and not being able to afford medications (26%). For barriers included in the count variable, patients with MCI reported on average 2.0 barriers and those without MCI reported 1.2 (p<0.01). After full adjustment, compared to the odds of having a given number of barriers among those without MCI, MCI was associated with 273% greater odds of reporting more medication adherence barriers (proportional OR 2.73, 95% CI 1.54-4.87).

CONCLUSIONS: MCI was an independent risk factor for reporting more barriers to medication adherence in this sample. Since none of these patients carried a diagnosis of dementia, systematic screening using the Six Item Screener in primary care could identify hypertensive individuals in need of additional assistance with medication adherence to help them achieve lower BP levels, thereby decreasing their risk for progression to dementia.

ASSOCIATION BETWEEN NON-VITAMIN K ORAL ANTICOAGULANT COPAYMENT AND ADHERENCE IN ATRIAL FIBRILLATION: A REAL-WORLD COHORT STUDY

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BACKGROUND: Among patients with atrial fibrillation, adherence to non-vitamin K oral anticoagulants (NOACs) is suboptimal, leading to increased risk of stroke. NOACs are expensive, and high out-of-pocket costs have been associated with lower adherence in other conditions. We evaluated whether higher copayments are associated with lower NOAC adherence.

METHODS: Using claims data from a large national insurer of commercial and Medicare Advantage patients (Optum Clinformatics DataMart), we performed a cohort study of patients with atrial fibrillation (and no other indication for anticoagulation) who newly initiated a NOAC in 2012–2017. Patients were required to have ≥6 months of available data prior to NOAC initiation to assess exclusion criteria and covariates. Medicare patients with a low-income subsidy were excluded. The exposure studied was the level of copayment for the first NOAC prescription, standardized to a 30-day supply. Patients were divided at the median into low (≤$45) versus high (>$45) copayments, and groups were 1:1 propensity-score matched based on demographics, insurance characteristics, comorbidities, prior health care utilization, calendar year, and which NOAC patients received. Patients were followed for one year, or until switching to a different anticoagulant, undergoing an ablation procedure, disenrolling from the insurance plan, or death. The primary outcome was adherence, measured by proportion of days covered (PDC). Secondary outcomes included NOAC discontinuation (no refill for 30 days) and switching anticoagulants (prescription for a different NOAC, warfarin, or low-molecular-weight heparin). In the matched cohort, we compared PDC using Wilcoxon rank-sum test and rates of discontinuation and switching using Cox proportional hazards regression.

RESULTS: We matched 63,574 patients between the two copayment groups, achieving balance across 50 clinical and demographic covariates (standardized differences <0.1). Apixaban (54%) and rivaroxaban (33%) were the most commonly used NOACs, and 71% of patients were in Medicare Advantage plans. Adherence was lower in patients who had high copayments (median PDC 0.81, interquartile range [IQR] 0.44-0.97) than in those with low copayments (median 0.87, IQR 0.52-0.98; p <0.001). Patients with high copayments also had higher rates of discontinuation (hazard ratio [HR] 1.23, 95% confidence interval [CI] 1.20-1.25) and switching to a different anticoagulant (HR 1.21, 95% CI 1.15-1.28). Results were similar among Medicare and commercially-insured patients.

CONCLUSIONS: Higher copayments were associated with lower NOAC adherence and higher rates of discontinuation. Patients with atrial fibrillation who do not adhere to oral anticoagulation are at higher risk of stroke. Policies to lower or cap cost-sharing of important medications may lead to improved adherence and better patient outcomes.

ASSOCIATION BETWEEN POST-HOSPITAL FOLLOW-UP VISITS WITH A PRIMARY CARE PROVIDER AND 30- AND 90-DAY HOSPITAL READMISSIONS

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BACKGROUND: Hospital readmissions are a major source of national healthcare expenditures. Many health systems encourage post-hospital primary care provider (PCP) visits, but the literature is mixed as to whether this reduces hospital readmissions. Our study evaluated the association between 7- and 14-day PCP visits and 30- and 90-day hospital readmissions in adult patients within a health system.

METHODS: We performed a retrospective cohort study of patients in a healthcare system located in Los Angeles, CA. Electronic health records of patients hospitalized from January 2016 to November 2019 were evaluated. Adults (age ≥ 18 years) who were discharged home were included. Demographic and clinical characteristics were compiled. Logistic regression models were used to estimate odds ratios (OR) with 95% confidence intervals [95%CI] for readmissions within 30- and 90-days of discharge. The primary predictors were a PCP visit within 7- and 14-days of discharge. In both models we adjusted for sex, age, and number of chronic conditions.

RESULTS: We identified 10,038 patients who met the study inclusion criteria. The median patient age was 70 years (interquartile range: 57, 81);5,806 (57.8%) patients were female, and 8,209 (81.9%) were Caucasian. Overall, 1,922 (18.6%) had a 7-day PCP visit, 2,776 (40.8%) had a 14-day PCP visit, and 7,262 (72.4%) did not see a PCP within 14 days of discharge. The unadjusted OR of readmission for patients with a 7-day PCP visit, versus no 7-day PCP visit, was 0.69, 95%CI: 0.60-0.79, within 30 days of discharge, and 0.67, 95%CI: 0.60-0.76, within 90 days of discharge. The unadjusted OR of hospital readmission for patients with a 14-day PCP visit, versus no 14-day PCP visit, was 0.67, 95%CI: 0.60-0.76, within 30 days of discharge, and 0.70, 95%CI: 0.63-0.77, within 90 days of discharge. The adjusted OR of hospital readmission for patients with a 7-day PCP visit, versus no 7-day PCP visit, was 0.72, 95%CI: 0.63-0.83, within 30 days of discharge, and 0.74, 95%CI: 0.67-0.82, within 90 days of discharge. The adjusted OR of hospital readmission for patients with a 14-day PCP visit, versus no 14-day PCP visit, was 0.70, 95%CI: 0.62-0.79, within 30 days of discharge and 0.76, 95%CI: 0.69-0.83, at 90 days of discharge.

CONCLUSIONS: Most patients in this study did not follow-up with a PCP within 14 days after hospital discharge. Post-discharge PCP visits within 7- and 14-days were associated with a lower likelihood readmission within 30- or 90-days of discharge. Limitations of this study include unmeasured potentially confounding variables such as markers of sickness preventing ability to get to a PCP visit. Despite this limitation, with low rates of PCP visits observed within 7- and 14-days of discharge, a

large cohort of patients might benefit from efforts to increase early post-discharge PCP visits. Randomized trials should be conducted to determine whether patient utilization of early post-discharge PCP visits might benefit patients and reduce healthcare expenditure.

ASSOCIATION BETWEEN POST-SKILLED NURSING HOME STAY FOLLOW-UP VISITS WITH A PRIMARY CARE PROVIDER AND 30 DAY HOSPITAL READMISSIONS

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BACKGROUND: Previous research suggests that timely post-discharge follow-up with a primary care provider (PCP) after a hospital admission may reduce readmission risk. Hypothesized reasons include improving transition of care by reconciling medications and reviewing discharge plans. Patients who were discharged to skilled nursing facilities (SNFs) are largely excluded from these studies.

Patients discharged to a SNF are typically more vulnerable, exhibit greater medical complexity, and thus may be at heightened risk for readmission. If PCP follow up after discharge from a SNF also mitigates risk reduction for readmissions, this could be a powerful mechanism for preventing readmissions.

This study examines demographic, clinical characteristics and 30-day readmission rates for patients successfully connected with a PCP within 7 and 14 days of discharge from a SNF compared to patients who did not.

METHODS: This is a retrospective cohort study of hospital readmissions following discharge from SNFs affiliated with an academic center in Los Angeles between January 2016 and November 2019. We examined unadjusted correlations between having a PCP visit and 30-day readmission rate. We used a multivariate logistic regression model to estimate the adjusted odds ratio of a patient experiencing a 30-day hospital readmission for patients who did and did not have a PCP visit following their SNF discharge. Our covariates included age, sex, and number of chronic conditions (as defined by Centers for Medicare and Medicaid Chronic Conditions Data Warehouse).

RESULTS: There were 1,648 patients discharged during the study period. Of these, 1,083 (65%) were female and the median age was 88 (IQR 73,88). With respect to our main outcome of interest, 183 (11%) had a primary care visit within 7 days and 309 (19%) had a primary care visit within 14 days. Overall rates of hospital readmission were 28% for those who did not see a PCP and 13% for those who saw a PCP within 14 days. Compared to those who did not see a PCP, the adjusted odds ratio of hospital readmission within 30 days of discharge were lower for patients who saw a PCP within 7 days of discharge from SNF (OR 0.55, 95% CI 0.36-0.85, p=0.01) as well as patients who saw a PCP within 14 days of discharge from SNF (OR 0.39, 95% CI 0.27-0.56, p< 0.01).

CONCLUSIONS: We found that patients discharged from SNFs who see a PCP within 7 or 14 days of discharge have lower likelihood of experiencing a 30-day hospital readmission compared with similar patients who do not. Though we adjusted for patient demographics and comorbidities in our models, it is possible that coming to a PCP visit is a proxy for better health status. It is also possible that when a PCP sees a patient soon after a SNF visit, the PCP provides important care that prevents readmission. Many health systems have institutional mechanisms to identify patients with recent hospital discharges and connect them with PCPs; this study suggests such interventions could be beneficial for patients leaving SNFs.

ASSOCIATION OF A SHARED MEDICAL APPOINTMENT PROGRAM FOCUSED ON NUTRITION AND LIFESTYLE INTERVENTIONS WITH PATIENT-REPORTED HEALTH- RELATED QUALITY OF LIFE AND BIOMETRIC OUTCOMES

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BACKGROUND: A growing number of Americans has one or more chronic conditions associated with lifestyle. Shared medical appointments (SMAs) offer a promising strategy to deliver sustainable care and education needed to regress or prevent chronic disease. Functioning for Life (FFL) is a 10-week SMA program focused on providing nutrition, lifestyle and behavioral health education and interventions to patients with various chronic conditions, and is led by a multi-disciplinary team of caregivers (a medical provider (MD/DO/PA/NP), dietitian and health coach). Our objective was to investigate the association of the FFL program with changes in health-related quality of life (HRQoL) and biometrics.

METHODS: A single-center, retrospective study was conducted to evaluate changes in HRQoL and biometrics for patients participating in the FFL program. HRQoL was measured using PROMIS Scale v1.2 Global Health (PROMIS GH), a set of self-administered, psychometrically validated questions that measure physical, mental, and social health. Patients were eligible if they were ≥18 years-old and participated in the FFL program between September, 2017 and February, 2019. Patients also had to have a baseline PROMIS Global Physical Health (GPH) score and a follow-up score at 10 weeks (±1 week). PROMIS T-scores have a mean of 50 and standard deviation of 10; changes of 5 points suggest a clinically important change. The primary outcome was change in PROMIS GPH scores from baseline to 10 weeks. Secondary outcomes included change in PROMIS Global Mental Health (GMH) scores, weight, systolic and diastolic blood pressure. Baseline and 10-week PROMIS GH scores, weight, BMI, systolic and diastolic blood pressure were compared using paired t-test.

RESULTS: In total, 284 patients were included. Mean age was 49.4±12.8, 83.0% were female and 85.2% were Caucasian. About 98% of patients attended more than half of the weekly sessions, 88% attended 7, and 35% attended all 10. At 10 weeks, patients had a significant improvement in their PROMIS GPH scores (from 45.6±7.3 at baseline to 49.3±7.0, p<0.001) with 38.7% improving their score by 5+ points or more. Similarly, patients experienced a significant improvement in their PROMIS GMH scores (from 45.6 ±8.5 at baseline to 49.1±7.8, p<0.001) with 36.6% improving their score by 5+ points or more. Patients also experienced a mean weight loss of 7.8 pounds (p<0.001 vs. baseline) and systolic blood pressure change of 6.1 points (p<0.001 vs. baseline).

CONCLUSIONS: The FFL program offers a promising strategy to deliver sustainable lifestyle intervention for patients with chronic disease, and could serve as a solution for the delivery of nutrition and lifestyle recommendations which are notoriously difficult to integrate into standard primary care. Future studies are currently underway to examine longitudinal changes in HRQoL, biometrics and cost.

ASSOCIATION OF FLUOROQUINOLONES OR CEPHALOSPORINS WITH CLOSTRIDIOIDES DIFFICILE INFECTION AFTER EMPIRIC TREATMENT FOR COMMUNITY-ACQUIRED PNEUMONIA

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BACKGROUND: *Clostridioides difficile* infection (CDI) is the most common cause of antibiotic-associated diarrhea and its incidence has increased exponentially in the last decade. Treatment with certain antibiotics has been identified as an important risk factor for CDI, and community-acquired pneumonia (CAP) is the most commonly treated infection in the hospital setting. Current Infectious Diseases Society of America (IDSA) guidelines recommend empiric antibiotic therapy with either a respiratory fluoroquinolone or a combination of a beta lactam with a macrolide, but the comparative risk of CDI with either regimen is unknown. The aim of this study was to compare the incidence of CDI in patients treated with either of these two empiric regimens.

METHODS: We conducted a large retrospective cohort analysis using the Premier Healthcare Database from 2010 – 2015 at 175 hospitals in the United States. We included adults who had both an ICD-9 diagnosis code for pneumonia as principal diagnosis (or as a secondary diagnosis paired with a principal diagnosis of respiratory failure or sepsis), and received at least 3 days of either empiric therapy. Patients receiving other antibiotics in the first 3 days were excluded. Hospital-acquired CDI was defined as a presence of a diagnosis billing code not present on admission and a positive laboratory test for CDI at or after hospital day 4. Multivariate logistic regression analysis was conducted to determine the association between antibiotic regimen in the first 3 hospital days and CDI, adjusted for known CDI risk factors (age, immunosuppression, hospitalization in the past 3 months, NSAIDS and acid-suppressive therapy, ICU admission, on dialysis and combined comorbidity score). Sensitivity analysis (fluoroquinolones vs. cephalosporins plus macrolides) was also performed with CDI being defined either by the presence of a diagnosis billing code not present on admission or a positive laboratory test for CDI at or after hospital day 4.

RESULTS: Our sample included 58,884 eligible patients treated with either cephalosporin plus macrolide (37,358 patients) or a quinolone (21,526 patients). A total of 136 patients (0.23%) developed hospital-acquired CDI, 93 (0.25 %) patients who received cephalosporin plus macrolide and 43 (0.20%) patients who received a fluoroquinolone. After adjustment for patient demographics, co-morbidities and risk factors, the risk of CDI was similar for fluoroquinolones vs. cephalosporins plus macrolides (Odds ratio [OR] =0.81, 95% CI 0.56-1.16). The risk for CDI was also similar for fluoroquinolones vs. cephalosporins plus macrolides on sensitivity analysis (OR=0.86, 95% CI 0.64-1.15).

CONCLUSIONS: Among patients with CAP at US hospitals, CDI occurred in approximately 0.25% of patients, a relatively uncommon complication. Risk of CDI was unaffected by choice of the initial guideline recommended therapy for CAP.

ASSOCIATION OF HIGH-DEDUCTIBLE HEALTH PLAN ENROLLMENT WITH ADVANCED BREAST CANCER PRESENTATION

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BACKGROUND: High-deductible health plans (HDHP) require large out-of-pocket payments, including for cancer diagnosis and treatment. HDHPs are associated with delays in breast cancer diagnosis of up to 8 months, but effects on cancer outcomes are unknown. We hypothesized that, compared with women in generous health plans, HDHP members would present with more advanced breast cancer and experience higher total costs in the 90 days after incident diagnosis.

METHODS: We studied 2004-2014 data in a large commercial and Medicare Advantage claims database. We included women aged 50-64 who were in traditional low-deductible (≤$500) health plans for 1 baseline year and then experienced either an employer-mandated switch to HDHPs (≥$1000) or an employer- mandated continuation in low-deductible plans. The index date was the HDHP switch date or, among potential controls, a randomly chosen "anniversary date" (annual insurance renewal date). We then restricted the study sample to women who developed incident breast cancer up to 10 years after the index date and classified them as low or high income based on neighborhood poverty level. Using baseline characteristics and stratifying by low- and high-income, we closely matched HDHP members to contemporaneous low- deductible members. Outcomes included (1) the percentage of women with incident breast cancer who had *de novo* metastatic disease and (2) total health care costs in the 90 days after incident diagnosis (a proxy for intensity of services in the post-diagnosis period). The cost variable was standardized across time and geography. To estimate differences between HDHP and control members, we used logistic regression to model the percentage with *de novo* metastatic disease and negative binomial regression to model 90-day total costs, adjusting for multiple baseline characteristics.

RESULTS: Our study sample included 751 HDHP members and 2777 matched controls. 4.4% of low- income HDHP members presented with *de novo* metastatic breast cancer versus 1.8% of low-income controls, an absolute difference of 2.6% (p=0.035). Total 90-day costs after incident breast cancer diagnosis were $42,883 among low-income HDHP members and $37,869 among low-income controls, an absolute difference of $5,014 (p=0.013). We did not detect statistically significant differences in study outcomes between high-income HDHP and high-income control members.

CONCLUSIONS: Low-income HDHP members had a substantially higher risk of presenting with advanced-stage breast cancer than similar members in low-deductible plans, and higher post-diagnosis total health care costs. Reducing financial barriers to breast cancer diagnosis among low-income HDHP members might improve breast cancer outcomes and costs.

ASSOCIATION OF MARIJUANA USE WITH RECEIPT OF PREVENTIVE CARE AND HEALTH BEHAVIORS

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BACKGROUND: There are conflicting reports on the effects of marijuana use on health behaviors with some studies suggesting that marijuana

use was associated with decreased use of other substances and other studies suggesting increased use. In addition, it is unknown whether receipt of preventive care delivery among users is different from non-users.

METHODS: Using the Behavioral Risk Factor Surveillance System, an annual telephone survey administered to over 500,000 US adults, we identified individuals who were eligible to receive 13 different preventive services including influenza, pneumonia, tetanus, and HPV vaccinations, serum cholesterol and blood glucose screening, alcohol use and HIV screening, as well as HbA1c screening and foot and eye examinations among respondents with diabetes. Using logistic regression, we examined whether users were less likely to receive preventive care services after adjusting for age, sex, race/ethnicity, employment, education, and marital status. We also examined the association of current marijuana use with other health behaviors including tobacco and alcohol use after adjusting for baseline characteristics.

RESULTS: Among 45,655,241 participants in 2017, 10.7% reported marijuana use in the past 30 days with 69.3% of current users, using it daily. Smoking was the most common method of use (90.4%). Compared to non-users, users were more often younger, male, high school graduates, and employed. After adjusting for baseline characteristics, users were less likely than non-users to have received an influenza vaccine in the past year (AOR=0.65, 95% CI=0.53-0.81) or to be screened for diabetes in the past 5 years (AOR=0.82, 95% CI=0.69-0.99). Users were more likely to be screened for alcohol use (AOR=1.6, 95% CI=1.1-2.5) and HIV (AOR=2.7, 95% CI=1.7-4.3) than non-users. There was no difference between marijuana users and non-users in the receipt of other services. After adjusting for baseline characteristics, compared to non-users, marijuana users were significantly more likely to currently smoke tobacco (AOR=3.1, 95% CI=2.5-3.9), use electronic nicotine vaping products (AOR=2.8, 95% CI 2.0-3.8), or use smokeless tobacco (4.6% vs 2.8%, p<0.008). Respondents who used marijuana were more likely to have had at least 1 alcoholic beverage in the past month (AOR=3.6, 95% CI=2.9-4.5) compared to non-users. Furthermore, risk adjusted analysis demonstrated that users were almost three times (AOR=2.9, 95% CI=2.4-3.6) as likely to binge drink in the past month compared to respondents who did not use marijuana.

CONCLUSIONS: Marijuana users were less likely to receive preventive services, such as influenza vaccination and diabetic screening but were more likely to be screened for high risk behaviors. Users were more likely to use other substances, such as tobacco and alcohol and engage in binge drinking. Current users may need more targeted care to ensure they receive needed preventive services and substance cessation counseling.

ASSOCIATION OF PATIENT ACTIVATION WITH BLOOD PRESSURE CONTROL IN AFRICAN AMERICAN PATIENTS

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BACKGROUND: To assess whether patient activation is associated with blood pressure control amongst participants of African ancestry.

METHODS: A secondary analysis of prospectively collected data from the Genetic testing to Understand and Address Renal Disease Disparities (GUARDD) Trial. Study included 2,050 hypertensive patients of African ancestry receiving primary care in 15 academic, community, and safety-net practices in New York City. Patients were eligible if they self-identified as having African ancestry, age 18-70 years, received primary care from a participating clinic site, and had hypertension defined as two of three criteria: an ICD-9 diagnosis of hypertension, taking anti-hypertensive medications, or two systolic blood pressure (BP) readings >140mmHg at least six months apart. Exclusion criteria included diabetes, chronic kidney disease pregnancy, non-English speaking, presence of cognitive impairment, and not community dwelling. The primary outcome was systolic BP control (<140mmHg). Logistic regression evaluated the association between the patient activation measure (PAM) and BP control after controlling for selected characteristics.

RESULTS: The mean age was 53 years (SD±10); 66% were female, the mean systolic BP was 134 mmHg (SD±20) and the mean diastolic BP was 85mmHg (SD±12). The mean PAM score was 68 (SD±83). Low patient activation (PAM level 1 and 2) was associated with lower odds of blood pressure control (unadjusted odd ratio [OR], 0.81 [95% CI, 0.67-0.98]; p=0.02). After adjusting for gender, education, and income, there was no significant association between low PAM and odds of BP control (adjusted OR, 0.84, [95% CI 0.68-1.02]; p=0.08). When assessing for a dose-dependent association, the odds of blood pressure control did not increase with higher patient activation levels (Table1).

CONCLUSIONS: Among patients of African ancestry, patient activation was not associated with better blood pressure control after adjusting for selected patient characteristics. Further research would be needed to assess whether patient engagement is an effective strategy to improve hypertension in this patient population.

ASSOCIATION OF PATTERNS OF MULTIMORBIDITY WITH LENGTH OF STAY: A MULTINATIONAL OBSERVATIONAL STUDY

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BACKGROUND: Multimorbidity is very prevalent and associated with length of stay (LOS). However, we lack data on which combinations of chronic comorbidities are associated with LOS. Since interventions could shorten LOS, it is important to better understand the associated risk factors.

METHODS: We used a multinational retrospective cohort of 126828 medical inpatients with multimorbidity (i.e. ≥2 chronic diseases). We classified the chronic diseases into categories of comorbidities using the Clinical Classification Software. We described the combinations of co-morbidities most strongly associated with prolonged LOS (≥ country-specific average LOS) and reported the difference in median LOS for

those combinations. We also assessed the association between number of chronic diseases or of body systems and prolonged LOS.

RESULTS: The strongest association with LOS (OR 7.25, 95%CI 6.64-7.91) and the highest difference in median LOS (13 days, 95%CI 12.8-13.2) were found for diseases of white blood cells combined with hematological malignancy (Table). Other comorbidities in the top combinations included mostly neurological disorders and chronic ulcer of skin with ORs between 2.37 and 3.65 and a difference in median LOS of 2-5 days ($p < 0.001$ for all). LOS was associated with the number of chronic diseases and of body systems (≥7 body systems (N=11,423): OR 21.50, 95%CI 19.94-23.18).

CONCLUSIONS: LOS was strongly associated with specific combinations of comorbidities and particularly with the number of body systems. Describing patterns of multimorbidity associated with LOS may help hospitals anticipate resource utilization and judiciously allocate services.

Comorbidity 1	Comorbidity 2	OR (95%CI)	Difference in median LOS (days) (95%CI)	Attributable LOS (days)
Diseases of white blood cells	Hematological malignancy	7.25 (6.64-7.81)	13.0 (12.8-13.2)	29,744
Diseases of white blood cells	Other nervous system disorders	3.65 (3.22-4.15)	4.0 (3.6-4.4)	3,764
Paralysis	Other nervous system disorders	3.28 (2.89-3.72)	4.0 (3.6-4.4)	3,832
paralysis	Cerebrovascular disease	3.08 (2.80-34.0)	5.0 (4.7-5.3)	8,450
Cerebrovascular disease	Other nervous system disorders	2.99 (2.68-3.34)	3.0 (2.7-3.3)	3,681
Paralysis	Chronic heart disease	2.92 (264-3.23)	4.0 (3.7-4.3)	5,864
Diseases of white blood cells	Chronic heart disease	2.91 (2.67-3,17)	3.0 (2.8-3.3)	6,108
Diseases of white blood cells	Esophageal disorders	2.84 (2.52-3.20)	3.0 (2.6-3.4)	3,033
Chronic ulcer of skin	Chronic heart disease	2.74 (2.55-2.93)	3.0 (2.9-3.2)	10,248
Chronic ulcer of Skin	Chronic kidney disease	2.62 (2.39-2.87)	3.0 (2.8-3.3)	5,564
Chronic ulcer of skin	Arthropathy and arthritis	2.62 (2.38-2.88)	3.0 (2.7-3.3)	4,986
Hematological malignancy	Chronic heart disease	2.57 (2.37-2.79)	2.0 (1.8-2.2)	4,636
Diseases of white blood cells	Mood disorders	2.54 (2.25-2.86)	2.0 (1.6-2.4)	1,948
Chronic ulcer of skin	Paralysis	2.54 (2.20-2.92)	3.0 (2.6-3.4)	2,118
Chronic ulcer of skin	Solid malignancy	2.51 (2.17-2.90)	3.0 (2.6-3.4)	1,986
Diseases of white blood cells	Chronic kidney disease	2.47 (2.15-2.85)	2.0 (1.6-2.4)	1,424
Chronic ulcer of skin	Other nervous system disorders	2.46 (2.22-2.71)	3.0 (2.7-3.3)	4,866
Chronic ulcer of skin	Chronic obstructive pulmonary disease and bronchiectasis	2.43 (2.15-2.74)	2.0 (1.6-2.4)	1,906
Chronic ulcer of skin	Peripheral and visceral atherosclerosis	2.41 (2.17-2.79)	2.0 (1.6-2.4)	1,280
Chronic kidney disease	Cerebrovascular disease	2.37 (2.07-2.72)	3.0 (2.6-3.4)	2,592

ASSOCIATION OF PROVIDER SPECIALTY WITH PROCEDURAL-RELATED MORBIDITY AND ADVERSE EVENTS AMONG PATIENTS UNDERGOING SURGICAL AND MEDICATION ABORTIONS

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BACKGROUND: Since *Roe v. Wade* legalized abortion in the U.S. in 1973, states have passed numerous restrictive abortion policies. In Mississippi, state law requires all abortions be performed exclusively by obstetrician-gynecologists (OBGYNs). In South Carolina, OBGYNs are required to perform all abortions after 14 weeks gestation. One rationale for such policies is to ensure the safety of abortion care, however there are no current data comparing abortion outcomes by physician specialty. To further understand if abortion safety differs by physician specialty, we used a large, national claims database to compare abortion- related morbidities and adverse events in abortions performed by OBGYNs vs. physicians of other specialties.

METHODS: Using the Truven Health MarketScan claims database, we identified privately insured women who had an induced abortion between January 1, 2011 and December 31, 2014. The sample was limited to abortions provided by OBGYNs and physicians of other specialties. The primary outcome was abortion-related morbidity and adverse events occurring within 6 weeks of the abortion, including retained products of conception, abortion-related infection, hemorrhage, and uterine perforation. Control variables included patient age, abortion type (medication, first trimester aspiration, second trimester or later), Elixhauser Comorbidity Index, U.S. census region, and year.

RESULTS: There were 42,770 abortions completed during the study timeframe; 30,564 (71.5%) abortions were provided by OBGYNs and 12,206 (28.5%) abortions were provided by physicians of other specialties. In unadjusted analyses, abortion-related morbidity or adverse events occurred in 3.6% of abortions provided by OBGYNs compared with 3.2% of abortions provided by physicians of other specialties. In adjusted analyses, there was no statistically significant difference in abortion-related morbidity or adverse events comparing physicians of other specialties vs. OBGYNs (adjusted OR 0.89, 95% CI 0.78-1.01).

CONCLUSIONS: Among privately insured women having abortions, there was no statistically significant difference in morbidity or adverse events when provided by OBGYN vs. physicians of other specialties. Our findings do not support state laws that have prohibited physicians of other specialties from performing abortions.

ASSOCIATION OF TIME OF DAY WITH DELAYS IN ANTIBIOTIC INITIATION AMONG WARD PATIENTS WITH HOSPITAL-ACQUIRED SEPSIS

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BACKGROUND: As the day progresses, clinicians may experience impaired clinical reasoning. This may exert its greatest effects on identifying and treating heterogeneous, diagnostically uncertain clinical syndromes, including sepsis. We examined the association of time of day with antibiotic initiation among ward patients with hospital-acquired sepsis.

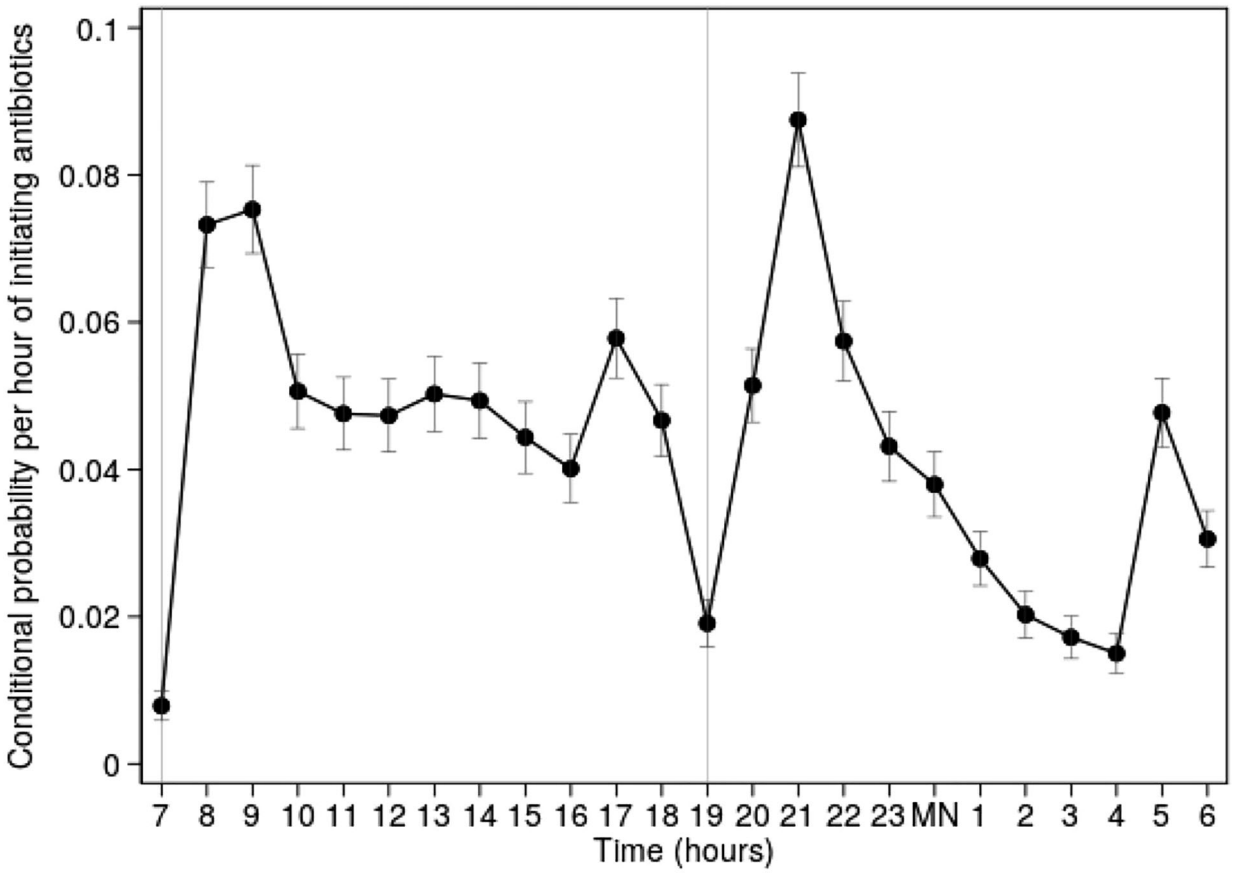
METHODS: In 4 hospitals, we conducted a retrospective cohort study of index hospital-acquired sepsis episodes for ward patients 7/2017-6/2019. Sepsis onset was defined using Sepsis-3 criteria. The exposure was hours from 7AM (work day start). We fit a discrete-time time-to-event model with hours from sepsis onset as the time axis, to assess the association between hour relative to 7AM and probability of antibiotic initiation. We used logistic regression to assess the association between time of sepsis onset and odds of antibiotic initiation within 3 hours (CMS SEP-1 quality measure). We adjusted for hospital, admit year, age, gender, race, ethnicity, admit diagnosis, and service type.

RESULTS: Among 156,399 visits, 7,569 (5%) had sepsis. Visits were median 62 years (IQR 51-71), 53% male, and 79% on medicine services. Median time to antibiotic initiation was 10 hours (IQR 3-48) after sepsis onset and 2,057 (27%) patients received antibiotics within 3 hours.

Relative to 7AM, the probability of antibiotic initiation at each hour differed significantly, ranging from 0.8% (95% CI 0.6-1.0%) at 7AM to 8.7% (95% CI 8.1-9.4%) at 9PM (all p<0.001) (Figure). Relative to sepsis onset at 7AM, odds of antibiotic initiation within 3 hours also differed significantly (range: 0.5 [95% CI 0.3-0.7] at 4PM to 1.5 [95% CI 1.0-2.1] at 9PM).

CONCLUSIONS: Antibiotic initiation peaks at 9AM/PM, early in clinicians' 12-hour shifts, and declines until shift change with nadirs at 7AM/PM. These findings suggest handoffs and/or decision fatigue cause treatment delays for hospital-acquired sepsis. Confirming these findings and distinguishing between mechanisms may lead to quality-enhancing interventions.

Figure. Conditional adjusted probability per hour from 7AM of antibiotic initiation among ward patients with hospital-acquired sepsis*



*Error bars denote 95% confidence intervals
Vertical lines indicate shift changes

ASSOCIATIONS BETWEEN STATE MEDICAID UTILIZATION MANAGEMENT POLICIES FOR BUPRENORPHINE, DRUG OVERDOSE BURDEN, AND OPIOID USE DISORDER TREATMENT AVAILABILITY

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BACKGROUND: State Medicaid programs employ a variety of utilization management policies, such as prior authorization (PA), to ensure safe delivery of care while containing costs and minimizing resource misuse. Several such policies have been directed at buprenorphine, a highly effective medication used to treat opioid use disorder (OUD). Given current efforts to increase availability of buprenorphine treatment across states, it is critical to understand whether utilization management policies, including PA and mandatory psychosocial counseling, affect the availability of buprenorphine. Prior work suggests that states that require PA have fewer addiction treatment facilities that offer buprenorphine. We

sought to extend these analyses by examining if state utilization management policies were associated with other buprenorphine treatment resources and drug overdose burden.

METHODS: We compared measures of buprenorphine treatment availability, substance use disorder (SUD) prevalence, overall overdose deaths and opioid overdose deaths across states with and without Medicaid requirements for: PA for buprenorphine; PA for buprenorphine-naloxone; psychosocial counseling. Data included: Medicaid utilization management policies, number of licensed prescribers with waivers to prescribe buprenorphine for OUD; SUD prevalence; overdose deaths; SUD treatment facility data; buprenorphine maintenance prescriptions per 1000 Medicaid enrollees (obtained from 2017-2018 Substance Abuse and Mental Health Service Administration, National Survey on Drug use and Health, CDC, National Survey of Substance Abuse Treatment Services, and Medicaid State Drug Utilization Data). Means and medians were calculated and pairwise comparisons made with t-tests and Wilcoxon rank sum tests as appropriate.

RESULTS: A majority of states required PAs for buprenorphine and buprenorphine-naloxone (39 and 30, respectively), while 17 states required counseling. SUD prevalence, overall overdose deaths, and opioid overdose deaths were similar in states with and without PA and counseling requirements. States requiring PA for buprenorphine had a lower proportion of SUD treatment facilities offering medications for OUD compared to states without prior authorizations (18.8% vs 21.4%, p=0.02). There were no differences in median number of providers licensed to prescribe buprenorphine (25.5 vs 20.2, p=0.27) or buprenorphine prescriptions per 1000 Medicaid enrollees (84.9 vs 58.0, p=0.55) in states with and without PA requirements. Similar results were observed for counseling requirements.

CONCLUSIONS: In this cross-sectional study, state Medicaid policies requiring PA or counseling for buprenorphine were associated with lower availability of OUD medications in SUD treatment facilities but no difference in the number of buprenorphine prescribers or prescriptions for Medicaid enrollees. Prospective research is needed to assess whether removing utilization management requirements is associated with changes in access to buprenorphine.

A SURVEY OF INTERNAL MEDICINE INTERNS REGARDING THE MOST USEFUL TOPICS TO INCLUDE IN AN INTERNAL MEDICINE TRACK OF A "GET READY FOR RESIDENCY BOOT CAMP" COURSE

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BACKGROUND: Several studies suggest that incoming interns frequently lack clinical and professional skills that residency program directors expect interns to have mastered during medical school. Various curricular efforts have attempted to remedy this discrepancy including residency preparatory "boot camps." We are currently developing a preparatory course for fourth year medical student entitled "Get Ready for Residency Boot Camp" that will entail a general curriculum for all fourth-year students as well as an Internal Medicine (IM) track for students planning a career in IM. The general curriculum is largely simulation based including standardized patient cases (i.e. breaking bad news) and management of acute clinical scenarios (i.e. myocardial infarction) with some didactics (i.e. capacity evaluation, wellness). We performed a needs assessment survey of current IM interns at our institution, who come from 44 accredited U.S. medical schools, about the content areas they would have found most useful in the IM track of the boot camp course.

METHODS: We surveyed a convenience sample of IM interns in October of 2019 regarding high yield topics to include in the IM track of the boot camp course. Prior to the survey, the interns received a brief introduction to the curricular project and an overview of topics included in the general curriculum. The survey asked interns to examine a list of clinical (medical knowledge) topics and a list of "non-clinical" (communication, professionalism, patient care, and system-based practice) topics. They were instructed to select the three most useful topics from both lists for the IM track of the boot camp course. The survey also had a free response section that asked them to write in one additional clinical and "non-clinical" topic. The list of topics presented to the interns was developed through literature review and local expert clinician educator input. We excluded topics already included in the general curriculum.

RESULTS: There was a 79% response rate (64/81). The most frequently identified useful clinical topics included: rational approach to antibiotics (27/64, 42%); electrolyte management (26/64, 41%); inpatient diabetes management (25/64, 39%); and acid-base disorders (24/64, 38%). "Write in" topics included acute pain, altered mental status, and critical care topics (i.e. respiratory failure and septic shock). The most frequently identified useful "non-clinical" topics included: cross-cover (44/64, 69%); responding to difficult or "offensive" patients (31/64, 48%); giving and receiving feedback (24/64, 38%); and adult learning theory (23/64, 36%). "Write in" topics included time management/organization tips and disposition/discharge options.

CONCLUSIONS: We have incorporated 12/13 (92%) of the most useful topics identified by IM interns into the IM track of the boot camp course, which is offered as two separate four-week blocks in March and April of 2020.

A TRAUMA EDUCATION PILOT CURRICULUM FOR PATIENTS IN URBAN PRIMARY CARE

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BACKGROUND: Posttraumatic stress disorder (PTSD) is prevalent in low-income communities and is often a missed diagnosis that contributes heavily to medical and psychological co-morbidity. Current treatment standard for PTSD is cognitive behavioral therapy and psychotherapy usually provided by a mental health professional. However, many individuals in low-income communities do not have regular access to behavioral health. There is some evidence to support the use of trauma education as an initial treatment for PTSD, particularly in those with multiple traumatic exposures as seen in urban patient populations. Furthermore, trauma education discussions do not require behavioral health expertise and can be performed by primary care providers in clinics without co-located behavioral health.

METHODS: Urban primary care participants with significant PTSD and moderate depression were selected from a larger cross-sectional study and randomized into two groups. The control group received an educational curriculum in various primary care diseases and the intervention group received an educational curriculum in PTSD. Each group met for 60-90 minutes weekly for 6 weeks. Symptoms of PTSD and depression were measured at the beginning of each session and semi-structured focus group discussions comprised the remainder of each session. Interviews were audiotaped, transcribed, and analyzed using Grounded Theory Methodology.

RESULTS: Six participants completed the curriculum, and three were randomized to each group. Average age was 54.15 ± 13.29 years, 5 (83.33%) were female, 3 (50%) completed some college, and average

Adverse Childhood Experience score=5. Two-sample *t*-tests showed no difference between the control group and the intervention group with regards to PTSD or depression symptoms during the 6-week course. Qualitative analysis generated the following themes in the intervention group 1) childhood events: perceptions of safety and trust; 2) support system: defining and identifying support; 3) internal processing: understanding reactions and recognizing coping mechanisms; 4) acceptance: acknowledging the past and its impact; 5) future planning: finding joy and purpose.

Exit-surveys completed by participants demonstrated that the curriculum was well-received. Both groups reported an improvement in knowledge and would recommend the course to a friend or loved one. When asked if the course helped understand how disease might impact life, the intervention group valued the course slightly higher compared to the control group. Participants in the intervention group successfully created individual toolkits of healthy coping strategies to use in times of stress.

CONCLUSIONS: Trauma education is a reasonable initial treatment intervention in urban primary care where the prevalence of PTSD is elevated and the access to behavioral health is limited. Future studies will need to follow larger cohorts over a longer period in order to truly assess the impact of trauma education on symptoms of PTSD and depression.

ATTITUDES AND PERCEIVED CONFIDENCE IN IDENTIFYING AND ADDRESSING PATIENTS' SOCIAL NEEDS AMONG SURGERY AND PRIMARY CARE RESIDENTS

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BACKGROUND: Health care professionals' understanding of adverse social determinants of health (SDOH) and their ability to address them is essential to delivery of comprehensive care of diverse populations. However, residents' perceived competency in integrating patients' social needs into routine care is unclear.

METHODS: As part of a larger project to develop and pilot a community engagement and SDOH curriculum for Johns Hopkins residency programs, we conducted a mid-year survey of general surgery interns and primary care (internal medicine and medicine-pediatric) residents (post-graduate year 1-4) to assess their attitudes and perceived confidence in identifying and addressing patients' social needs. We used descriptive statistics to describe questionnaire responses.

RESULTS: Twenty surgical interns and 17 primary care residents completed the survey (86% response rate). Nearly all residents reported frequently encountering patients with unmet social needs and agreed addressing patients' social needs is as important as addressing their medical conditions (97% and 100% respectively). However, fewer surgery residents reported receiving training or having access to good role models for identifying and addressing patients' social needs compared to primary care residents. Overall, most residents felt confident in identifying patients' unmet social needs, however fewer residents felt confident in addressing them once they were identified. (p=0.001)

CONCLUSIONS: Although all residents agreed addressing patients' social needs was important, less than half felt confident in addressing them. Access to SDOH training also varied between programs. Meaningful curricula tailored to meet the differing needs of individual residency programs is needed to enhance residents' capacity to effectively address the health care needs of vulnerable populations, with a particular emphasis on integration into programs where training is currently lacking. Health system efforts to link community resources may also enhance residents' capacity to effectively address patients' social needs.

Table. Residents' Attitudes and Self-rated Confidence in Identifying and Addressing Patients' Social Needs	% of Residents	
	Surgery (n=20)	Primary Care (n=17)
Received training in identifying and addressing SDOH*†	35	100
Had good role models to identifying and addressing SDOH*†	53	100
Agreed well-informed about most available resources to address patients' social needs**	25	88
Confident in identifying unmet social needs‡	68	88
Confident in addressing unmet social needs‡	40	25

†Surgery vs. primary care residents. p<0.01

AUGMENTING PREDICTIVE MODELING OF HOSPITAL READMISSIONS WITH SOCIAL DETERMINANTS OF HEALTH

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BACKGROUND: Identifying patients at high risk of readmission through predictive modeling is one strategy to reduce unnecessary readmissions, a significant source of patient morbidity and healthcare costs. However, the performance of predictive models in urban safety-net populations who suffer disproportionately from socioeconomic disparities is not known. We sought to assess how validated predictive models of readmission perform in an urban safety-net population and if augmenting them with variables addressing social determinants of health may improve prediction of urgent rehospitalization within 30 days of discharge.

METHODS: We performed a retrospective cohort analysis of patients ≥ 18 years old admitted (16,540) to Denver Health (DH), a tertiary care urban safety-net hospital that includes 9 Federally Qualified Health Centers, between July 1, 2016 and June 30, 2018, tracking readmissions through July 31, 2018. Emergent hemodialysis, obstetric and psychiatric admissions were excluded. We applied the LACE, LACE+ and Epic predictive models of urgent readmission to the cohort to determine how well they performed in the DH population compared to the original populations used in their development. We developed a new predictive model using the variables in the LACE model, augmented with the following variables: Area Deprivation Index, patient language, housing, healthcare utilization, patient identified barriers to learning, mental health and substance abuse diagnoses, and discharge location. In model development, we randomized 50% of the cohort into a training set to perform logistic regression with stepwise selection based upon AIC criteria to control for confounding. We tested the final model on the remaining 50% of the cohort in our validation set. We compared the predictive models' performance with the C-statistic. We had 80% power to detect a difference 0.039 in the C-statistics of the models tested.

RESULTS: The predictive model with the best performance was the Epic model with a C-statistic of 0.71 compared to LACE (0.65) and LACE+ (0.61). Our augmented model had a C-statistic of 0.66. In comparing the C-statistics, the Epic model was significantly higher than the other models ($p < 0.05$). The variables most associated with readmissions in urban safety-net patients were (OR): AMA discharge (3.19), mental health diagnosis (2.06) and healthcare utilization (1.94).

CONCLUSIONS: Our new predictive model with non-traditional covariates performed better in our cohort than the LACE and LACE+ predictive models. While the Epic model performed the best in an urban safety- net population, it requires the most covariates, including lab value data. Our results demonstrate the value of accounting for socioeconomic status and mental health in assessing the risk of readmission in urban safety- net patients. More importantly, some of these variables are potentially modifiable, and if properly addressed can help reduce the risk of readmission in this vulnerable population.

AVAILABILITY OF SEXUALLY TRANSMITTED INFECTION SCREENING SERVICES AND IMPLICATIONS FOR PREP DELIVERY IN COLLEGE AND UNIVERSITY STUDENT HEALTH SERVICES

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BACKGROUND: Sexually transmitted infections (STIs) are increasingly prevalent among college-aged individuals in the US. The Centers for Disease Control and Prevention (CDC) recommend comprehensive screening and treatment for STIs, including three-site testing (i.e. urinary/vaginal, throat, and rectal swab specimens) for gonorrhea and chlamydia (GC/CT) among people at risk. College and university student health services are uniquely positioned to deliver sexual health services to young people. However, published data on STI testing and treatment on college campuses are limited.

METHODS: Questions about STI testing and treatment services were included as part of a larger study of HIV pre-exposure prophylaxis (PrEP) availability at undergraduate student health services (SHS) in New England. Electronic surveys were distributed to 143 SHS directors between April – October 2019. Chi- squared statistics were used to evaluate associations.

RESULTS: Fifty-six SHS directors (39%) responded to the survey. The majority of institutions represented were four-year (n=52, 93%) and private (n=42, 75%). Fifty respondents completed questions related to STI testing and PrEP. STI testing of any kind was offered at 48 SHS (96%). Forty-one SHS (82%) offered HIV testing, most commonly as fourth generation laboratory testing (n=36, 88%). Syphilis testing was available at 45 (90%) SHS. Urine GC/CT testing was available at 47 (94%) SHS and vaginal GC/CT testing was offered at 44 (88%); a full complement of three-site GC/CT testing was offered at 40 (80%). Among SHS with any STI testing, 13 (27%) offered intra-muscular penicillin, 34 (71%) offered intra-muscular ceftriaxone, and 35 (73%) offered oral azithromycin for on-site STI treatment. Thirty-two institutions (64%) reported offering PrEP, some through a formal program. Among 18 SHS without PrEP, 12 respondents (67%) reported that clinical and laboratory monitoring posed a significant barrier to implementation (rated 3-4 on a scale from 1-4). Compared to SHS that did not offer three-site GC/CT testing, those that did were more likely to offer PrEP (20% vs. 75%, $p<0.001$).

CONCLUSIONS: Although many college and university SHS in New England offer STI testing, 20% did not offer three-site GC/CT testing. This represents a gap in screening, as studies have demonstrated that up to 77% of CT and 95% of GC infections are missed by urine GC/CT screening alone in high risk populations. Increasing access to comprehensive STI screening for college students is an important priority. STI service limitations may also pose a barrier to implementation and expansion of PrEP programs on college campuses, as three-site testing is critical to high-quality PrEP care. Interventions to increase PrEP availability at SHS should incorporate expansion of STI screening access. Additional work is necessary to understand and address barriers faced by SHS to providing comprehensive STI screening and treatment.

A VALIDATED ALGORITHM TO IDENTIFY OPIOID AND CANNABIS USERS USING URINE TOXICOLOGY RESULTS

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BACKGROUND: Given the wide spread use of prescription opioids and the legalization of cannabis in over 33 states, the use of both substances is increasingly common. However, the health effects of combined cannabis and opioid use is unknown. Urine toxicology data can be potentially used to identify users and assess the health effects of use. We developed and validated an algorithm that combines text and numerical processing to map drug screening data to one of four results: positive, negative, test not given/canceled, or unknown.

METHODS: Urine drug screening results are recorded in the VA's Corporate Data Warehouse. However, no standard name for drug screenings exists; laboratory results are reported as numeric measurements, text, or some combination of the two; and the units of measurement are often missing. We identified all urine opioid drug screens and urine cannabis drug screens using LOINC Codes, text mining on the laboratory test name, and text mining on the laboratory result value. Drug screenings were limited to those given in primary care in the VA between January 1, 2012 and December 31, 2018. The resulting datasets consisted of 10,739,412 opioid drug screenings and 4,027,551 cannabis drug screenings. We first grouped drug screening data by similar result values and units. We then iteratively compared random samples of 20 cases from each category to the text relevant to the drug screening in each patient's chart. Once the proportion of unclassifiable tests were less than .5%, we assessed the strength of the urine toxicity exposure categorization approach by obtaining a sample of 75 Veterans (25 Veterans who had both opioids and cannabis in the urine toxicology data, 25 Veterans who only had evidence of opioid in the urine toxicology data, and 25 Veterans showing no evidence of either substance in their urine toxicology data), and reviewed their respective charts using national CAPRI. We then assessed the positive predictive value of the final algorithm against chart review.

RESULTS: Among a sample of 10,739,412 opioid urine screenings given in the VA, 7,986,231 tests were negative, 2,372,317 were positive, and 354,600 tests not given or canceled. We were unable to classify 26,264 tests (.24%). Among 4,027,551 cannabis urine drug screenings, 3,493,543 were negative, 455,315 were positive, 72,091 not given or canceled. We were unable to classify 6,602 cannabis tests (.16%). The unclassifiable tests were characterized by the result field containing incomprehensible text or the result field containing a numeric measurement with no accompanying units specified. The PPV of the algorithm against chart review was 1.00 among the classifiable tests.

CONCLUSIONS: We developed an approach to identify positive and negative urine drug screens. The algorithm can be used to assesses the health effects of cannabis use among long-term opioid users in the VA.

BACK SO SOON?

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BACKGROUND: Hospital readmissions are a commonly identified issue affecting many healthcare organizations in the US. As Jencks et al outlined in his study of Medicare beneficiaries between 2003 and 2004, almost 20% of patients are re-hospitalized within 30 days of discharge, and more than a third within 90 days. This carries major implications from healthcare cost to increased morbidity. As of the early 21st century, a combined staggering 59.3% of medical and surgical patients discharged from hospitals in the US either were readmitted or deceased at 12 months post-discharge. We attempt to identify patterns in 7-day readmissions within our institution, with hopes to be able to prevent them in the future.

METHODS: Patients who were discharged from the hospitalist service and readmitted to the hospital within 7 days were identified. The discharging hospitalist performed the first review on the reason for readmission with the help of a standardized form we created. They were asked to rate the readmission as preventable or not preventable. If preventable, they were then asked to classify the reason for readmission in broad categories. A two-physician reviewer process was used to reduce any bias. This involved a bi-monthly meeting of a group of interested hospitalists and residents, to perform a second review of the initial readmission forms. Deep dives were utilized in instances when there was a clear discrepancy between the initial and second review. The preventable cases were then classified into sub-categories in an attempt to identify patterns amenable to systems provisions with the goal of reducing preventable readmissions.

RESULTS: Of the 171 patient charts reviewed to date, 110 (64.33%) were unavoidable. Various causes were identified in the 61 (35.67%) readmissions that were avoidable, with non-adherence and social issues being the most commonly implicated (25%). Other causes included patients leaving against medical advice (AMA), premature discharges, substance dependence issues, and incomplete discharges or medical errors.

CONCLUSIONS: Hospitalists are interested and willing to examine their seven day readmissions for possible errors and learn from them. A well-validated system to identify early readmissions can aid in addressing implicated issues and reducing their prevalence. A multidisciplinary approach is necessary, and we aim to explore various measures in an attempt to reduce these readmissions. This includes systems-based interventions to control diagnostic and medication errors, patient education, early involvement of social work and case management, identifying and controlling factors leading to AMA, and employing discharge checklists that serve as reminders to reduce discharge errors.

BARRIERS TO BEDSIDE TEACHING AND GIVING FEEDBACK IDENTIFIED BY EARLY- CAREER ACADEMIC HOSPITALISTS

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BACKGROUND: Academic hospitalists have identified teaching learners as the most fulfilling aspect of their jobs. Components of effective clinical education include teaching at the bedside and giving feedback. To enhance and develop the teaching and professional developmental skills of early-career hospitalists, the Society of Hospital Medicine (SHM), the Society of General Internal Medicine (SGIM), and the Association of Chiefs and Leaders of General Internal Medicine (ACLGIM) created the Academic Hospitalist Academy (AHA), an annual conference of lectures and workshops. Our study aims to identify the barriers to teaching effectively at the bedside and providing feedback to learners as identified by academic hospitalists attending AHA.

METHODS: As part of AHA enrollment, all attendees are asked to complete an anonymized, voluntary survey prior to the start of the conference. The survey includes questions about participant demographics, barriers to teaching at the bedside, and barriers to providing feedback to learners. We collected the survey responses from all 11 years of the AHA (2009 to 2019) and coded and categorized the free-response answers.

RESULTS: The average age of AHA attendees was 34 years, and attendees have an average 3.2 years of hospitalist experience. Of the 812 hospitalists who completed the survey, 702 (86.4%) identified barriers to bedside teaching and 685 (84.4%) identified barriers to providing feedback. Lack of time was the most commonly reported barrier to bedside teaching, reported by 86.8% of hospitalists, and named as the leading barrier by the majority of hospitalists (53.7%). Lack of confidence in bedside teaching skills was also named as a barrier by a majority of hospitalists (74.6%). Barriers to providing feedback included a lack of confidence in individual skills, listed as a barrier by 80.2% of hospitalists, followed by difficulty giving negative feedback (43.9%) and lack of time (38.1%).

CONCLUSIONS: Time constraints and lack of confidence in individual skills are the most common barriers to bedside teaching and providing feedback reported by academic hospitalists. With these data, AHA and other groups engaged in hospitalist career development and clinical education can better tailor their training to the needs of academic hospitalists.

BASELINE KNOWLEDGE AND ATTITUDES ABOUT HPV VACCINES IN EAST AFRICAN IMMIGRANT MOTHERS AND THEIR ADOLESCENT CHILDREN

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BACKGROUND: HPV vaccine uptake is low among East African adolescents in the U.S. Providers, parents, and adolescents are stakeholders in vaccination, and there are social, cultural, and religious factors that influence vaccination decisions. This presentation will describe baseline demographics and HPV vaccine knowledge and attitudes of mothers and adolescents who participated in an educational intervention to promote HPV vaccination.

METHODS: We recruited East African mothers and their 14-17 year old adolescent children to participate in an educational intervention to promote HPV vaccination. The educational intervention was delivered via 10

dinners held in East African community centers in the Seattle metropolitan area; 8 with the Somali community and 2 with the Ethiopian community. Mothers were administered face-to-face interviews in their native language, and adolescents self-completed paper surveys. Surveys assessed demographics and baseline knowledge and attitudes about HPV vaccines. Survey measures included true/false statements to assess HPV- related knowledge and social norms. Self-efficacy (e.g., 'You have enough information to make a decision about vaccination') was measured with agree/disagree statements. Willingness to vaccinate was measured as yes/no/undecided. All questions included a 'not sure' response option.

RESULTS: 120 mothers participated in the dinners with 136 of their 14-17 year old adolescent children. Most (85%) mothers were Somali, and 58% were <40 years of age. Mothers' reported a median of 8 (interquartile range 1-12) years of formal education, and 61% reported a median annual household income <$25,000. Mothers' baseline knowledge of HPV and HPV vaccines was very low, with correct responses ranging from 3% to 38% of participants (not sure responses ranged from 61% to 90%). Pre-intervention, only 12% of mothers felt they had enough information to make a decision about HPV vaccination (76% were not sure) and only 9% of mothers felt they wanted their children to get the HPV vaccine (91% were undecided). Adolescents' baseline knowledge of HPV and HPV vaccines was higher, with correct responses ranging from 27% to 67%, and 38% of adolescents indicating willingness to get the HPV vaccine (23% were not willing, and 39% were not sure).

CONCLUSIONS: Baseline results confirm key knowledge gaps about HPV vaccines and low intention to vaccinate, particularly among mothers, with higher levels of knowledge in their adolescent children. This gap suggests there is room for improvement through an intervention. The majority of mothers responded "not sure" to many of the questions about HPV vaccination, suggesting that there are knowledge gaps that can be targeted, rather than just attitude-behavior gaps. Interventions that target low HPV vaccine awareness may increase HPV vaccine uptake in high priority communities.

BEDSIDE ROUNDS OBSERVATION: PATIENT-CENTEREDNESS OF COMMUNICATION

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BACKGROUND: Patient-centered communication is associated with improved patient understanding and adherence to therapy. At our hospital, 1 of 4 general medicine services utilizes a specific curriculum to teach patient-centered care (PCC) and communication. We did not provide scripting on how to conduct bedside rounds, but we hypothesized that communication would be more patient-centered on PCC team rounds than on standard teams.

METHODS: We designed an observation checklist of 8 behaviors for inpatient bedside rounds covering domains of etiquette-based behaviors, patient-centered communication, and shared decision-making. 3 items were designated Always Behaviors: knocking before entering, articulating the medical plan for the day, and asking if the patient had any questions.

RESULTS: Between August 2018 and May 2019 a trained observer completed 448 observations of bedside rounds. Always Behaviors were performed in 39.0% vs. 14.9% of encounters on PCC vs. standard teams ($p<0.001$). Performance of patient-centered behaviors are shown in the Table. Team census was not different between PCC and standard teams (mean 10.0 vs. 10.2 patients, $p=0.75$). Mean time spent discussing each patient was not different between groups (PCC 18.1 vs. standard 18.2 minutes, $p=0.73$). The subset of time spent at the bedside per patient was greater on the PCC team (8.5 vs. 7.1 minutes, $p<0.001$).

CONCLUSIONS: Performance of Always Behaviors during inpatient team rounds was more frequent on a team with a PCC curriculum than on standard teaching teams. However, the performance rate was lower than anticipated. Our checklist facilitates objective evaluation of PCC and could guide efforts to improve PCC during bedside rounds. Next steps will include sharing checklist performance with PCC team attendings and assessing the degree of correlation between patients' perspectives on communication and results of checklist observations.

BEHAVIORAL ECONOMICS INFORMED DECISION SUPPORT TO IMPROVE CHOOSING WISELY ADHERENCE WHEN ORDERING TESTS AND TREATMENTS FOR GERIATRIC PATIENTS: A PILOT STUDY

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BACKGROUND: Our objective was to pilot test the implementation and effect of three electronic health record (EHR) clinical decision support (CDS) tools to reduce (1) prostate specific antigen (PSA) screening in men aged ≥ 75 years old (2) ordering of urine studies for non-specific reasons in women ≥ 65 years old, and (3) failure to de-intensify diabetes treatment in older adults with a HbA1c of <7.0 (DM) treated with insulin or sufonylureas.

METHODS: This pilot study occurred January through July 2019 within an academic health system with an enterprise wide EHR (Epic). We enrolled consenting physicians from three primary care practices to receive CDS alerts when conditions within the patient's chart met triggering criteria. CDS alerts, pops-up that included language to increase the salience of potential harms, used social norms to remind clinicians that their peers were not routinely using the test/treatment for similar patients (PSA), and recommended that clinicians consider canceling the order (PSA and urine studies) or de-intensifying diabetes treatment (DM). It also informed clinicians that if they proceeded to sign the order they would be asked to enter a justification that would be included in the chart (PSA/urine studies). Data regarding CDS exposure and resulting actions taken by clinicians were extracted from the EHR. We performed manual chart review for all cases where DM CDS fired to determine if treatment was de-intensified. We compared performance data for participating and non-participating primary care physicians across the health system for the six months prior to the pilot and after completion of the pilot.

RESULTS: Pilot clinicians (n=14) were 79% female and had an average of 21 (standard deviation, 6) years in practice. Among the 73 patients for which the DM CDS was triggered 128 times, physicians reduced the intensity of diabetes treatment in 22 (30%). For urine studies, the test was not ordered at 60% of encounters where the CDS activated. The proportion of urine tests done for non-specific reasons fell to 6.7% (5/75) during the pilot from 13.0% (10/77) in the six months before the pilot among the test physicians, and the difference in differences in rates between test physicians and non-test physicians was -8.9%. PSA screening was low at baseline for test physicians. In 4 of 19 (21%) encounters with PSA CDS, the physician did not order the test.

CONCLUSIONS: In this pilot study, behavioral economics informed clinical decision support aimed at curbing several clinical practices identified in the Choosing Wisely guidance statement from the American Geriatrics Society affected clinician behavior. We are currently investigating the effect of these alerts in a larger randomized controlled trial.

BEST INTENTIONS: MEDICATION NON-DISPENSING AFTER HOSPITAL DISCHARGE

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BACKGROUND: There are over 36 million hospital admissions in the U.S. each year with a median of 4 medications prescribed to each patient discharged, contributing in part to the over 4 billion prescriptions dispensed annually in the United States. Non-dispensing of discharge medications is associated with hospital readmission and increased mortality. Factors such as patient age, changed or new medication, medication type, hospital duration, lack of teaching, and cost have been identified as playing significant roles in medication non-dispensing following discharge. We sought to determine how frequently medications were not dispensed after discharge at an urban academic medical center.

METHODS: All patients discharged from the teaching service at Montefiore Moses Medical Center over a one-month period were eligible. From these, a random number generator was used to select a sample of patients. For each patient, demographic characteristics and all newly prescribed medications were abstracted from the electronic medical record (EMR). Patients were excluded if they were not on the teaching service or if they were discharged to a facility. Medications were excluded if they were not newly prescribed. The primary outcome, dispensing of medication, was assessed by information in the EMR and by calling pharmacies. We examined the proportion of patients who filled all new prescriptions. Predictors of non- dispensing including patient gender, language, and weekend vs. weekday discharge were examined using chi- square tests.

RESULTS: Of 442 eligible patients, 305 were reviewed and 166 met criteria for inclusion. Of these patients, 52 (31.3%) had at least one medication not dispensed following discharge. Of the total 408 new medications prescribed, 104 (25.5%) were not dispensed. Analysis by medication type showed the two medications least likely to be completely dispensed were as follows: of 11 patients prescribed any insulin, 4 (36.3%) were not dispensed at least one of the insulin prescriptions and of 12 patients prescribed inhalers, 4 (33.0%) were not dispensed at least one of the inhalers. The two medications most likely to be completely dispensed were anticoagulants 14/14 (100%), followed by antihypertensives 26/28 (93%). Patient gender, language, and weekend vs. weekday discharge were not associated with non-dispensing.

CONCLUSIONS: We found 31% of patients had at least one newly prescribed medication not dispensed after discharge. The medications most likely to be dispensed were anticoagulants, while the least likely was insulin. It is unclear why anticoagulants were more reliably filled, but it may involve the severity of illness requiring anticoagulants and the way doctors communicate about these medications, which if true, could represent an intervention for improving dispensing. The medication most likely to be non-dispensed was insulin, which may have to do with relative difficulty of use. These data suggest insulin and inhalers may represent the best targets for intervention.

BEYOND PROXIMITY AND TOWARDS EQUITY: A MULTIDIMENSIONAL VIEW OF URBAN GREEN SPACE ACCESS

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BACKGROUND: Green spaces have been associated with increased physical activity and a wide range of improved health outcomes, including better mental health, decreased rates of low-weight births, lower blood pressure, decreased cardiovascular mortality, and lower all-cause mortality. However, disparities in access to green space limit these potential public health benefits. Current concepts of access are focused on physical proximity. In order to capture additional relevant factors that impact access, we created and evaluated a multidimensional tool to describe green space access across diverse communities.

METHODS: We conducted a cross-sectional study in two historically disinvested communities bordering a large urban park in Baltimore City, Maryland. We randomly selected 175 households in the two neighborhoods for an in-person survey conducted between April to September 2019. Our primary outcome was self-reported number of visits to the park over the last 30 days. Our main independent variables conceptualized park access based on Penchansky and Thomas' healthcare theory of access with its five domains: Availability, Accessibility, Accommodation, Affordability, and Acceptability. We ran negative binomial regression models to test whether measures of access were associated with park use, adjusting for a range of covariates (age, education, car-ownership, children in the household, and physical activity).

RESULTS: Among the 87 respondents (response rate 50%), the mean age was 49.0 years old, 72% were African American, and 32% reported children in the household. The median number of park visits over the prior 30 days was 2 (IQR 0-5). 30% of respondents had not visited the park over the prior 30 days. Frequency of park use over the prior 30 days had statistically significant associations with age, education, car- ownership, and presence of children in the household. Physical proximity (≤10-minute walking distance) was not associated with increased frequency of park use. Frequency of park use was associated with the perception that there were events in the park that individuals could participate in (adjusted Incidence Rate Ratio [IRR] 7.44 [95% CI 3.03, 18.3]) and feeling safe in the park during the day (adjusted IRR 7.35 [95% CI 2.60, 20.7]). Those who reported that living near the park was affordable reported fewer park visits (adjusted IRR 0.53 [95% CI 0.32, 0.86]).

CONCLUSIONS: In two historically disinvested urban communities, physical proximity was not associated with green space use. However, multiple dimensions of a broad conceptual theory of access were significantly associated with green space use. Our findings suggest the need to focus beyond physical proximity as policymakers and practitioners work to increase equity in access to green space and improve health.

BLOOD PRESSURE MEDICATION PATTERNS OF USE IN OHIO MEDICAID BENEFICIARIES WITH UNCONTROLLED HYPERTENSION

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BACKGROUND: Little is known regarding current-day blood pressure (BP) medication patterns of use by Medicaid patients within primary care

practices. Understanding BP medication patterns of use in primary care practices provides opportunities to improve BP control in this population.

METHODS: Using a unique data resource comprised of electronic health records (EHRs) from practices in an Ohio Department of Medicaid funded statewide hypertension quality improvement (QI) project linked with Medicaid pharmacy claims data, this study aimed to: 1) describe BP medication types, dosages and adherence in patients with uncontrolled BP; and 2) determine changes in filled BP medications after an uncontrolled BP visit. We included 3,828 individuals on Medicaid with a diagnosis of hypertension and at least one visit at one of 8 practice sites participating in a statewide hypertension QI project with linked claims data between 01/2017 through 12/2018. Visit dates and BP measurements were obtained from EHR data, while data on patient demographics and BP medications were retrieved from Medicaid enrollment and claims data. Medication intensification was defined as the addition of a new BP medication to the existing regimen, and/or an increase in the dosage. Medication adherence was defined as medication possession ratio of ≥80%.

RESULTS: In the overall sample, mean age was 50 years (SD 10); 57% were women; 40% were non- Hispanic white; 58% were non-Hispanic black; and 19% had diabetes. Half (50%) had good medication adherence (MPR>80%). Of the 1,549 (40%) patients with uncontrolled BP and linked claims data, the top 4 BP medication classes used were calcium channel blockers (54%), thiazide and thiazide-like diuretics (44%), angiotensin converting enzyme inhibitors (43%), and beta blockers (28%). Only 10% were on chlorthalidone and 6% were on spironolactone. Of those with uncontrolled BP, 24% were on hydrochlorothiazide 12.5 mg, 36% were on hydrochlorothiazide 25 mg, and 30% were on amlodipine 5 mg (all lower than optimal dosing) indicating an opportunity for medication intensification. For those with good medication adherence (MPR>80%) and on only 2 BP medications (N=451), only 47% had BP medication intensified within one month of a visit with uncontrolled BP; 42% had no BP medication change; 8% were de-escalated/stopped therapy; and 3% switched therapy. In the less adherent subgroup (MPR<80%), 53% had medication intensified, 26% had no change, 19% de-escalated/stopped therapy, and 2% switched therapy within one month.

CONCLUSIONS: Among patients with poorly controlled BP, medication adherence and medication intensification (two key drivers of BP control) remain suboptimal. These data also identify opportunities for greater use of higher doses of diuretics and calcium channel blockers. Increased efforts to implement existing hypertension best practices which include providing feedback to sites on medication patterns of use are needed to achieve better BP control among Medicaid populations in primary care.

BREMELANOTIDE TREATMENT PROVIDED CLINICALLY MEANINGFUL BENEFITS IN PREMENOPAUSAL WOMEN WITH HYPOACTIVE SEXUAL DESIRE DISORDER

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BACKGROUND: Hypoactive sexual desire disorder (HSDD) is the most common sexual dysfunction in women, and is characterized by an absence or deficiency of sexual desire accompanied by distress. Bremelanotide, a melanocortin receptor agonist, is approved for the treatment of acquired, generalized HSDD in premenopausal women. The RECONNECT studies (Studies 301 and 302), which comprised two identically designed, double-blind, randomized, placebo-controlled studies, demonstrated that subcutaneous self-administration of bremelanotide, as needed, significantly improved sexual desire and decreased related personal distress in premenopausal women with HSDD. The objective of this study is to determine whether bremelanotide treatment provided clinically meaningful benefits.

METHODS: The co-primary endpoints were change from baseline to end-of-study (EOS) for Female Sexual Function Index–desire domain (FSFI-D) and Female Sexual Distress Scale–Desire/Arousal/Orgasm (FSDS- DAO) Item 13 scores. Clinically meaningful significance was evaluated using General Assessment Questionnaire Question 3 (GAQ Q3), which evaluated patients' perceived benefit of the drug ("Compared to the start of the study [prior to taking the study drug], to what degree do you think you benefitted from taking the study drug?"). GAQ Q3 scores ranged from 1 (very much worse) to 7 (very much better); responders were defined as score ≥5. Additionally, a cumulative distribution analysis was performed to determine the percentage of patients whose changes in the co-primary endpoints from baseline to EOS achieved predefined clinically meaningful thresholds (FSFI-D ≥0.6, FSDS-DAO Item 13 ≤-1). Finally, a receiver operating characteristics (ROC) analysis was performed to determine how predictive the co-primary endpoints were of patient perceived benefit by measuring the area under the time-concentration curve (AUC), with AUC >0.5 indicating discrimination between a nonresponder and a responder.

RESULTS: Responses to GAQ Q3 demonstrated clinically meaningful and statistically significant (P<0.0001) differences between the treatment groups in each study, with 58.3% and 58.2% responder rates for bremelanotide and 36.1% and 35.4% for placebo in Studies 301 and 302, respectively. The cumulative distribution for the co-primary endpoints showed highly statistically significant differences (FSFI-D: P<0.0001; FSDS-DAO Item 13: P=0.0002) for both studies. Good discrimination was computed for the co- primary endpoints, with AUCs of 0.715 and 0.714 for FSFI-D and 0.666 and 0.651 for FSDS-DAO Item 13 in Studies 301 and 302, respectively.

CONCLUSIONS: An independently predefined threshold for dynamic anchor assessment of GAQ Q3, as well as cumulative distribution analysis, ROC analysis, and prespecified responder rates for the co-primary endpoints on desire and distress all confirmed clinically meaningful and statistically significant differences between bremelanotide and placebo in both studies.

BUNDLED PAYMENTS FOR MEDICAL CONDITIONS DEMONSTRATE SAVINGS AT 3 YEARS AFTER ACCOUNTING FOR EPISODE PRECEDENCE

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BACKGROUND: Published studies of medical bundles have not found evidence of savings. Defining medical episodes is methodologically complex because patients experience frequent hospitalizations, and programs

include "episode precedence" rules to determine how overlapping episodes are assigned to hospitals. Both the Bundled Payments for Care Improvement (BPCI) program and its ongoing successor, BPCI-Advanced, use precedence rules. Yet the impact of these rules on measured performance is unknown. We compared hospital performance for four high-volume medical bundles using two precedence methodologies.

METHODS: We performed a difference-in-differences analysis of episodes in Medicare claims 2011–2016 for congestive heart failure, pneumonia, acute myocardial infarction, and chronic obstructive pulmonary disorder. In prior work, episodes were constructed with BPCI precedence, preferentially assigning overlapping episodes in the performance period to BPCI hospitals. We reconstructed episodes using a "naturally occurring" method that always assigned episodes to the earlier hospitalization. BPCI hospitals were compared with matched non-BPCI hospitals using identical propensity-score matching and statistical models. The primary outcome was standardized total episode spending. Secondary outcomes included spending by category, readmission rates, and mortality. Generalized linear models clustered at the hospital level were adjusted for patient characteristics, time-varying market characteristics, and hospital and quarter fixed effects.

RESULTS: In original results with precedence, BPCI participation was not associated with a change in total spending. Skilled nursing facility (SNF) spending decreased (-5.6%, 95% CI -9.4% to -1.6%, p=0.01), and home health (HHA) spending increased (+5.2%, 95% CI 2.3% to 8.3%, p<0.001). BPCI participation was also associated with increases in readmissions spending (+3.6%, 95% CI 0.9% to 6.3%, p=0.01) and the 90- day readmission rate (+1.4 pp, 95% CI 0.9 pp to 2.0 pp, p<0.001). In contrast, with "naturally occurring" episodes, BPCI participation was associated with a *decrease* in total spending (-1.2%, 95% CI -2.3% to -0.2%, p=0.02). SNF spending still decreased (-6.3%, 95% CI -10.0% to -2.5%, p=0.001), while HHA spending increased (+4.4%, 95% CI 1.4% to 7.5%, p=0.004). However, readmissions spending and the readmission rate no longer increased.

CONCLUSIONS: BPCI participation in 4 common medical conditions was associated with savings at 3 years after removing apparent bias against participants from precedence. A spurious finding of increased readmissions was corrected by removing precedence. Medical bundles may lead to practice changes that reduce Medicare spending and reduce institutional post-acute care without unintended effects on quality. Policymakers should recognize the impact of methodological issues in program design such as episode precedence, which can lead to bias in measured performance.

BURDEN OF ACUTE ISCHEMIC STROKE AFTER PERCUTANEOUS CORONARY INTERVENTION IN THE ELDERLY: AN ANALYSIS OF THE NATION INPATIENT SAMPLE

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BACKGROUND: Ischemic stroke is an uncommon complication after per-cutaneous coronary intervention (PCI). Data on the outcomes of post-PCI ischemic stroke complicating acute myocardial infarction (AMI) in elderly patients is limited.

METHODS: We used the National Inpatient Sample from 2010 to 2014 to identify elderly patients (age≥65 years) with AMI (ICD code 410.xx) who underwent PCI. In this retrospective cohort, we compared in- hospital outcomes of patients with and those without post-PCI ischemic stroke. The effect of post-PCI ischemic stroke on in-hospital mortality, length of stay and cost of hospitalization was assessed using multivariate logistic and linear regression models.

RESULTS: A total of 545,187 elderly patients with AMI underwent PCI. Overall prevalence of post- PCI ischemic stroke was 0.6% (Mean age (SD) 75.6± 7.2 years, 50.6% women, 69.9% Caucasian) and increased with advancing age (0.6% in age 65-74 years, 0.7% in age 75-84 years and 0.9% in ≥85 years; p <0.001). In hospital mortality (overall 33% vs. 4.8%; aOR = 6.06, 95% CI = 5.43-6.77; 26.3% vs. 3.3% in age 65-74 years, 35.3% vs. 5.4% in age 75-84 years and 48.5% vs. 10.4% in ≥85 years; p <0.001), length of stay (Median 6 vs. 3 days; aOR =1.69,95% CI= 1.64 -1.71; p<0.001) and cost of hospitalization ($105,880 vs. $67,314; aOR = 1.35, 95% CI =1.32 -1.37;p<0.001) in post-PCI ischemic stroke group were significantly higher.

CONCLUSIONS: In our study, the prevalence of post-PCI ischemic stroke among elderly patients increased with advancing age and was independently associated with higher fatality, longer hospitalization and increased costs. Our study highlights the poor prognosis associated with stroke after PCI, thereby allowing physicians to counsel patients and families around outcomes if such an event were to occur.

BURDEN OF PRESCRIPTION MEDICATION USE AMONG THE ELDERLY WITH TYPE 2 DIABETES IN THE US

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BACKGROUND: Type 2 Diabetes (T2D) affects 1 in 4 US adults aged ≥65 years. In addition to diabetes complications, these patients often have high prevalence of chronic comorbiditiesand therefore are at risk of harm from polypharmacy. To understand the burden of polypharmacy in this vulnerable population, we examined trends in prescription drug use.

METHODS: This is a retrospective analysis of 2001-2016 National Health and Nutrition Examination Survey. We included people aged ≥65 years who had ever been told they had diabetes, had an HbA1C >6.4%, or fasting plasma glucose >125 mg/dL. Trends were estimated for the mean number of prescription drugs per patient and prevalence of reported use of ≥5 drugs, ≥10 drugs, and any of 13 different drug classes. We also examined change in patient characteristics and burden of comorbidities. Trends were examined across 3 periods (2001-2006, 2007-2012, 2013-2016) using logistic or linear regression. Finally, we compared prescription drug use between patients with vs. without diabetes and those taking insulin vs not aggregately for 2001-2016. We used Stata 14.2 and accounted for survey weights.

RESULTS: The final sample included 11,159 patients, 3,178 of whom had T2D. Across the 3 study periods, mean age slightly decreased while mean BMI and the percentage of male, non-White, with high-school or higher education, and no insurance increased. Number of comorbidities also increased, driven by hypercholesterolemia and obesity; cardiovascular disease decreased. The average number of drugs per patient increased from 5.6 in 2001-2006 to 6.4 in 2013-2016 (Table). Compared to the elderly without diabetes, those with T2D had more comorbidities (5.4 vs 3.5), used more drugs (6.2 vs 4), had two and three times more the prevalence of using ≥5 drugs (65% vs 35%) and ≥10 drugs (14% vs 4%). Patients taking insulin had the most comorbidities (6.0), took the most drugs (8.1), and were most likely to use ≥5 drugs (85%) or ≥10 drugs (28%).

CONCLUSIONS: Over 15 years, use of prescription drugs has increased significantly in the elderly with T2D. Patients with T2D, especially those who use insulin, are a particularly vulnerable group with a high burden of co-morbidities and likely to experience polypharmacy. Future work should explore opportunities to decrease polypharmacy in this group.

BURNOUT AMONG VA PROVIDERS EXPERIENCING CHALLENGES IN MANAGEMENT OF VA AND NON-VA CARE

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BACKGROUND: Care management is a key component of managing complex patients in the patient centered medical home model of primary care. However, care management can overburden already busy providers with additional administrative tasks, contributing to provider burnout. Congress recently increased the scope of care management in VA primary care with the introduction of non-VA Community Care through the Choice and MISSION Act(s). VA primary care providers (PCPs) must now manage care in the VA, and coordinate externally with non-VA Community Care providers.

Internally, VA PCPs are burdened with tasks like receiving patient messages on a timely basis, helping patients when they can't reach VA specialists, or assessing whether face-to-face appointments are needed (vs. care by telephone call or e-mail). External care management requires that VA PCPs must assist patients unable to schedule routine tests with Community Care providers or manage prescriptions from non-VA providers, particularly for pain management (e.g., opioids). To understand the role of these changes in care management, we analyzed challenges with internal and external care management and their relationships with VA provider burnout.

METHODS: Population: 1547 PCPs in 540 VA facilities nationwide responded to our survey (14% response rate).

Our cross-sectional survey contained 9 questions about challenges with care management (response range: 0-4, not at all challenging to extremely challenging), and through factor analysis, we created two indices of care management challenges: one internal (k=4, range 0-4, Cronbach's alpha 0.76) and external (k=5, range 0-4, Cronbach's alpha 0.84). On average, respondents found both internal (mean [M] 2.27, standard deviation [SD] 0.97) and external (M 2.41, SD 1.02) care management at least somewhat challenging.

We assess whether care management challenges were associated with two measures of provider burnout (any burnout vs. none; burnout a few times a week or more vs. a few times a month or less), adjusted for provider gender, age, race, ethnicity, VA tenure, PACT tenure, and supervisor status. Models were also adjusted for survey nonresponse.

RESULTS: Fifty-one percent of our sample reported some level of burnout overall, and 47% reported feeling burned out at least once a week. PCPs were more likely to be burned out overall if they reported more than average challenges with internal (odds ratio [OR] 1.86, linearized standard error [SE] 0.16) or external (OR 1.21, SE 0.09) care management. PCPs who reported more than average internal (OR 1.91, SE 0.15) or external (OR 1.09, SE 0.09) care management challenges were also more likely to be burned out at least once a week.

CONCLUSIONS: VA primary care providers who reported greater than average internal or external care management challenges were more likely to be burned out. Burnout among VA PCPs is linked to internal and external care management challenges. Improving internal and external care management could help improve provider experience.

CANCER-RELATED THEMES PRESENTED AT SGIM: ARE WE KEEPING UP WITH POPULATION TRENDS AND RESEARCH INNOVATION?

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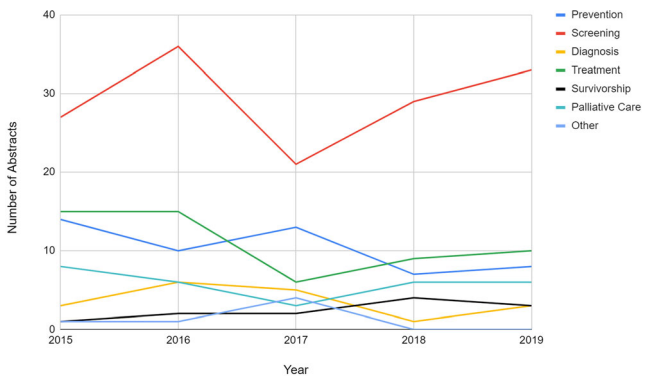
BACKGROUND: In 2019, an estimated 1.7 million new cancer diagnoses occurred in the U.S. The population of cancer survivors grew to 16.9 million and will rise to 22.1 million by 2030. Primary care physicians (PCPs) care for patients across the cancer continuum and must have core competencies to attend to the needs of this growing population. National conferences are an important venue for medical education and dissemination of innovative research findings. We assessed the trends in cancer-related abstracts presented at SGIM annual meetings.

METHODS: All abstracts from the 2015-2019 annual SGIM conferences (n=3437) were reviewed for content areas across the cancer continuum: prevention, screening, diagnosis, treatment, survivorship and palliative/end of life care (P/EOL). A one-tailed unpaired t-test compared abstracts addressing primary/secondary prevention (prevention and diagnosis) to tertiary prevention (all others) per year.

RESULTS: We found n=304 (8.8% of total) abstracts related to cancer presented. Prevention, screening, diagnosis, treatment, survivorship and P/EOL were addressed in 52 (17.1%), 146 (48.0%), 18 (5.9%), 55 (18.0%), 12 (4.0%) and 29 (9.5%), respectively. Some addressed multiple categories, and 6 were classified as "other". (Figure 1). Per year, significantly more abstracts addressed primary and secondary (mean=39.60, SD=4.72) than tertiary prevention (mean=22.80, SD=5.26), $t(8)=5.31$, $p<0.001$. Breast (mean =18.2, SD=4.66), colon (mean=12.8, SD=3.11) and lung (mean=8.2, SD=2.29) cancers were most commonly presented.

CONCLUSIONS: Cancer-related topics accounted for 8.8% of the research presented at the 2015-2019 SGIM annual meetings, with main focus on primary and secondary prevention. With the cancer survivorship population growing and reaching levels comparable to common chronic diseases, PCPs must be adequately prepared to care for patients across the cancer continuum. Content presented at national meetings should reflect the population trends, raise awareness of core competencies and promote innovative research.



CANNABIS AND HIGH DOSE PRESCRIPTION OPIOID USE AMONG ADULTS WITH SICKLE CELL DISEASE

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BACKGROUND: Opioids have been the mainstay of treatment for sickle cell disease (SCD) pain since the 1960s. Up to 40% of patients with chronic SCD pain take daily opioid analgesics, often at high doses that increase the risk of opioid use disorder or overdose. We previously found that among adults with SCD engaged in outpatient care, self-reported cannabis use was common and positively associated with being prescribed opioids. Using a more rigorous method, this study aims to investigate the relationship between cannabis use and high dose opioid prescription in a sample of adults with SCD, and our hypothesis is that patients who test positive for tetrahydrocannabinol (THC) are less likely to be on high dose chronic opioid therapy (COT), driven by cannabis' potential analgesic effect.

METHODS: Using electronic medical record data from large urban medical center, we identified patients aged 18 and older who had a visit to the outpatient SCD clinic, an emergency department (ED), or an inpatient encounter for SCD, based on ICD-10-CM codes, between July 1, 2018 and June 30, 2019. Sociodemographic and clinical data were extracted, including age, gender, race, ethnicity, SCD genotype, presence of avascular necrosis, urine toxicology tests for THC, and opioid prescriptions. COT was defined by 3 or more prescriptions within 6 months, and considered to be "high dose" if the morphine milligram equivalent per day was 90 or greater. We first determined whether the sociodemographic and clinical factors were associated with high dose COT with $p<0.25$ on univariate analyses, then using the associated sociodemographic and clinical factors as covariates, we conducted a multivariate logistic regression model to determine the relationship between urine toxicology test positive for THC and high dose COT.

RESULTS: Among 1,054 patients meeting inclusion criteria, there were 2894 outpatient SCD clinic visits (2.7±5.7 per patient), 2684 ED encounters (2.5±10.2 per patient), and 1153 inpatient encounters (1.1±2.1 per patient). Among 145 patients who were prescribed COT from the health system, 64 (44%) were prescribed high dose opioids, and 94 (65%) had at least one urine toxicology test; among these, 33 (35%) were positive for THC. In univariate analyses, the following variables were associated with high dose COT: older age (p=0.07), female gender (p=0.08), Hispanic race (p=0.007), SCD genotype (p=0.07), ≥4 ED visits (p=0.09), ≥4 hospitalizations (p=0.15) and no SCD clinic visit (p=0.05). In a multivariate analysis controlling for these factors, urine toxicology test positive for THC was not associated with high dose COT (AOR=0.35, 95% CI: 0.12-1.06, p=0.06).

CONCLUSIONS: In this cohort of adults with SCD, having a urine toxicology test positive for THC was not associated with being prescribed high dose COT, though sample size was limited. These findings highlight the need for further research to understand potential therapeutic benefit of cannabis and its relationship with opioid use in adults with SCD.

CAN REGIONALIZATION OF CARE REDUCE SOCIOECONOMIC DISPARITIES IN BREAST CANCER SURVIVAL?

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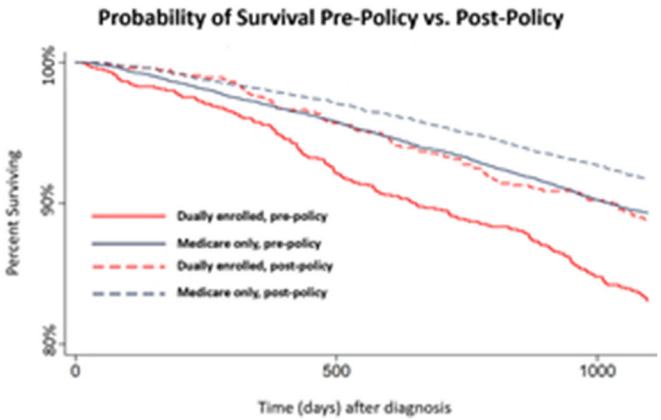
BACKGROUND: Breast cancer patients of low socioeconomic status (SES) have worse 5-year survival than more affluent women and are more likely to undergo surgery in low-volume facilities. Since breast cancer patients treated in high-volume facilities have better survival, regionalizing care of low SES patients toward high-volume facilities may reduce SES disparities in survival. Under a policy enacted in 2009 by New York state (NY), NY Medicaid does not pay for initial breast cancer surgery in low-volume facilities. Our objective was to determine if NY's policy reduced SES disparities in survival among breast cancer survivors diagnosed in 2006-2008 vs. 2014-2015.

METHODS: We contrasted 3-year all-cause mortality, the primary study outcome, for two cohorts: patients enrolled in Medicare and Medicaid (dual enrollment, indicates low SES) and patients enrolled only in Medicare (unaffected by the policy). Difference-in-differences methods estimated the impact of NY's policy on survival of dually enrolled beneficiaries. The models controlled for age at diagnosis, race, comorbidities, and temporal trends.

RESULTS: Unadjusted survival curves (Figure 1) and multivariate estimates both demonstrated improvement in survival over time among both low and higher SES groups, although the higher SES group had better survival at both time periods ($p<0.001$ for both SES group and time period). The disparity between low and high SES declined over time. The difference-in-difference interaction term yielded a coefficient of -0.13 (95% CI -0.30, 0.03) with p=0.12.

CONCLUSIONS: NY's policy was associated with a trend toward a reduction in SES disparities in breast cancer survival at 3-years after diagnosis. Although p=0.12, literature suggests that a 95% confidence limit may be too restrictive for interpretation of such social experiments. Given this, we interpret these data as suggestive of a beneficial effect of the regionalization policy for reducing disparities in breast cancer survival. This finding provides evidence to support additional exploration of regionalization policies on disparities.



CAN RESEARCH ASSISTANTS CLASSIFY MEDICATION DISCREPANCIES AS ACCURATELY AS PHARMACISTS?

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BACKGROUND: Medication discrepancies are associated with adverse drug events, emergency department visits, and hospitalizations. A validated taxonomy, MedTax, is comprised of 12 primary and 28 secondary classifications for medication discrepancies. MedTax was designed for use by a pharmacist; however, in the context of clinical research, pharmacists' time is limited. Therefore, we sought to determine whether research assistants (RAs) could classify discrepancies using MedTax as accurately as a pharmacist.

METHODS: We evaluated medication discrepancies assessed 30 days post-hospital discharge at one Veterans Affairs Medical Center. We modified MedTax to include the eight most expected types of discrepancies: omission; commission; duplication; discrepancy in strength, frequency, number of units or total daily dosage; discrepancy in dosage form or route of administration; computer system expiration; other; and no discrepancy. Next, we trained a pharmacist (PharmD) and two RAs (each with a master's degree) to use the modified MedTax. Under the supervision of two physicians, six training sessions were performed using 79 discrepancies identified from a clinical trial. In the first session, the pharmacist and RAs collaboratively classified 25 discrepancies. In the subsequent five rounds, the pharmacist and RAs independently classified the remaining discrepancies, continuing until the raters reached >90% agreement.

Finally, to assess agreement among coders, 945 discrepancies were independently classified and comprise the sample for this analysis. The pharmacist reviewed all discrepancies while the RAs divided them evenly for independent review. Our primary analysis compared the pharmacist's classifications to the combined effort of the RAs, and our secondary analyses compared the pharmacist's classifications to each individual RA. Krippendorff's alpha was used to assess concordance between all three coders, while Cohen's kappa coefficient was used to assess concordance between each pharmacist-RA pair.

RESULTS: In our primary analysis, RAs classified discrepancies with comparable accuracy as a pharmacist (Krippendorff's α=0.81, 95% confidence interval [CI] 0.78-0.84). Secondary analyses revealed similar findings, with each individual RA performing at a comparable level as the pharmacist (RA-1: Cohen's κ=0.85, 95% CI 0.77-0.92; RA-2: Cohen's κ=0.79, 95% CI 0.73-0.85).

CONCLUSIONS: Individuals without medical training were able to be trained to use the modified MedTax taxonomy to classify medication discrepancies as well as a pharmacist. Implementing standardized taxonomies into research and clinical practice enables comparison of findings across studies and settings. By demonstrating that individuals without a clinical education were capable of being trained to accurately apply the modified MedTax taxonomy, our results support the use of such individuals for classifications tasks, potentially saving costs and time-based resources in future research studies.

CAPTURING IMPACT ON EMPLOYEE EXPERIENCE THROUGH NETWORK ANALYSIS OF THE VHA INNOVATORS NETWORK

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BACKGROUND: The Veterans Health Administration Innovators Network (iNET) trains diverse frontline employees in developing health care delivery innovations, with the twin goals of improved employee experience alongside improved care quality. Prior interviews found iNET was highly valued "as a network." To investigate characteristics of the network created and sustained through iNET participation, our evaluation team used network analysis to: 1) quantify connections, known as "edges," in network analysis, created through national and local iNET activities; 2) identify patterns of network growth and engagement associated with participant characteristics (network group, professional role, location); and 3) explore which edges were sustained and why.

METHODS: Initial (T1) data collection used checklists to identify connections created during a national in- person training. At 5 months (T2) and 9 months (T3), tailored emails asked follow-up questions about which connections were sustained through further contact, whether new connections had been created through iNET-related work, and which connections had been most useful and why. We used Gephi network visualization and analysis software to examine density of sustained connections from T1 to T3, density within iNET participant groups, and patterns across roles (MD, non-MD clinical, administrative) and geographic locations. Participants groups were Innovation Specialists (new or established iNET site leads), Innovation Project Investees (leaders of funded innovation projects, most of whom were new to iNET at T1), Finalists (innovation leads from non-iNET VA facilities), and iNET staff/consultants.

RESULTS: 94 iNET participants from 38 VA facilities nationally provided data at T1; T2 response rate was 73% (n=69) and T3 rate was 63% (n=60). Over 9 months in 2019, the network grew from interactions among 162 to 247 individuals, with 44% of T1 edges sustained at T3 (see Image). Edges sustained from T1 (n=524) outnumbered all subsequent edges created (n=126). Edges between investees were infrequently sustained (89/383, or 23%); edges between Innovation Specialists were sustained at a higher rate (137/167, or 82%). Edge creation across roles and locations was common. Innovation specialists were highly valued for instrumental and motivational support; edges resulting from common innovation project interests were also highly valued.

CONCLUSIONS: Network analysis identified overall network growth, frequent edge sustainment, and growth across professional and regional boundaries. The visualization capacity of network analysis aided discussion and actionable feedback to program partners. Network patterns and qualitative data suggest Innovation Specialists provided ongoing support for investees and each other. Connections among investees were less likely to be sustained, with unclear implications. Innovation training programs like iNET may effectively dismantle silos and address other barriers to employee engagement and innovation within healthcare.

CAPTURING THE REST: INPATIENT INTERVENTION STUDIES FOR NON-ADHERENT HOSPITALIZED WOMEN TO IMPROVE BREAST CANCER SCREENING ADHERENCE

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BACKGROUND: More than a third of hospitalized women are overdue for breast cancer screening and at high risk for developing breast cancer. We evaluated the feasibility of two separate interventions for non- adherent hospitalized women to improve their adherence to breast cancer screening recommendation. First intervention consisted of inpatient breast cancer screening education, scheduling an outpatient mammography prior to hospital discharge, a reminder phone call and a small monetary incentive for screening test. The second intervention consisted of inpatient breast cancer screening education and offering inpatient screening mammography.

METHODS: For both intervention studies women aged 50-75 years who were hospitalized to a general medicine service and were non-adherent to breast cancer screening were approached for enrollment. Socio- demographic, reproductive history, family history for breast cancer, and medical comorbidities data was collected for all patients. Chi square and unpaired t-tests were utilized to compare characteristics among women who did and did not get screening.

RESULTS: First intervention was conducted among 30 hospitalized women who were non-adherent to breast cancer screening at Johns Hopkins Bayview Medical Center, the mean age for study population was 57. 8 years, mean 5-year Gail risk score was 1. 68, and 57% of women were African American. Only one third of the enrolled women (n=10) went to their pre-arranged appointments for screening mammography. Not feeling well enough after the hospitalization and not having insurance were reported as main reasons for missing the appointments. Second intervention was conducted among 101 hospitalized women non-adherent to breast cancer screening at Howard County General Hospital, the mean age for this study population was 59. 2 years, mean 5-year Gail risk score was 1.63, and 29% of women were African American. More than two-third of the enrolled women (n=79) under went in-patient screening mammography. All women who underwent screening mammography during inpatient stay were extremely satisfied. Neither the ordering hospitalists nor the nurses taking care of these women reported any concerns or misgiving. Convenience of having a screening mammography while in-patient stay was reported to be a facilitator of completing the screening test.

CONCLUSIONS: Although both interventions were successful in improving awareness and adherence to breast cancer screening, inpatient mammography intervention had much higher impact on breast cancer screening adherence. Because hospitalization creates the scenario wherein patients are in close proximity to healthcare resources, at the same time that they are reflecting upon their health status, strategies could be employed to counsel, educate, and motivate these patients towards health maintenance. Future studies need to evaluate the inpatient feasibility of other common cancer-screening tests to overcome the significant barriers to compliance with cancer screening for hospitalized population.

CARDIOVASCULAR DISEASE GUIDELINES AND THE ART OF MEDICINE: COMPARING GUIDELINES AND PRIMARY CARE PROVIDERS' APPROACH TO CVD TREATMENT

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BACKGROUND: Clinical practice guidelines have been accused of emphasizing strong dichotomies such as treatment thresholds and being insufficiently attentive to patient values and context. To understand potential misalignment between published guidelines and the information providers need to provide patient care, we performed a qualitative analysis of interviews with primary care providers about their practice and guidelines for prevention of cardiovascular disease (CVD).

METHODS: This was a qualitative study comparing 9 CVD prevention guidelines with primary care providers' approach to CVD treatment, as described in 30 to 60-minute semi-structured interviews in which they formulated treatment plans for four patient scenarios. Interviews were conducted in person and by phone. Using a content analysis approach, we developed coding categories encompassing pharmacologic and nonpharmacologic factors based on clinical experience and inductively from the interview data. We applied these codes to the interview transcripts and to the text in the CVD treatment guidelines from the American Heart Association, the US Preventive Services Task Force, and the National Institutes of Health, then compared findings across the two types of data sources.

RESULTS: Guidelines consistently provide detailed instructions for *pharmacologic* treatment decisions. In interviews, providers cited and attempted to follow these guidelines with relatively little variation. In contrast, providers showed much greater variation in the degree to which they focused on *nonpharmacologic* factors, and in their methods of addressing them. Further, for nonpharmacologic factors, there was a notable divergence between providers' accounts of treatment decision-making and the guidelines. Providers regularly demonstrated that these aspects of care – patient lifestyle and behavior, shared decision-making (SDM), social determinants of health (SDOH), medication adherence, and team-based care – were as critical to treatment decisions as pharmacologic options. Though guidelines do urge *assessment* of these nonpharmacologic factors, they are dramatically less emphasized and often lack *actionable strategies* to address them, such as details on how to perform SDM or how to access resources to improve lifestyle behavior for individual patients. Providers expressed clear barriers to addressing nonpharmacologic factors, including: insufficient time; that SDOHs may be unactionable (e.g., solving a patient's lack of access to fresh food); and the difficulty of performing true shared decision-making and of improving adherence. Guidelines rarely guided providers in how to overcome these barriers.

CONCLUSIONS: Providers approached CVD treatment at a greater level of nuance and with different priorities than are captured by guidelines. Guidelines, performance measures, and other tools that guide clinical care must recognize the breadth of factors in clinical decision-making and provide better support to providers for addressing them.

CBD OR CBT: WHAT TYPES OF TREATMENT DO PAIN MANAGEMENT SPECIALISTS PROVIDE?

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BACKGROUND: An estimated 50 million Americans experience chronic pain. To minimize risks associated with opioid treatment for chronic pain, governmental agencies recommend a multimodal approach, combining medications, restorative therapies, procedures (e.g. joint injections) and behavioral therapy with "timely, early consultation with pain specialists" for complex pain. This study sought to quantify access to pain clinics and the services they offer.

METHODS: The study used "secret shopper" audit methodology during July 2019-September 2019.3 The pain clinics were sampled from IQVIA OneKey, a frequently updated healthcare database listing over 9.6 million practitioners, and were drawn from 9 states. Research Assistants (RAs) called clinics posing as a patient on long-term opioid therapy (LTOT)

seeking care. RAs asked about clinic size, providers available, treatments offered, insurances accepted, referral requirements, wait time for a new patient appointment, and providers' willingness to prescribe opioids, assist with opioid tapering, and/or use buprenorphine to manage pain. Descriptive analysis was performed to summarize findings.

RESULTS: Of these 366 clinics in the sample, 48.1% were unwilling to accept patients with Medicaid. Additionally, 54.9% required a referral before accepting patients, and another 23.2% reported that referral requirements varied by insurance. The median wait time for a new appointment was 9 [IQR 4-17] days. Nearly all clinics (97.0%) performed interventional procedures and 77.3% managed pain medications; over a third (36.3%) offered only one or both of these services. Physical therapy was offered by 38.3%. A quarter (25.1%) offered cannabidiol (CBD) products in the 8 states where they were legal (n=355). Opioid tapering was offered at 246 clinics (67.2%); 105 (42.7%) of those reported having a buprenorphine provider on staff. Only 12.8% offered behavioral therapy. Multimodal treatment combining procedures, medication management, and behavioral therapy was rare (10.4%).

CONCLUSIONS: This study indicates many gaps in access to care at pain clinics, especially to multimodal care. Almost half of pain clinics did not accept Medicaid, and many required primary care physician (PCP) referrals, which may be difficult for patients on LTOT to obtain. Few pain clinics offered behavioral therapy, which can address factors such as pain catastrophizing that are commonly associated with pain-related disability. Interestingly, more clinics offered CBD products than behavioral therapy, despite evidence for CBD being less robust than that for behavioral therapy. The focus on procedural pain relief may be particularly limiting in patients who have chronic pain with co-morbid substance use disorders. Thus, while timely multimodal specialty care may be the ideal pain treatment model, it is currently unavailable to most patients.

CHALLENGES AND BARRIERS IN MODERN DAY CARE COORDINATION

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BACKGROUND: The care of hospitalized patients have become increasingly complex. Inpatient care coordinators (CC) play an integral role in helping care teams with this transition of care and provide valuable guidance and support for patients as they navigate the transition from the hospital to home or other care setting. Additionally, they establish a reliable link between hospitalists and primary care physicians. Hospitals face pressure to perform well on outcomes such as length of stay, patient flow, and readmissions which places additional pressures on CC roles and responsibilities.

We conducted a survey to determine the role and function of inpatient CC, highlight some of the challenges and barriers faced by hospital based CC, and outline potential ways in which care teams can assist CC.

METHODS: Design/setting: Survey based study of inpatient CC across academic, private, and VA Medical Centers. Subjects: Hospital based CC, social workers, and case managers.

A survey monkey link with a ten-question survey was emailed to 156 inpatient CC from five teaching hospitals. Survey questions were developed and analyzed by the study investigators. 85 subjects completed the survey between October and December 2019 with a response rate of 54.4%. Majority of the questions were closed ended with one open comment question.

RESULTS: Most CC described their responsibilities as arranging home health services and equipment, follow up appointments and transportation. 60% of the survey participants develop patient care plans based upon the physician management plans. CC identified contacting family members and obtaining primary care appointments as a major barrier. 36% described constant interruptions in workflow as a consistent challenge and 34% note challenges with understanding the medical providers' follow up plans. Significant barriers with negative impact on CC workflow include extended hold time when making appointments and communication with providers. 70% felt that lack of patient engagement was a significant barrier. 89% of CC reported that a major cause of patient dissatisfaction at discharge related to patients not feeling ready for discharge followed by insurance non-coverage of home equipment and transport. CC suggested improving communication for discharge planning, changes, and/or consistency in the discharge plan, timely completion of discharge paperwork with advanced notice, seeking improved communication from travel and medical services, increase responsiveness and accountability from physicians and consultants, and to have a trusting, collaborative relationship.

CONCLUSIONS: CC care for an increasingly complex group of hospitalized patients with a variety of roles and responsibilities. This study identifies some issues that lead to patient dissatisfaction at discharge, identifies barriers that impact the work of CC, and offers suggestions for improving the work of CC through closer collaboration, trust, improved communication, and institutional support.

CHALLENGES THAT OCCUR WHEN ATTEMPTING TO DE-IMPLEMENT POTENTIALLY HARMFUL CARE: THE ROLE OF OTHER PROVIDERS AND INHERITED PRESCRIPTIONS

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BACKGROUND: Despite knowing the futility or the potential harms of certain clinical practices, providers struggle to successfully de-implement them. While the literature offers examples of barriers and promoters of de-implementation, the context is limited to qualitative data from hypothetical scenarios or generalized concepts. There are few reports from specific interventions to reduce low-value practices and even fewer on patterns across multiple de-implementation projects. Our aim was to assess factors influencing the provision of and the challenges to de-implementing specific low-value practices across three de-implementation projects.

METHODS: Semi-structured qualitative interviews with primary care providers (PCPs), specialists, and clinical staff were conducted as part of three distinct quality improvement clinical de-implementation projects at Veterans Health Administration (VHA) medical facilities. The projects focused on reducing (1) unnecessary follow-up imaging for lung nodule surveillance, (2) use of inhaled corticosteroids (ICS) for mild- to moderate COPD, and (3) use of antipsychotic medications to address disruptive behavior in dementia. Forty-nine providers and clinical staff were interviewed about their experiences with the low-value practice and de-implementation efforts at their sites. We conducted a cross-project inductive thematic analysis of factors influencing the decision to deprescribe in these three areas. We focus on one emergent and particularly salient theme, the role of other providers who interact with patient care prior to or during the intervention but not specifically targeted by it.

RESULTS: In all three studies, participants reported that other providers both facilitate and complicate their decision to deprescribe low-value care. Facilitators included providers identifying their colleagues and specialists as resources for guideline updates and discontinuation of low-value practices. For example, PCPs reported reaching out to colleagues or specialists with specific questions or referred their patients to specialists. One barrier was that PCPs and specialists reported feeling hesitant to discontinue a practice, even if considered an overtreatment, that was prescribed by another provide. Likewise, clinical staff reported additional challenges to discontinuing a low-value practice if the patient enrolled in their care with an inherited prescription or recommendation from a previous provider.

CONCLUSIONS: Other providers involved in patient's care, either previously or in real time, could hold a major influence on providers' and staff's ability and willingness to de-implement low-value practices. Successful interventions might target the strength of a specialist's influence, empowering PCPs to take ownership of prescriptions they may have not initiated, and encouraging clinical staff to play a more dynamic role in deprescribing potentially harmful practices that have become status-quo for the patient.

CHANGE IN ATTITUDES OF INTERNAL MEDICINE INTERNS TOWARDS COMMUNITY- ORIENTED PRIMARY CARE EDUCATION AT AN URBAN, ACADEMIC RESIDENCY PROGRAM FROM 1998-2018

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BACKGROUND: Despite a growing interest in focusing on social context, it is unclear how exposure to these concepts prior to residency and the value residents place on these experiences have changed over time. We aim to describe how residents' prior exposure to community-oriented primary care (COPC) and attitudes towards the importance of an experience in COPC changed in our residency program over 20 years.

METHODS: We used survey data from Internal Medicine residents who attended an urban, academic residency program from 1998-2018. The voluntary survey was administered to interns prior to completion of a mandatory COPC curriculum to assess their baseline knowledge and experiences with COPC. We grouped responses into three time points (1998-2008, 2009-2012, 2015-2018) that reflect the addition of a patient-centered curriculum and a social determinants of health curriculum that may have affected who selected our program. Gaps in time reflect missing data. Our primary outcome was change over time in the response to: "Rate how important an education experience on community health is to your professional values?" We hypothesized that the numerical rating would increase over time, reflecting changing attitudes of our residents. As secondary objectives, we examined how rating of the importance of an educational experience in community health was to future career plans and how previous involvement in community health changed over time. We used descriptive statistics to determine proportions of responses in each time period and Pearson's chi-squared testing to calculate p-values.

RESULTS: We reviewed data from 182 available surveys. Most (n=104) completed the survey between 1998-2008, with fewer in 2009-2012 (n-27) and 2015-2018 (n=51). The demographics of each cohort are as follows: 1998-2008 (n=137, 53% women, 22% underrepresented in medicine [UIM], 45% in the Primary Care Track [PCT]); 2009-2012 (n=45, 53% women, 20% UIM, 40% PCT); and 2015-2018 (n=48, 48% women, 35% UIM, 35% PCT). Across all cohorts, 87% of residents rated an experience in community health as very important or essential to their professional values and 37% rated an experience in community health as very important or essential to their career plans. There was a statistically significant increase in previous experience with community health over time, with 52% of residents reporting no experience in community health from 1998-2008, 40% from 2009-2012 and 26% from 2015-2018 (p=0.04).

CONCLUSIONS: Although ratings of the importance of an experience in community health for professional values or career goals did not change over time, residents entering the program were significantly more likely to report previous experience in community health. This may reflect changes in medical school curricula or changes to the applicant pool to our program in response to an increase in community-oriented curricular offerings. Residency training is another opportunity to create learning experiences that may influence learners to focus on COPC.

CHANGES IN BREAST CANCER SCREENING COSTS AFTER THE INTRODUCTION OF DIGITAL BREAST TOMOSYNTHESIS

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BACKGROUND: Previous studies have estimated that breast cancer screening costs more than 7 billion dollars annually in the US. However, in recent years, screening technology has changed considerably with the introduction of digital breast tomosynthesis (DBT). DBT is more expensive than 2D mammography but may produce fewer false positives requiring costly follow up. The impact of DBT on screening costs has not been well characterized. The goal of this study was to characterize changes in screening costs associated with the introduction of DBT in a privately insured population, and to estimate corresponding changes in total national expenditures.

METHODS: We conducted a longitudinal study of screening costs from 2012-2018, using the Blue Cross Blue Shield Axis, a large database of commercial claims. We identified screening 2D mammograms and DBT among women 40-59 in each calendar year. We calculated the cost of the screening test as well as the screening episode. Episodes included the initial screen plus any follow up tests (diagnostic mammography with or without DBT, ultrasound, MRI, and biopsy) performed within 4 months. DBT costs were calculated for 2015 onward, as DBT was not reimbursed prior to 2015. All costs were inflation-adjusted to 2017 dollars. Pairwise comparisons of median costs used the Wilcoxon rank-sum test. We also used Census and CDC data to estimate screening costs among privately insured women in this age group nationally.

RESULTS: Our study included 14,027,791 women screened between 2012-2018. The median cost of a 2D mammogram fell from $223 in 2012 to $216 in 2015 (p=<0.001), to $196 by 2018 (p<0.001 for 2015 vs 2018). By contrast, between 2015 and 2018, the cost of DBT rose from $274 to $285 per test (p<0.001). The proportion of women screened with DBT also rose during this period from 12% to 58%. As a result, the median cost of a screening exam increased from $223 to $237 (p<0.001), a 6% increase overall, despite a 12% decline in the cost of a 2D mammogram. Between 2012-2018, the median episode cost among all screened women rose from $233 to $261 (p<0.001). Median episode costs among women

screened with 2D were steady 2012-2015 at $233 then declined to $210 in 2018 (p<0.001 for 2015 vs 2018). Episode costs for women screened with DBT were higher overall, and rose from $294 to $309 between 2015-2018 (p<0.001). During this period, rates of follow up among screened women were stable at 12-13%. Given national mammography rates in this age group, we estimate that the introduction of DBT was associated with an additional $769 million in health care expenditures since 2015.

CONCLUSIONS: The introduction of DBT has contributed to rising breast cancer screening costs. Although changes in unit costs for screening are relative small, mammography is widely used and these small changes translate into large national expenditures. Whether this additional expenditure on screening has contributed to improved health is not known.

CHANGES IN FINANCIAL MARGINS AND QUALITY AMONG CRITICAL ACCESS HOSPITALS AFTER THE AFFORDABLE CARE ACT

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BACKGROUND: Critical access hospitals (CAHs) are safety-net institutions that serve rural and underserved areas. Often located in areas with high rates of poverty and low population density, they struggle financially and have had challenges providing high-quality care. Medicaid expansion under the Affordable Care Act (ACA) broadened insurance coverage and reduced hospitals' financial burden of uncompensated care in states that elected to expand, which could be highly beneficial for CAHs. However, whether the financial circumstances or quality of care at CAHs changed after the ACA remains unknown.

METHODS: Difference-in-differences (DID) linear regression comparing changes over time in financial parameters, patient experience, and clinical outcomes between CAHs in states that expanded Medicaid in 2014 compared to those that did not.

RESULTS: From 2011 to 2016, we identified 543 CAHs in states that expanded Medicaid and 661 in states that did not. CAHs in expansion states were more likely to be in the West (28.4% in expansion states vs. 13.2% in non-expansion states, p<0.001) and Midwest (49.8% vs. 44.5%, p<0.001), and were more likely to be non-profit (41.5% vs. 37.9%, p<0.001). There was no difference in average baseline percent of uncompensated care between CAHs in expansion and non-expansion states (0.09 vs. 0.09, p=0.11). Uncompensated care declined more among CAHs in expansion states compared to those in non-expansion states (difference-in-differences DID=-0.37, p=0.02). While the magnitude of differential changes in net hospital operating revenues (DID= $1,795,434, p=0.16) and operating margins (DID=3.2, p=0.11) was large, estimates were imprecise. There was a small reduction in 30-day readmissions for acute myocardial infarction among CAHs in expansion states as compared to those in non-expansion states (DID=-0.62%, p=0.009). However, there were no other significant differential changes in quality between CAHs in expansion vs. non-expansion states (1.16% change in overall patient experience ratings, p=0.16; -0.03% change in all-cause 30-day readmissions, p=0.74; 0.01% change in 30-day heart failure readmissions, p=0.97; -0.03% change in 30-day pneumonia readmissions, p=0.86; -0.12% change in 30-day heart failure mortality, p=0.43; 0.60% change in 30-day acute myocardial infarction mortality, p=0.48; 0.40% change in 30-day pneumonia mortality, p=0.09).

CONCLUSIONS: The ACA was associated with reductions in uncompensated care at CAHs in states that adopted Medicaid expansion, however there was limited evidence that quality improved among CAHs in expansion states, apart from a small decrease in readmission rates from acute myocardial infarction. CAHs continue to face important financial challenges despite recent reductions in uncompensated care associated with expansions of insurance coverage. Whether improving financial margins among these safety-net providers leads to better quality remains an important focus for policymakers.

CHANGES IN HEALTH CARE SPENDING, UTILIZATION, AND MORBIDITY AFTER FIREARM INJURIES

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BACKGROUND: While deaths from firearms has garnered increasing public attention, relatively little is known about the impact of firearm injuries on survivors and their families. We examined economic and clinical consequences of firearm injuries among survivors and family members.

METHODS: Using 2007-2017 commercial insurer and Medicare claims, we analyzed spending, cost- sharing, utilization, and diagnoses before and after firearm injuries among survivors (treatment group), all of whom were continuously enrolled for at least 3 years. Counterfactuals (control group) were constructed using claims history. In addition to unadjusted analyses, we estimated the treatment effect of firearm injury by comparing treatment and control group outcomes in a difference-in-differences analysis using an event study framework, with individual fixed effects and standard errors clustered by individual. Family members were studied analogously.

RESULTS: There were 4,051 survivors of firearm injury, averaging 33.2 years old with 84.3% male. Unadjusted total spending increased from $1,014 per month prior to firearm injury, to $64,208 during the month of firearm injury, then $1,910 per month afterwards. Unadjusted cost-sharing similarly rose from $83 per month before, to $2,007 during, and to $111 after firearm injury. In adjusted analysis, firearm injury was associated with increases of $62,860 (p<0.001), $4,093 (p<0.001), $1,755 (p<0.001), $702 (p=0.048), and $683 (p=0.03) in total spending over the first 5 months, respectively, relative to control. Sharp increases in tests and treatments explained these findings. Findings were similar among subgroups of survivors of assault, self-harm, and other causes. Spending and cost-sharing rose to a lesser degree among family members after firearm injury in the survivor, driven by increased use of psychotherapy services.

Following firearm injury, the prevalence of mental health conditions among survivors increased 5.4-fold, driven by diagnoses of anxiety, mood disorders, and adjustment disorders. Prevalence of pain diagnoses increased 3.9-fold, driven by muscle, limb, and generalized pain. Prevalence of substance abuse diagnoses increased 10.0-fold, driven by non-dependent drug abuse and alcohol. Rates of these diagnoses reverted toward baseline in the months subsequent to injury. Family members exhibited a smaller increase in mental health diagnoses compared to that among survivors.

CONCLUSIONS: Among survivors of firearm injuries, health care spending and cost-sharing increased sharply after the injury. Survivors also experienced a discontinuous rise in mental health disorders, pain, and substance abuse, with subsequent return of these diagnoses toward preinjury rates potentially due to treatment or recovery. Family members were also affected, experiencing an increase in spending largely due to mental health services. While public attention is drawn toward firearm deaths, nonfatal firearm injuries exhibit economic and clinical consequences for survivors and their families.

CHANGES IN OUT-OF-NETWORK LABORATORY TEST SPENDING AND VOLUME IN THE UNITED STATES

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BACKGROUND: Out-of-network costs are concerning to patients and policymakers. Lab tests - the highest volume health care service in the US - are more expensive out-of-network than in-network. To date, little is known about spending and volume of lab tests out-of-network. We examined out-of-network lab test in a nationwide population with employer-sponsored insurance.

METHODS: Using 2008-2016 claims, we evaluated changes in the share of spending and volume of lab tests that occurred out-of-network, adjusted for age, sex, risk, and insurance plan among 27,833,040 unique individuals whose employers continuously contributed data. We decomposed lab tests into sentinel categories. We also studied prices (allowed amount) per lab test out-of-network and in-network. We tested the model in sensitivity analyses.

RESULTS: Subjects averaged 33.8 years of age, 52% female, with a DxCG risk score of 0.9. The share of lab test spending that occurred out-of-network was 5.2% in 2008-2010 and 11.5% in 2014-2016, an increase of 0.8 percentage-points per year ($p<0.001$). This was driven by toxicology tests, for which the share of spending out-of-network rose from 11.9% to 48.2%—an adjusted 2.9% per year increase ($p<0.001$). Out-of- network tests overall increased from 55 tests per thousand people per year in 2008-2010 to 139 per thousand per year in 2014-2016, similarly driven by out-of-network toxicology testing which rose sharply from 38 to 93 tests per thousand per year ($p<0.001$). The average price per out-of-network test increased from $54 in 2008-2010 to $67 in 2014-2016; that for out-of-network toxicology tests increased from $46 to $88 during this period.

We noted a positive correlation between changes in toxicology spending out-of-network and changes in state- level drug overdose mortality. An OLS model at the state-by-year level from 2008-2016, with state fixed effects and standard errors clustered by state, demonstrated that a 1 percentage-point increase in drug-related mortality was associated with a 2.1 percentage-point increase in the share of toxicology test spending out-of- network (95% C.I., 1.5 to 2.8 percentage points, $p<0.001$). This relationship should not be interpreted as causal.

CONCLUSIONS: The share of lab spending out-of-network rose sharply in the past decade. Increased use of out-of-network lab tests and their prices, relative to in-network lab tests, explained the growing share of lab spending out-of-network. This was driven by toxicology lab tests, which are plausibly related to the opioid epidemic given their use in the diagnosis and monitoring of patients with substance use disorders. To our knowledge, this is one of the first nationwide reports of an upward trend in the share of lab spending out- of-network.

In 2018, the Protecting Access to Medicare Act began paying for lab tests in Medicare using commercial prices. Although the price of each test may be modest, toxicology tests billed out-of-network may reflect an economic opportunity from the opioid epidemic, deserving policy attention.

CHANGES IN OUTPATIENT CARE PATTERNS IN MEDICARE AND THEIR IMPLICATIONS FOR PRIMARY CARE FROM 2000-2017

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BACKGROUND: The US health care system emphasizes use of specialists which can lead to more fragmented and costly care compared to most other health systems. There is little evidence that this emphasis is decreasing. In 2000, 59% of all office visits in the US were with primary care physicians, which decreased to 49% by 2013, while from 1999-2009, referral rates from primary care physicians (PCPs) nearly doubled. These trends raise renewed questions about the capacity for PCPs to coordinate the care of their patients. However, there is little empirical data on specialist use since 2001 or how this translates to the care received across a PCP's patient panel.

METHODS: We analyzed a 20% national sample of claims for fee-for-service Medicare from 2000-2017. We examined outpatient visits to all office-based physicians, divided into PCPs and specialists. In each calendar year, we attributed patients to the PCP with the plurality of their outpatient visits, or to a specialist if no PCP could be assigned. Our main outcomes included annual beneficiary-level counts of visits to PCPs and specialists, the number of distinct PCP or specialist physicians seen, and the percent of all visits with attributed PCPs. We also counted the number of other physicians who had a visit with each PCPs attributed panel each year. We adjusted for demographic trends using beneficiary-level linear regression controlling for age, sex, race/ethnicity and Medicaid eligibility (We did not adjust for comorbidities because of the drift in "upcoding" over this period).

RESULTS: From 2000-2017, the average unadjusted number of annual outpatient visits per Medicare beneficiary increased 14% from 7.19 to 8.19. This was driven almost entirely by a 22% increase in annual specialist visits from 4.14 to 5.07 per beneficiary, while PCP visits increased marginally from 3.04 to 3.11 visits over the same period. However, there were similar increases for in the number of distinct specialists (1.68 to 2.23, 33% increase) and PCPs (0.91 to 1.18, 30% increase) seen annually. At the PCP level, in 2000 the average PCP's attributed patient panel received outpatient care from 93 other physicians, which increased 62% by 2017 to a median of 151 other physicians. Over the same period, the average number of patients shared between PCPs and physicians caring for their patients decreased 31% from 1.7 to 1.3.

CONCLUSIONS: Since 2000, Medicare beneficiaries are having more outpatient encounters with a greater number of physicians, driven by increasing contact with specialty care. Meanwhile, contact with primary care has remained largely stable. These changes translated into a substantial increase in the span of physicians seen annually in a PCP's attributed panel and were also manifested in weaker connections to other physicians over time. To accommodate the increasingly complex task of care coordination, interventions may be necessary to increase PCPs' capacity to care for complex populations spread over many more physicians (i.e. smaller panels).

CHANGES IN PATIENT REPORTED OUTCOMES FROM A DIABETES GROUP VISIT CLUSTER RANDOMIZED INTERVENTION TRIAL AMONG MIDWESTERN HEALTH CENTERS

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BACKGROUND: Diabetes group visits (GVs), shared medical appointments in which patients receive self- management education in a group setting, have been shown to improve clinical outcomes. However, few studies have assessed patient-reported outcomes from diabetes group visits, especially in the health center (HC) setting.

METHODS: In our ongoing cluster randomized controlled trial, we assigned 14 Midwestern HCs to a GV intervention arm or waitlist control. Sixty-eight adult patients with A1C ≥ 8% were enrolled in GVs at seven HC intervention sites. GV patients completed surveys at baseline and 6-months (immediately post- intervention.) Patient-reported outcomes included diabetes self-care behaviors, diabetes self-efficacy, diabetes knowledge, satisfaction with current diabetes treatment, diabetes distress (1=not a problem to 6=a very serious problem), diabetes social support (12 domains, 1=strongly disagree to 5=strongly agree), self-report of mental health problems, and satisfaction with GVs. Generalized linear mixed models (for binary or count outcomes) and linear mixed models (for continuous outcomes) were used to test the effect of GVs, and HCs were considered as random intercept effect.

RESULTS: Fifty-seven patients completed baseline surveys (mean age 52 ± 13 years, 70% female, 11% American Indian, 17% Black, 28% Latino, 42% White, 2% Asian; 80% with mean income <$30,000; 22% preferred to speak in Spanish; mean baseline A1C 9.71% ± 1.43%). We found no significant difference in baseline to 6-months in self-care activities. There was a trend towards improvement in self-efficacy in two domains: confidence in exercising at least 30 minutes on 5 or more days in a week (p= 0.09) and in talking to health care provider regarding concerns related to diabetes (p=0.12). Patient's knowledge increased regarding prevention and treatment of high (p=0.01) and low blood sugar (p=0.01); their satisfaction with current diabetes treatment (p=0.01) also increased. There was a trend towards less overall diabetes distress (3.13 ± 1.21 vs. 2.64 ± 1.31, p=0.08). Overall diabetes social support showed a trend towards improvement (3.51 ±0.73 vs. 3.84 ± 0.79, p=0.07). Diabetes social support showed significant improvements in four domains and trends towards improvement in two domains. Among those who reported a mental health problem in the past six months (62% of patients), there was an increase in the percentage of patients who reported being prescribed a medication from baseline to 6-months (50% vs. 94%, p=0.01). Patients were highly satisfied with the GVs.

CONCLUSIONS: Adults with uncontrolled diabetes who received care in GVs in HCs had improvements in diabetes self-efficacy, diabetes knowledge, diabetes distress, satisfaction with their diabetes treatment, diabetes social support, improvement in treatment of mental health problems, and high satisfaction with the GV program. Future analyses of our ongoing trial will provide assessment of changes in clinical outcomes and long-term patient reported outcomes.

CHANGES IN PRESCRIPTION DRUG SPENDING AND UTILIZATION 8 YEARS INTO GLOBAL PAYMENT

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BACKGROUND: The growth of prescription drug spending is a leading concern for policymakers. To date, efforts to tackle prescription drug spending have focused on lowering drug pricing. Alternative payment models in which providers bear risk for population spending may be another strategy for slowing the growth of drug spending, but evidence of their effects is sparse. We examined a large, two-sided global budget payment model, the Alternative Quality Contract (AQC), over its first 8 years and assessed changes in drug spending and utilization associated with this payment model.

METHODS: We used 2006-2016 data from Blue Cross Blue Shield of Massachusetts, which implemented the AQC, and Truven Health Analytics, which provided data for a control group. The intervention group comprised about 700,000 unique enrollees whose providers entered the AQC; the control group comprised roughly 1,040,000 unique enrollees from the 8 other Northeastern states whose providers were not in the AQC. Cardinality matching was used to balance treatment and control groups based on age, sex, and DxCG risk score. Through an intention-to-treat approach, we used a difference-in-differences model at the individual-year level. We decomposed spending by insurer and patient (cost-sharing) portions and by branded and generic drugs. We tested for differences in pre-intervention trends and the robustness of main results.

RESULTS: Over the first 8 years, we found large and statistically significant reductions in prescription drug spending attributable to the AQC. Across the 4 initial cohorts that entered the contract in years 2009-2012, estimated changes in prescription drug spending ranged from -12% to -24% of total prescription drug spending relative to control (p<0.001). Relative reductions of similar magnitude were observed in the insurer portion of spending, while relative reductions in patient out-of-pocket costs (cost-sharing) were generally smaller. Changes in spending and utilization differed among branded and generic segments across the cohorts. Directly analyses of quantity revealed that the number of specialty drug scripts declined by roughly 11% to 24% of pre-intervention levels across the cohorts, though not all estimates were significant.

CONCLUSIONS: Over 8 years in a large two-sided global budget contract, spending on prescription drugs slowed relative to control, driven by savings from branded pharmaceuticals. Reductions in price may be achieved by substitution to generics or other lower-priced alternatives, and reductions in quantity may come from decreased prescribing of drugs in unnecessary or lower-value scenarios. To date, savings on drug spending have not been accompanied by quality deficits or increased ED visits. Population-based prospective payment models with downside risk offers a potential framework to address prescription drug spending. This evaluation offers an initial assessment of longer-run implications under such a global budget model, which resembles other ACO arrangements across the country.

CHANGES IN SAFETY-NET HOSPITAL UTILIZATION ASSOCIATED WITH AFFORDABLE CARE ACT COVERAGE EXPANSION IN 2014

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BACKGROUND: Safety-net hospitals (SNHs) often have lower profit margins, with fewer services available. Non-SNHs may thus be more attractive to patients with freedom to choose where they receive care. Medicaid expansion and other provisions of the Affordable Care Act (ACA) increased insurance rates, thus enabling previously uninsured patients the choice to transfer care from SNH to non-SNH. It is unclear how the reduction in uninsurance affected utilization of SNHs overall, or among racial/ethnic minorities.

METHODS: Using 2011-2015 all-payer inpatient discharge data from 12 Medicaid expansion states (AR AZ CA CO IA IL KY MA NJ NY OR PA) and 5 non-expansion states (FL NC TX VA WI), we classified hospitals in the top quartile for the percentage of Medicaid discharges in 2010 in each state as SNHs throughout the study period. Using pre-expansion zip code-level uninsurance rate, we stratified each state into

four quartiles of uninsurance. Using a quasi-experimental difference-in-differences study design and linear regression models with zip code fixed effects, and age, sex and race/ethnicity as covariates, we estimated the post-expansion change in hospitalization rate in higher vs. lowest pre-expansion uninsurance quartiles within states. To assess changes related to ACA reforms overall we estimated separate models for Medicaid expansion and non-expansion states. To assess change from Medicaid expansion alone we compared expansion vs. non-expansion states. We also estimated models for individual states to explore heterogeneous treatment effects. All models examined differences by race/ethnicity.

RESULTS: In analyses of Medicaid expansion states combined, there was no significant change in the proportion of hospitalizations in a SNH in the top three quartiles of uninsurance relative to the lowest uninsurance quartile. In non-expansion states, there was a 1.1% decrease (95% CI -1.8, -0.4) in the proportion of SNH hospitalizations in the highest uninsurance quartile relative to the lowest quartile. There was no change in SNH use associated with Medicaid expansion alone. Across states there was heterogeneity in the direction/magnitude of change. Relative to the lowest uninsurance quartile, the proportion hospitalized in a SNH in the highest quartile decreased significantly in FL (-1.5%), CA (-1.4%), WI (-1.0%), MA (-0.9%), TX (-0.7%), NC (-0.6%), IL (-0.5%), VA (-0.5%) and NJ (-0.3%) and increased significantly in KY (1.4%), NY (1.1%), IA (0.9%), AZ (0.4%). There was heterogeneity in corresponding changes by race/ethnicity with sizable changes among non-Hispanic whites (TX=-6.7%; AR=2.2%), non-Hispanic blacks (CA=-2.8%; TX=1.2%), Hispanics (AR=-7.9%; IL=3.2%) and Asians (NY=-4.9%; MA=2.7%).

CONCLUSIONS: ACA reforms led to heterogeneous changes in SNH use. SNH use decreased in some states and race/ethnic groups (as hypothesized), but increased in others, possibly due to patient preference (e.g., proximity, language services). Further study of underlying factors is warranted.

CHANGES IN THE IMPACT OF THE MEDICARE'S JOINT REPLACEMENT BUNDLED PAYMENT PROGRAM FROM THE SECOND TO THIRD YEAR OF THE PROGRAM

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BACKGROUND: Controversy remains over whether bundled payment models should be voluntary or mandatory and the degree to which providers selectively choose to care for healthier, less costly patients. The Comprehensive Care for Joint Replacement (CJR) model, a randomized, mandatory bundled payment initiative for lower extremity joint replacement (LEJR), provides an opportunity to inform both debates. In 2018, the 3rd year of CJR, Medicare made CJR participation voluntary in half of the participating metropolitan statistical areas (MSAs), enabling a comparison of voluntary vs. mandatory participation. In the third year, Medicare also allowed knee LEJRs to be performed as outpatient procedures, which CJR hospitals have an incentive to avoid to retain more healthier, more profitable patients within bundled payments.

METHODS: Using 2015-8 Medicare claims and difference-in-differences methods, we compared LEJR episodes (admission plus subsequent 90 days) in both the randomly selected 29 MSAs transitioned to voluntary participation vs. their control MSAs and the 38 MSAs where participation remained mandatory vs. control MSAs. Our primary outcomes were institutional spending per episode and predicted spending per episode (measure of patient selection). We also examined characteristics of hospitals in voluntary MSAs who dropped vs. stayed and the percent of inpatient vs. outpatient billed knee LEJR episodes in mandatory vs. voluntary MSAs. Our models adjusted for beneficiary and procedure characteristics as well as hospital and MSA-level random effects to account for clustering of outcomes.

RESULTS: Within voluntary MSAs, the savings from CJR fell by 37%: -$628 (95% CI -1,005,-250) in Year 2 and -$398 (95% CI -856,60) in Year 3. There was no difference in the adoption of outpatient knee billing between intervention vs. control MSAs. In voluntary MSAs, 73% of hospitals performing 62% of episodes dropped out of the CJR program in Year 3. Hospitals that dropped out had higher total spending per episode at baseline vs stayers ($29,215 vs. $27,973). In mandatory MSAs, savings in institutional spending per episode fell by 34%: -$1,273 (95% CI -1,842,-704) in Year 2 and -$838 (95% CI -1,367,-308) in Year 3. This decline was driven by use of outpatient knee procedures. In mandatory MSAs fewer total knee replacements were performed outpatient setting in 2018 (16% vs. 26% in intervention vs. control MSAs).

CONCLUSIONS: By Year 3 of CJR, savings in both voluntary and mandatory MSAs decreased, though by different mechanisms. In voluntary MSAs, the mechanism appears to be differential drop out of higher-cost hospitals that were generating savings. In mandatory MSAs, the mechanism came from risk selection from differential use of outpatient knee procedures. In the current structure of this payment model, higher cost hospitals who may generate the most savings are unlikely to participate. The results also illustrate how providers within such programs can use risk selection to retain healthy, low cost patients.

CHARACTERISTICS OF AMBULATORY VISITS ASSOCIATED WITH SCREENING FOR DIABETES AMONG YOUNG ADULTS: ANALYSIS OF A NATIONALLY-REPRESENTATIVE SAMPLE

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BACKGROUND: The prevalence of type 2 diabetes is rising among young adults in the U.S., as are rates of complications among young adults with type 2 diabetes. While early detection is known to be important, diabetes screening among high-risk young adults, for whom screening is recommended, remains sub-optimal. Understanding characteristics of ambulatory visits in which screening occurs is important in identifying opportunities to improve screening practices.

METHODS: We analyzed data from the 2012-2016 National Ambulatory Medical Care Survey, a nationally representative survey of U.S. ambulatory visits. Our analytic sample consisted of visits for adults ages 18-25 who were not currently pregnant and did not carry a diagnosis of diabetes; we also restricted our sample to visits in which patients were seen by a provider (MD, NP, midwife or PA). The primary outcome was prevalence of diabetes screening, defined as having a hemoglobin A1c (HbA1c) or glucose ordered at the visit or drawn on the day of visit. We compared patient (age, race/ethnicity, gender, weight status), provider (e.g., practice specialty) and visit (e.g., type of visit) characteristics between visits with and without diabetes screening using chi-squared tests. All results were weighted yielding nationally representative estimates.

RESULTS: Our analytic sample consisted of 191 million weighted (8,817 unweighted) ambulatory visits over 5 years. Diabetes screening occurred in 2.8% (95% CI 1.8% to 4.2%) of visits. The majority of visits with screening were preventive visits (52.1%), involved female patients (70.4%), and were conducted by general, family or internal medicine providers (74.1%). 34.1% of visits with screening involved Hispanic patients, which was significantly higher than for visits without screening (only 14.2% of visits without screening involved Hispanic patients;

p=0.04). Over 1 in 5 (21.9%) of visits with screening involved patients with obesity, which was also significantly higher than for visits without screening (only 4.4% of visits without screening involved patients with obesity; p<0.01). Visits with screening were also more likely to be preventive care visits than those without screening (52.1% vs 17.5%, p<0.01).

CONCLUSIONS: Diabetes screening with HbA1c or fasting blood glucose was ordered in less than 3% of ambulatory care visits (and overall in only 3.3% of preventive care or regular follow-up visits visits) for 18 to 25 year-olds. Screening was associated with visits involving patients with diabetes risk factors such as Hispanic ethnicity and obesity, and also was more common in preventive visits. Further understanding provider-level factors, such as knowledge of diabetes risk factors, that should prompt diabetes screening in young adults and improving preventive care visit receipt may help enhance screening in this population

CHARACTERISTICS OF EXCESSIVELY PROLONGED HOSPITALIZATIONS IN COLORADO

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BACKGROUND: Prolonged hospitalizations often do not wholly reflect medical necessity and are instead driven by a variety of non-medical factors. A subset of patients with complex discharge barriers resulting from interactions between their medical and/or psychiatric condition and social circumstances, remain hospitalized long after their acute condition has been resolved. Effectively addressing these excessively prolonged hospitalizations (EPH) requires a better understanding of their characteristics.

METHODS: Denver Health, a safety-net hospital, partnered with the Colorado Hospital Association to conduct an analysis of EPH in the State of Colorado. We utilized the On Demand Hospital Information Network to retrospectively analyze EPH among adult inpatients (18 years or older) between April 1, 2018 and March 31, 2019. We included all urban, rural and critical access hospitals in Colorado, and excluded specialty hospitals (i.e., rehabilitation, long term acute care and psychiatric hospitals). We defined EPH as those with a length of stay (LOS) at least 3 times predicted for that stay's Diagnosis Related Group (DRG) (i.e., LOS-index greater than or equal to 3), excluding stays under 10 days. We assessed the total number of EPH, total excess days (i.e., any inpatient days beyond the national untrimmed arithmetic mean for that DRG), excess costs (i.e., estimated cost of the excess days using a cost-to-charge ratio), patient sociodemographics, and other characteristics of EPH.

RESULTS: During the 1-year study period, there were a total of 6,539 EPH in Colorado representing 1.7% of all hospital discharges, and 11.5% of total inpatient days (163,904 excess days). Average LOS for EPH was 31 days versus 4 days for normal stays. ESH represented 5.8% of total hospital charges. Average charges per EPH were $268,000. Estimated total 1-year cost associated with EPH in Colorado was $89,980,000. The large majority of EPH (89%), excess days (149,945 days) and costs ($83.18M) occurred at urban hospitals. Medicare was the primary payer in 43% of EPH, while Medicaid was the primary payer in 27%, and commercial in 23%. The highest number of EPH and excess days occurred on General Medicine, Behavioral Health, and Neurology services lines. The top 3 DRGs with the highest number of EPH were: Septicemia and Disseminated Infections (430 stays), Other Disorders of Nervous System (393 stays), and Alcohol Abuse and Dependence (337 stays). The top 3 DRGs with the most number of excess days were: Septicemia and Disseminated Infections (11,575 days), Other Disorders of Nervous System (6,977 days), and Schizophrenia (6,931 days).

CONCLUSIONS: Conclusion: Although EPH account for a small proportion of total discharges from Colorado acute care hospitals, they represent a disproportionate share of total inpatient days and costs. This analysis is a crucial first step towards better understanding EPH and may inform the development of meaningful, state-wide policies to deliver better care at lower cost.

CHARACTERIZING GOALS OF CARE MEDICAL RECORD DOCUMENTATION

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BACKGROUND: Mismatch of goals with medical care results in aggressive treatment at the end of life and is related to decreased quality of life and worse caregiver outcomes. Advance care planning (ACP) involves discussions regarding values, prognosis, goals of medical care, treatment preferences, surrogate decision maker, and may yield a completed advance directive (AD) or Physician Orders for Life-Sustaining Treatment (POLST). Goals of Care (GoC) notes in the electronic health record capture these discussions to promote continuity and to inform future care decisions. We characterized the content of GoC notes to understand how ACP is documented.

METHODS: Using grounded theory qualitative methods, we analyzed the content of GoC notes from 2016 at one health system. Every tenth note of 4061 total notes was coded using Atlas.ti until thematic saturation was reached (201 notes coded). Codes were created based upon a preliminary assessment of notes. Further analyses were conducted in Atlas.ti and Excel. C-coefficients were calculated to understand code co- occurrence relationships (c=0 codes never co-occur, c=1 codes always co-occur).

RESULTS: Ninety-one percent of GoC notes contained ACP content (9% other topics such as "healthy baby"). GoC notes contained the following content: 76% treatment preferences (i.e., trial artificial feeding only), 52% prognosis or prognostic awareness, 49% surrogate decision maker, 42% AD, 38% goals of care and future state preferences (i.e., does not want to be kept alive permanently on machines) and 26% POLST. Eighty-nine percent of future state preferences focused on future health states, but 45% of such GoC notes focused on non-health goals. One quarter of GoC notes contained comprehensive ACP documentation of current state/prognosis, future health state/treatment preferences, and decision maker/AD/POLST.

When GoC notes documented family perspectives on treatment preferences, 70% described discussions rather than simply listing preferences, and these discussions more often focused on short-term (days to weeks) rather than long-term (months to years) decisions (c-coefficient=0.59 v 0.07, respectively). In contrast, 64% of GoC notes documenting patient treatment preferences stated the preference without description of discussion.

One quarter of GoC notes used a template and these were tightly linked to documentation of AD (c=0.52), POLST (c=0.44), health care decision maker (c=0.54), and patient opinions on treatment preferences (c=0.59), but tended to contain yes/no data and less detailed documentation of decision making.

CONCLUSIONS: GoC notes are largely used to document family views of real-time end of life treatment plans. Only a minority of GoC notes documented ACP discussions focused on goals of care or future health states. Templates appear to be associated with

breadth, but not depth of documentation. Understanding GoC documentation may inform interventions to improve ACP.

CHARACTERIZING THE RELATIONSHIP BETWEEN VISION AND TECHNOLOGY ACCESS AND USAGE IN ADULT INPATIENTS DIAGNOSED WITH TYPE 2 DIABETES MELLITUS

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BACKGROUND: Vision is essential for effective disease self-management; however, the role of low vision in self-management has been understudied. One population highly impacted by low vision is persons with diabetes mellitus (DM). DM is the leading cause of new blindness cases in adults and may lead to diabetic retinopathy and glaucoma. The role of vision and self-management is particularly salient with respect to the growing prevalence of Electronic Health (eHealth) interventions for DM self-management. In this study, we assessed differences in access and utilization of technology among adult inpatients with DM and with or without low vision at an academic urban hospital.

METHODS: This is an observational study of hospitalized, adult, general medicine patients who were enrolled in an ongoing quality improvement study (Hospitalist Study), conducted from June through November 2019. Participants who were enrolled in the Hospitalist Study, completed the brief health literacy questionnaire, and met our additional inclusion criteria (i.e. age ≥18 years, English speaking and no need for proxy) were deemed eligible for our sub-study. For our sub-study, patients completed a survey that asked about technology access and use and online capabilities, which was administered at the bedside. Survey responses were stored using REDCap. Visual acuity was assessed using a Snellen Pocket Eye Chart, and DM diagnosis status was determined using the electronic medical record. Descriptive statistics, bivariate chi- squared analyses, and multivariate logistic regression analysis (adjusted for age, race, and gender) were performed using STATA version 15.1 (StataCorp).

RESULTS: Among 49 enrolled participants, the mean age was 52 years, most were black (82%), female (56%), and had at least some college education (60%). Most participants owned technology devices (96%) and had used the internet previously (86%). Participants with low vision (n=27) were less likely to report an ability to perform online tasks without assistance compared to those with normal vision (n=22), including using a search engine (56% vs 91%, p=0.006), opening an attachment (41% vs 86%, p=0.001), and using an online video (56% vs 86%, p=0.02).

CONCLUSIONS: Our study found that technology device ownership and internet usage rates were high in our study population but that participants with low vision reported reduced ability to perform some online tasks as compared to participants with normal vision. This suggests that barriers patients face to using eHealth may be related to online capabilities rather than technology access. To ensure that at-risk populations can effectively utilize these new eHealth technologies, future studies need to be conducted to better understand the relationship between vision level and technology usage.

CHARACTERIZING THE VARIATION OF ALCOHOL CESSATION PHARMACOTHERAPY UTILIZATION IN PRIMARY CARE

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BACKGROUND: Excessive alcohol use is linked to 90,000 deaths and more than 250 billion dollars spent in the United States each year. Naltrexone, Acamprosate, and Disulfiram are approved by the Food and Drug Administration (FDA) for the treatment of Alcohol Use Disorder (AUD), but are likely underutilized. Our objective was to describe prescribing trends of these medications by primary care providers (PCPs).

METHODS: We extracted electronic health record (EHR) data of primary care visits in a large healthcare system from 2010 to 2019. Patient inclusion criteria required established care with a PCP, a documented International Classification of Disease (ICD) diagnosis related to AUD, and documented alcohol use in the social history. The resulting data were internally validated to ensure accuracy by manual reference to the EHR. We identified details regarding prescriptions for any of the three FDA approved medications and patient demographics including age, sex, race, median household income, type of insurance coverage, and co-morbidities. We also collected PCP demographics including age, sex, degree, length of practice, and board certification. We compared patient-related factors for those who received a prescription with those who did not using a multivariate analysis. For the provider-level analysis, PCP's with <20 AUD patients were excluded, and prescription rates were analyzed using descriptive statistics.

RESULTS: Of 17,676 patients who met the inclusion criteria, 8.9% received treatment for AUD with one of the FDA approved medications, 3.3% from their PCP. The most commonly prescribed medication was Naltrexone (44.4%) followed by Acamprosate (31.7%) and Disulfiram (23.9%). Patients were on average 53 years old with median household income of $51,770 per year; 65% were male and 46% were Christian; 53% had a co-morbid mood disorder and 56.5% had an anxiety disorder. Patients were less likely to receive treatment if they were Black (aOR 0.71; 95% CI 0.60, 0.85) or older (aOR per decade 0.94; 0.90, 0.98). They were more likely to be treated if they had a higher income (aOR 1.07; 95% CI 1.05, 1.09), a mood disorder (aOR 2.5; 95% CI 2.1, 2.8), or an anxiety disorder (aOR 1.8; 95% CI 1.5, 2.0). Compared to commercial insurance, patients with Medicaid were more likely to be treated (aOR 1.6; 1.3, 1.8), and patients with Medicare (aOR 0.76; 0.64, 0.90) or no insurance (aOR 0.62; 0.48, 0.78) were less likely to be treated. Of 278 PCPs with at least 20 AUD patients, the median rate of initiating treatment was 1.5%; 46.4% did not prescribe medication at all, whereas the top 10% prescribed to 14.3% of their patients.

CONCLUSIONS: Medications for AUD are infrequently prescribed by the vast majority PCP's, particularly for lower income patients, African Americans, older patients, Medicare recipients, and uninsured patients. There is considerable variation in PCP prescriptions with many PCP's not prescribing at all and few high prescribing outliers.

CIVIC ENGAGEMENT AND ADVOCACY: ATTITUDES AND INTENTIONS OF US MEDICAL STUDENTS

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BACKGROUND: Civic engagement, particularly regarding just distribution of resources and social determinants of health, is a core component of medical professionalism. Professional organizations frequently emphasize the importance of physician advocacy, but it is unclear how educators can best prepare trainees to meet this professional obligation. We set out to understand medical students' attitudes toward civic engagement, including issues of interest, and to determine congruence with professional obligations.

METHODS: We surveyed a national sample of students from US medical schools. The survey was accessed online through a link from an article posted on the Student Doctor Network (SDN), an on-line student forum; survey completers could enter a lottery to win a $100 gift card. Survey items included questions about demographics and attitudes toward physician advocacy for health issues and involvement in 6 directly medical (e.g. healthcare costs) and 12 related (e.g. immigration) social issues. We used descriptive statistics and chi-square tests to assess associations of attitudes toward advocacy and involvement with sex, political identification, anticipated debt, and intended field. The study was reviewed by our institutional IRB and deemed exempt.

RESULTS: Among 815 viewers of the SDN article, 361 visited the survey and 240 (66%) students representing all US regions completed it. Among the 240 participants, 53% were female; most were white (62%) or Asian (28%) and in MD (82%) or DO (13%) programs. Clinical/non-primary care was the most common intended field (61%). Most agreed that they follow healthcare policy in the news (82%) and plan involvement (80%) and leadership (65%) in healthcare policy issues. Many stated it is very important that physicians encourage medical organizations to advocate for public health (76%), provide health-related expertise to the community (57%), and be politically involved (45%). More participants rated physician advocacy for medical issues as very important (e.g. drug addiction [83%], nutrition [81%], healthcare coverage [81%]) compared to related issues with indirect connections to or implications for health (e.g. national security [22%], transportation [36%], criminal justice [40%]) (p=<0.001). Self-identified liberals were more likely than others to follow health policy in the news (p=0.008) and agree with encouraging medical organizations to advocate for public health (p=<0.001).

CONCLUSIONS: Medical students report political engagement and interest in advocacy, particularly around issues directly tied to healthcare services or health behaviors, which is generally consistent with professional standards. Attitudes remain stable during medical school; few are associated with political affiliation. To optimize physician advocacy, educators should provide opportunities for student engagement in issues of interest.

CLINICAL, DEMOGRAPHIC, PROVIDER AND FORMULARY CHARACTERISTICS ASSOCIATED WITH INITIATION OF A SGLT2 INHIBITOR OR GLP-1 RECEPTOR AGONIST AMONG MEDICARE BENEFICIARIES WITH TYPE 2 DIABETES: A COHORT STUDY

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BACKGROUND: Characteristics associated with initiation of newer diabetes medications (e.g. SGLT2 inhibitors and GLP-1 receptor agonists) among older adults with type 2 diabetes (T2D) have not been previously described.

METHODS: Using 2014-2016 claims data from a random 5% sample of Medicare beneficiaries, we sought to describe characteristics associated with initiation of a SLT2i or GLP1-RA, focusing on measures of plan generosity (e.g. the number of drugs covered with no or minimal copays). Our cohort included beneficiaries with T2D who had at least 1 prescription claim for an oral diabetes medication in the 180 days before the start of follow-up (1/1/2015). To identify new initiators, we excluded beneficiaries who filled any insulin, SGLT2i or GLP-1RA prior to the index date or who died before 12/31/16. We developed multivariable logistic regression models controlling a priori for age, race, region, prior medication use, claims-based measures of diabetes severity and clinical comorbidities, provider specialty and measures of formulary generosity.

RESULTS: Of 103,112 eligible beneficiaries (mean age 73, 57% female), 5,076 (4.9%) initiated a SGLT2i or GLP-1RA between 1/1/15-12/31/16. After adjusting for all baseline characteristics, beneficiaries in plans covering 2 or more target drugs in preferred tiers (i.e. 1-3) were more likely (adjusted odds ratio [aOR] 1.18 [95% CI, 1.05 to 1.32]) to initiate one of these medications than patients enrolled in plans covering 0 drugs. Other characteristics associated with higher odds included: age<65 (aOR 1.78 [95% CI, 1.64 to 1.92]), diabetic retinopathy (aOR 1.19 [95% CI, 1.08 to 1.31], obesity (aOR 1.49 [95% CI, 1.38 to 1.62) and having baseline medications prescribed by an endocrinologist (aOR 1.68 [95% CI, 1.49 to 1.89]. Black race (aOR 0.66 [95% CI, 0.60 to 0.73]) and CKD (aOR 0.84 [95% CI, 0.76 to 0.92]) were associated with lower risk of initiation.

CONCLUSIONS: After controlling for a large number of prespecified covariates, Medicare beneficiaries with T2D with more generous prescription drug coverage were more likely to initiate a SGLT2i or GLP-1RA.

CLINICAL FEATURES, RADIOGRAPHIC, AND PATHOLOGIC FINDINGS IN E-CIGARETTE AND VAPING-ASSOCIATED LUNG INJURY

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BACKGROUND: New cases of E-cigarettes and vaping associated lung injury (EVALI) continue emerge since the first cases were reported in June 2019. The CDC defines a "confirmed" case of EVALI as using an e-cigarette within 90 days prior to symptom onset with chest CT findings of infiltrates and absence of pulmonary infection. While new data is emerging to define radiographic and pathologic features, the definition of EVALI remains vague. This review aims to further identify the clinical features of these patients along with their radiographic and histopathologic findings.

METHODS: This retrospective study analyzed 24 patients from 19 medical centers in the U.S. who met EVALI criteria according to the CDC. Data on medical history and symptoms were collected. Eight patients were excluded due to minimal data available. All remaining 16 patients received CT chest with images independently reviewed by 2 cardiopulmonary radiologists. Fifteen patients underwent tissue sampling through surgical biopsy, transbronchial biopsy, or cryobiopsy. One patient underwent bronchoscopy with bronchoalveolar lavage only.

RESULTS: Eleven of 16 patients (68%) were male. The average age was 34 years (range: 21 – 67 years). Ten patients (62%) used THC-containing products. All patients presented with cough, 11 with dyspnea (68%), 7 with fever (43%), 4 with chest pain (25%), and 3 with GI symptoms (19%). The most common co-morbidities include chronic lung disease (25%) and obesity (31%). A complete table of all symptoms and co-morbidities will be provided. Three patients had previous occupational exposures. Eight patients (50%) were hypoxic, 3 of which required intubation. The predominant CT chest findings were ground glass opacities (GGO, n=15) and consolidation (n=6). The most common CT pattern was acute lung injury (ALI, 31%) and hypersensitivity pneumonitis (HP, 12%). Fifteen out of 16 patients underwent tissue biopsy, with the most common pathology finding of airway-centered fibrinous and organizing acute lung injury with prominent reactive type 2 pneumocyte hyperplasia.

CONCLUSIONS: There were no significant correlation between pre-existing conditions and severity of respiratory failure. Most common presenting symptoms are cough, dyspnea, fever, and GI symptoms. The main CT patterns observed in our cohort were ALI and hypersensitivity

pneumonitis with GGO and consolidation. The predominant pathology finding was airway-centered acute lung injury with type 2 reactive pneumocyte hyperplasia. Foamy macrophages and inflammatory cells were commonly seen. Our study is limited by incomplete medical records from multiple medical centers. The outcomes of these cases are unknown. Although all cases met CDC criteria for EVALI, it is difficult to completely exclude all other causes of lung injuries. Finally, tissue sampling is not completely precise as the small biopsied area may not accurately represent the overall lung process.

CLINICAL HYPERTENSION GUIDELINES AND SOCIAL DETERMINANTS OF HEALTH

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BACKGROUND: One third of U.S adults have hypertension, a major risk factor for mortality from heart disease and stroke. Despite these life-threatening consequences and numerous treatment guidelines, hypertension control is achieved in only half of those diagnosed. Significant inequities in morbidity and mortality persist in minority and low socioeconomic groups. We conducted a scoping review of published hypertension guidelines to explore how they direct clinicians to ask about and address patients' social conditions as part of hypertension management. We defined social conditions based on the Center for Medicare and Medicaid Services initiatives requiring social risk screening. We drew from a National Academy of Medicine's report defining five social care activities foundational to improving care integration at both individual and population levels (5A Framework): *Awareness* of social conditions that influence health; *Adjustments* to clinical decision-making based on contextual data; *Assistance* linking patients to social resources; *Alignment* of resources between health and social services and *Advocacy* to improve community conditions.

METHODS: We reviewed clinical guidelines, protocols, and professional organization statements for hypertension management in adults. Primary outcomes included acknowledgement of social risk on hypertension management or reference to one of the five social care activities.

RESULTS: We found 118 hypertension guidelines using our initial search terms. Forty-three guidelines met all inclusion criteria. 51% (22/43) acknowledged social risk factors as relevant to hypertension management. A partially overlapping 22 guidelines recommended changing care based on social risks. 32% (14/43) of the guidelines did not acknowledge social risk factors or recommend any social care activities as part of hypertension management. When social risk factors were referenced, economic status was the most common social determinant described; one guideline mentioned housing stability and one mentioned utilities security.

CONCLUSIONS: Our analysis highlights important gaps in the translation of social determinants science to clinical practice. Few existing hypertension guidelines acknowledge the impact of social risk factors on hypertension control. Even fewer provide instruction for clinicians on how to screen for or intervene around social risks, including on topics such as food, housing, transportation, and utilities. Findings may reflect gaps in existing evidence on social risk interventions, but also may reveal potential opportunities to identify at-risk individuals who will benefit from tailored hypertension interventions. This review underscores opportunities to elevate research on the intersection of social risk and hypertension. Future guideline developers will need to closely examine emerging evidence on social determinants as a strategy for improving hypertension management.

CLINICALLY MEANINGFUL ANXIETY, COGNITIVE FUNCTION, AND ASSOCIATIONS WITH HEALTH LITERACY AND SELF-MANAGEMENT SKILLS

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BACKGROUND: High levels of anxiety have been linked to poor medical outcomes, however mechanisms underlying these observed relationships are not entirely clear. The ability to make informed healthcare decisions ('health literacy') and successfully self-manage health may be one pathway linking anxiety to poorer health. We sought to determine the prevalence of clinically meaningful symptoms of anxiety in a cohort of older adults, and to examine associations with health literacy and chronic disease self-management skills.

METHODS: 897 adults aged 55-74 were recruited from diverse primary care settings across Chicago, IL. Clinically meaningful anxiety was defined as a T-score of ≥60 on the Patient-Reported Outcomes Measurement Information System (PROMIS) Anxiety short-form. Health literacy was measured using the Test for Functional Health Literacy in Adults (TOFHLA) and dichotomized into adequate and limited literacy. The Comprehensive Health Activities Scale (CHAS) was used to measure chronic disease self-management skills, such as navigating written materials, recalling instructions presented in oral or technology-based formats, and dosing complex medication regimens. Adjusted logistic and linear regressions were used to assess associations between clinically meaningful anxiety symptoms and outcomes of interest. A factor score representing cognitive function was entered into subsequent models.

RESULTS: 23% percent (n = 208) of the sample endorsed clinically meaningful symptoms of anxiety. These participants were more likely to be only high school educated, earn <$25,000 per year, and self-report a greater number of chronic medical conditions (3.6 vs. 2.4). In adjusted multivariable analyses, clinically meaningful anxiety was significantly associated with poorer overall performance on self-management tasks (B -2.39, 95% CI -4.61, -0.17; p = 0.04). When broken down by skill type, it was associated with poorer recall of spoken instructions (B -3.32, 95% CI -6.42, -0.22; p = 0.04) and recall of information presented in multimedia modalities (B -3.71, 95% CI -7.32, -0.10; p = 0.04), specifically. When entered into models, cognitive function significantly attenuated these associations. All remaining outcomes were found to be non- significant.

CONCLUSIONS: The presence of significant anxiety symptoms may be relatively common yet undetected among older adults in primary care settings, and may interfere with successful management of medical conditions. This may be due to anxiety's negative impact on cognitive processes such as attention and memory, which are involved in many healthcare-related tasks. Routine screening for symptoms of anxiety among patients with medical conditions may help better identify and treat psychological distress that may impact adequate self-management. For patients identified with anxiety, the modality in which important medical information is disseminated should also be considered.

CLINICAL STATUS QUO OF INFECTIVE ENDOCARDITIS IN JAPAN: A SINGLE HOSPITAL- BASED RETROSPECTIVE STUDY

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BACKGROUND: No research on infective endocarditis (IE) of more than 40 patients from all the departments of hospitals they possibly visited in Japan had been conducted since 2000. Imaging modalities such as computed tomography or magnetic resonance imaging are most readily available in clinical practice in Japan of OECD countries. The aim of this study was to clarify the status quo of IE in Japan.

METHODS: The present investigation was a single-hospital-based retrospective study. Inpatients who were diagnosed as having IE or suspected IE in Saga University Hospital from September 2007 to August 2017 were identified by examining hospital data. Two doctors from the Department of General Medicine in our hospital checked the medical charts and collected data on possibly eligible patients. Patients who were subsequently diagnosed as having "definite IE" according to modified Duke's criteria were enrolled. The results were expressed as the median values for quantitative data and as percentages for categorical data.

RESULTS: The study cohort comprised 74 patients of median age 66.5 years, 56.8% of whom were male. Patients were admitted to and treated by 16 departments in our hospital including Cardiovascular Surgery (50.0%), Cardiology (45.9%) or General Medicine (23.0%). Symptoms within 2 months before the first visit to our hospital comprised fever (73.0%), general malaise (33.8%), disturbance of consciousness (24.3%), and dyspnea (24.3%). High-frequency causative microorganisms were *Staphylococcus aureus* (28.4%), followed by *Streptococcus viridans* group (18.9%) and *Enterococcus spp*. (6.8%). High-frequency valves involved were the mitral (48.6%), followed by the aortic valve (25.7%), and multiple valves (14.9%). Patients without cardiac murmurs accounted for 37.8%, without valvular disease 17.6%, and with only mild valvular disease (below grade I) 14.8%. The patients developed various complications including CNS disorders (60.8%) which consisted of embolic stroke (52.7%) and cerebral hemorrhage (31.1%); glomerulonephritis (45.9%); extracranial embolism (36.5%) including splenic infarction (23.0%), renal infarction (12.2%), pulmonary embolism (10.8%), hepatic infarction (2.7%), and superior mesenteric artery embolism (1.4%); disseminated intravascular coagulation (32.4%); disseminated infections (18.9%), including pyogenic spondylitis (9.5%), deep-seated abscess (9.5%), mycotic aneurysm (5.4%), pyogenic arthritis (4.1%), and spinal epidural abscess (1.4%); and acute heart failure (14.9%). The average number of complications per patient was 2.1, with 66.2% of patients having two or more complications.

CONCLUSIONS: Patients with IE could have non-specific symptoms and visit any departments other than cardiovascular departments. When IE is suspected clinically, clinicians must check thoroughly for common complications, even in patients without cardiac murmurs or valvular disease.

CLINICAL TRAINING AND EDUCATION OF PRIMARY CARE INTERNAL MEDICINE RESIDENTS ON OUTPATIENT PROCEDURES A NATIONAL SURVEY OF PRIMARY CARE INTERNAL MEDICINE TRAINING PROGRAM LEADERSHIP

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BACKGROUND: Literature on ambulatory procedure training in Internal Medicine (IM) residency programs and focused Primary Care Internal Medicine (PC IM) residency programs is lacking.

METHODS: We conducted a cross sectional survey of Program Leaders of PC IM training programs or tracks in 2013 identified via the National Resident Matching Program, the American Medical Association's Fellowship and Residency Electronic Interactive Database, and individual program websites.

RESULTS: Forty-five of the 70 programs identified as PC IM training programs or tracks completed the survey (64% response rate). Most PC program directors (89%) reported that their program included ambulatory procedures training.

PC IM program leaders reported training was required or available in pap smear (87%), joint injection and aspiration (82%), incision and drainage (56%), skin biopsy (56%), cryotherapy (47%), suturing (38%), splinting (31%), toenail removal (29%) and IUD placement (16%).

Experience in continuity and subspecialty clinics was the most common means of teaching residents to perform procedures. Additional instructional methods utilized included simulation models (56%), lectures (47%), a procedure clinic (33%), skills lab (29%), media (31%), and standardized patients (11%).

PC IM program leaders described the typical resident graduating from their program as highly competent or competent to perform pap smears (82%), joint injections and aspiration (67%), and incision and drainage (53%). Leaders report the typical graduating resident requires more training or are unable to assess competency to perform splinting (67%), suturing (47%), toenail removal (49%), and IUD placement (67%).

CONCLUSIONS: Currently, there is no standard technique for training and evaluating a resident's ability to perform a procedure. Though programs are incorporating various teaching modalities, many rely on chance patient encounters in subspecialty or continuity clinics with supervising physicians who feel comfortable teaching the procedure.

Though recent graduates recognize the importance in performing common outpatient procedures, many report referring patients to subspecialty clinics due to lack of confidence in independent practice. This equates to fewer internists honing that skillset. Unsurprisingly, general internists in the academic field report less confidence in teaching the procedures, thus creating a cycle where residents have less opportunities to learn and therefore contribute to the growing number of graduates uncomfortable with performing ambulatory procedures.

This study highlights areas for growth in ambulatory training as the only procedure PC program leaders consistently viewed their typical resident as being competent was pap smears. Further, though different training modalities may be utilized to improve competency, ultimately having a workforce of providers more equipped to perform these procedures will enhance education.

CLINICAL UTILITY OF PHARMACOGENETIC DATA COLLECTED BY A HEALTH-SYSTEM BIOBANK

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BACKGROUND: Use of pharmacogenetic (PGx) data to optimize drug therapy for individual patients has the potential to reduce the incidence of adverse drug reactions (ADRs).[1-3] For example, patients who are positive

for certain human leukocyte antigen (HLA) alleles are at increased risk of severe cutaneous ADRs when given carbamazepine (*HLA-A*31:01* or *HLA-B*15:02*) or oxcarbazepine (*HLA-B*15:02*), and preemptive PGx testing may prevent patients from receiving the drug and experiencing these reactions.[4] A key barrier to the implementation of PGx into clinical practice is the lack of integration of genetic information in the electronic health record (EHR) with clinical decision support (CDS). The aim of this study was to determine the incidence of cutaneous ADRs among patients with positive *HLA-A*31:01* and *HLA- B*15:02* results from Biobank data who received carbamazepine or oxcarbazepine in order to assess the clinical utility of returning these results in the EHR with CDS.

METHODS: We assessed the number of patients over 18 years old who received testing for *HLA-A*31:01* and *HLA-B*15:02* at a Partners-affiliated institution participating in the Partners Biobank Program between 01/01/2016-08/19/2019. Among this group, we determined the number of patients who were positive for *HLA-A*31:01* and received carbamazepine, and we determined the number of patients who were positive for *HLA-B*15:02* and received carbamazepine or oxcarbazepine. Finally, we conducted a chart review to assess whether these patients had a hypersensitivity allergic reaction (HSR) to carbamazepine or oxcarbazepine documented in the allergies section of the EHR that required drug discontinuation.

RESULTS: 36,424 patients received testing for *HLA-A*31:01*; of these, 2,327 patients tested positive (6.4%). Of these patients, 19 (0.82%) received carbamazepine. No patients had a documented HSR to carbamazepine. 36,424 patients received testing for *HLA-B*15:02*; of these, 3,543 patients tested positive (9.7%). Of these patients, 32 (0.90%) received carbamazepine, and two of them (5.3%) had a documented HSR to carbamazepine. In addition, 41 (1.15%) patients received oxcarbazepine, and one of them (2.4%) had a documented HSR to oxcarbazepine. Patients with a documented HSR discontinued the drug that caused it.

CONCLUSIONS: ADRs leading to drug discontinuation were detected among patients who received relevant PGx testing via a health-system Biobank. These reactions may have been preventable if prescribers had access to patients' PGx data in advance of prescribing. Incorporating PGx CDS alerts into the EHR could facilitate the clinical implementation of PGx and decrease incidence of ADRs. Further work includes manual chart review to check for carbamazepine and oxcarbazepine-induced ADRs that may not have been documented in the allergies section; the development of an effective CDS tool to alert prescribers to high-risk PGx results; and the assessment of other PGx data from the Biobank and associated ADRs.

CLINICIANS' EXPERIENCES WITH EVALUATING AND MANAGING CHRONIC COUGH IN ADULT PRIMARY CARE

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BACKGROUND: Chronic cough (CC), defined by a duration of at least 8 weeks, is one of the most common reasons for primary care visits. Evaluation and treatment may be difficult for primary care providers (PCPs) due to the numerous causes of CC. Since PCPs often serve as the initial assessors and long-term providers of care for patients with CC, we sought to explore their experiences with, and perspectives about, evaluating and managing CC.

METHODS: PCP's treating CC patients were identified from previously published research using natural language processing to identify CC encounters in two healthcare systems. These PCPs were invited to complete an in-depth interview regarding their experiences evaluating and managing CC. Interviews were conducted in person and over the phone, depending on PCP preference. Two researchers analyzed interviews using an iterative inductive and deductive approach. Episode profile summaries and thematic analysis were used to analyze the data.

RESULTS: Three main themes were identified among 8 men and 7 women: defining CC, and identifying its cause; trial and error in evaluation and treatment; and challenges of ongoing management. Our findings revealed significant inconsistencies among PCPs in how they defined CC, which they described as ranging from a minimum of two weeks to six months. PCP's reported that evaluation and treatment for CC can be lengthy and may include multiple visits, diagnostic tests, specialty referrals, and trials of medications. PCPs indicated that the effectiveness of available prescription medications for CC is often insufficient. While confident in their approach to treatment, 13 of 15 PCPs were unaware of clinical guidelines for managing CC.

CONCLUSIONS: PCPs recognized that CC has various causes—and expressed confidence in identifying causes—but conveyed uncertainty or misunderstanding about the definition of CC. Lack of awareness of guidelines for CC likely contributes to inconsistencies in how PCPs define and treat CC. Our findings suggest an opportunity to educate PCPs about evaluation and management of CC to improve care. Better access to, or coordination with, specialists or multi-specialty care for CC may also help. Future research should investigate the alignment of PCPs' management of CC with clinical guidelines.

CLOSING THE GAP: PARTICIPATORY INTERVENTION DEVELOPMENT TO REDUCE CANCER SCREENING DISPARITIES AMONG PATIENTS WITH LIMITED ENGLISH PROFICIENCY

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BACKGROUND: In the U.S., adults with limited English proficiency (LEP) have lower rates of recommended cancer screening than the general population. Greater understanding of underlying barriers and stakeholder engagement in intervention development are necessary to increase screening rates. The objectives of this study were: 1) to understand screening barriers from multiple stakeholder perspectives, 2) to identify candidate intervention approaches, and 3) to develop a feasible, acceptable, and theory-based framework for reducing cancer screening disparities among patients with LEP

METHODS: *Setting:* Small metropolitan area of the upper Midwest U.S. *Study Design and Population:* This study employed a three-stage participatory formative evaluation approach. The Social Ecological Model and Health Belief Model served as theoretical frameworks. First, study team members reviewed existing literature on cancer screening interventions with LEP populations. Second, individual interviews were conducted with patients with LEP (women 50-64 and men 50-74 who were eligible for but had not completed recommended screening) (n=9), in-house language interpreters (n=5), primary care providers (n=5), and individuals identified as leaders in the local Cambodian, Hispanic, and Somali communities (n=3). Finally, results of interviews and the literature review were presented at a community summit attended by community members,

representatives from the medical practice, and employees or volunteers of social service organizations serving people with LEP (n=48). Activities engaged attendees in data interpretation and recommendations for intervention development.

Data Analysis: Interviews were analyzed using methods of directed content analysis and parallel-serial memoing. Results of the literature review were summarized by intervention level, population, screening type, study design, and outcome. Results of the community summit activities were discussed by the study team and integrated into the study findings.

RESULTS: Interview findings highlighted multilevel barriers including limited patient understanding of preventive health, time and cost constraints, and variable roles of language interpreters. Interventions in the literature largely focused on single levels and population groups, but community members were able to provide insights on research findings and make suggestions for a two-prong intervention aimed at heterogeneous populations: 1) community-placed, registry-based community health worker education, motivation, and navigation and 2) clinic-based point-of-care medical interpreter education, handoff to provider, and navigation. Pilot testing of these interventions is ongoing.

CONCLUSIONS: This study leveraged multiple data sources to inform understanding of the complex personal, interpersonal, and structural barriers that impede cancer screening among patients with LEP. Participatory methods can further understanding and engage community members in multilevel intervention planning.

CLOSING THE LOOP ON ECONSULTS: WHAT ARE PATIENTS LEARNING ABOUT THEIR HEALTHCARE?

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BACKGROUND: As national specialty referral rates climb, patients are subjected to increased wait times and costs. Electronic consultations (eConsults) are formal consultations between primary care providers (PCPs) and specialists, recorded in the electronic medical record (EMR). eConsults have been shown to reduce specialty referrals and healthcare costs, leading to eConsult programs at hospitals across the country. These programs facilitate patient access to specialty care through their PCPs; however, there is little research assessing whether PCPs inform their patients of eConsult responses detailing the specialist's opinion. Our research examines this potential gap in communication to assess whether the eConsult "loop" between the PCP, specialist, and patient is being closed by updating the patient.

METHODS: A retrospective study of eConsults to all participating specialties at a single U.S. tertiary care academic medical center from February 10, 2015 to February 25, 2019. A random sample of all eConsults in this timeframe was chosen by selecting every tenth eConsult, with 60 excluded from analysis. We reviewed patient demographics, type of clinical question, whether the eConsult loop was closed, who closed the loop, how the loop was closed, and loop closure time. Data was collected using a modified version of a previous template.

RESULTS: There was documentation that the loop was closed in 231 of the total 387 eConsults reviewed (59.7%). The average time to close the loop on the eConsult was 9 days, measured from the time the eConsult was ordered to when the patient was informed of the eConsult results as documented in the EMR. eConsults were primarily ordered to assist with the management of patients (62.8%), questions concerning the diagnosis (23.5%) and interpreting labs or imaging (13.7%). The majority of eConsult loops were closed by attending physicians, followed by trainees, nurses, and mid-level providers. Nurses had the shortest average time in closing the eConsult loop at 6 days, followed by mid-level providers, attending physicians, and trainees. When comparing how the eConsult loop was closed, the fastest methods were by using the patient portal (5 days) and making a phone call (6 days). In contrast, closing the eConsult loop at a patient's next appointment had an average loop closure time of 25 days.

CONCLUSIONS: Evaluation of eConsult loop closure demonstrates that although attending physicians close the loop most frequently, the loop closure time was shorter when nurses were involved. The findings also reveal that utilization of patient portal messages and phone contact facilitate earlier patient notification of eConsult results. This study demonstrates room for improvement in conveying specialists' information from eConsults to patients. Overall, 40.3% of eConsults' loop closure remained undocumented. This absence iterates the need for provider specific training to ensure that patients are involved in their healthcare team and that the eConsult loop is closed.

COGNITIVE IMPAIRMENT NO DEMENTIA AND ASSOCIATIONS WITH HEALTH LITERACY, SELF-MANAGEMENT SKILLS, AND HEALTH STATUS

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BACKGROUND: Cognitive impairment no dementia (CIND) increases as the U.S. ages, and is associated with poor health outcomes. CIND may negatively impact health through the ability to independently self- manage illness, given the cognitive demands associated with many health-related tasks. We sought to determine the prevalence of CIND among a diverse, community-based population, and establish associations between CIND and health literacy, chronic illness self-management and functional health status.

METHODS: Baseline data from the prospective 'LitCog' cohort study was used for this secondary analysis. 863 adults without dementia aged 55-74 were recruited from six socioeconomically diverse primary care clinics in Chicago, IL. CIND was categorized according to severity (None, Mild, Moderate/Severe). Health literacy was measured using the Newest Vital Sign (NVS) and Test of Functional Health Literacy in Adults (TOFHLA). The Comprehensive Health Activities Scale (CHAS) was used to measure self-care performance. Patient-Reported Outcomes Measurement Information System (PROMIS) measures were used to determine physical and mental health status. Multivariable logistic and linear regressions were used to assess adjusted associations between CIND and outcomes of interest.

RESULTS: 36% of the sample exhibited CIND. It was strongly associated with greater likelihood of limited health literacy (NVS: Mild [OR 3.25; 95% CI 1.93, 5.49], Moderate/Severe [OR 6.45; 95% CI 3.16, 13.2]; TOFHLA: Mild [OR 3.46; 95% CI 2.08, 5.75], Moderate/Severe [OR 8.82; 95% CI 4.87, 16.0]; all p's < 0.001) and poor chronic disease self-management (Mild [B = -11.2; 95% CI -13.5, -8.90], Moderate/Severe CI [B = -21.0; 95% CI -23.6, -18.4]; both p's < 0.001). There were no significant associations between CIND and functional health status in adjusted models.

CONCLUSIONS: In this cohort of older adults, CIND was prevalent and strongly associated with requisite skills for managing everyday health needs. Greater attention to subtle declines in chronic disease self-care may

assist with CIND identification and care management within this population.

Conversely, when CIND is observed, clinicians should expect and address difficulties with self-management. Healthcare systems, clinicians, and researchers should also consider ways to best tailor healthcare and support materials for patients with modest impairments in cognition.

COLORBLIND RACIAL IDEOLOGY IS ASSOCIATED WITH AN INCREASE IN THE USE OF RACE IN MEDICAL DECISION-MAKING

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BACKGROUND: Colorblindness is an ideology or worldview that minimizes the role of systemic racism in shaping outcomes for people of color and attributes racial disparities to the bad choices and poor behavior of racial minorities. Physicians who adhere to a color-blind ideology may be less likely to critically interrogate the role of racism in shaping health outcomes, and, therefore, less likely to challenge race-based treatment guidelines. The purpose of this study is to determine if colorblindness is associated with the use race in medical decision-making.

METHODS: We sent 2,039 members of the Minnesota Academy of Family Medicine Physicians (MAFP) an online survey that included demographic questions and two validated surveys: the Color-blind Racial Attitudes Scale (CoBRAS) and the Racial Attributes in Clinical Evaluation (RACE) scale. CoBRAS measures colorblindness using three continuous subscales to measure respondents' unawareness of (1) racial privilege (scored 7-42); (2) institutional discrimination (scored 7-42) and blatant racial issues (scored 7-36). Higher scores indicate a lack of awareness and thus higher levels of colorblindness. The RACE scale (scored 0-28) was used to determine the extent to which physicians used race in medical management, with a higher score indicating a greater use of race. Multivariate regression analyses were used to assess the relationship between a color-blind racial ideology and the use of race in medical decision making.

RESULTS: The response rate was 12% (236/2039). Higher CoBRAS scores were associated with an increased use of race (β=0.05, $p<0.01$), after controlling for age, gender, location of training and practice characteristics. Of the three CoBRAS subscales, only unawareness of institutional discrimination was significantly associated with an increased use of race (β=0.17, p=0.01), after controlling for the aforementioned covariates. Additionally, physicians under 40 years of age, who worked in urban clinics or academic practices, or had a clinic population consisting of at least 70% racial/ethnic minorities were significantly less likely to use race in their treatment decisions than physicians who were 40 years of age and older, worked in non-urban clinics or non-academic practices, or had a clinic a population consisting of less than 70% racial/ethnic minorities, respectively.

CONCLUSIONS: Physicians who adhere to a color-blind racial ideology, particularly those who deny institutional racism, are more likely to use race in their screening and treatment decisions. Because this may be due to a poor understanding of how systemic racism affects health, more physician education about racism as a health risk is needed. Additional research is also needed to evaluate physician motivations and beliefs as it relates to race-based medical guidelines and policies.

COLORECTAL CANCER SCREENING PATIENT NAVIGATION FOR PATIENTS WITH MENTAL ILLNESS AND/OR SUBSTANCE USE DISORDER: RANDOMIZED CONTROLLED TRIAL

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BACKGROUND: Colorectal cancer (CRC) is the second leading cause of cancer death in the US. Screening has been shown to decrease CRC mortality. However, disadvantaged patients such as those with mental illness (MI) or substance use disorder (SUD), are less likely to be screened. Over 43.6 million adult Americans have MI and cancer is the second most common cause of death. Over 20 million American have SUD. In 2017 at Massachusetts General Hospital (MGH) Charlestown Health Center only 30% of primary care patients with SUD or/and MI were screened for CRC compared with a 72% screening rate for all clinic patients. Patient navigation (PN) has been shown to improve CRC screening. The objective of this study was to evaluate the feasibility and effectiveness of PN program on CRC screening in patients with MI and/or SUD.

METHODS: We conducted a 6 month randomized controlled trial at MGH Charlestown Health Center. Of 251 patients aged 50-74 years with MI and/or SUD overdue for CRC screening, 126 were randomized to intervention and 125 to usual care stratified by diagnosis. Patients in the intervention group received a letter followed by a phone call from navigators. Navigators helped patients overcome barriers to CRC screening. The intervention included education, scheduling, explanation of bowel preparation, addressing lack of transportation or accompaniment to appointments. For those refusing colonoscopy, navigators offered fecal occult blood tests. The primary outcome was proportion of patients completing CRC screening in intervention and usual care groups. We used intention to treat analysis for the primary outcome and chi- squared tests to compare the proportion of patients completing screening in the 2 groups.

RESULTS: Navigators contacted 85 patients (67%) in the intervention group and 26 declined to participate. The completion of CRC screening over the 6-month study period was higher in the intervention group, with 25 patients (19.8%) screened, compared to 13 patients (10.4%) in the usual care group (p=0.04). This was mostly due to the colonoscopy screening rate in the intervention group, which was almost double the colonoscopy screening rate in the usual care group (14.3% vs. 7.2%, p=0.07). In our as-treated analyses, among 82 patients in the intervention group who had contact with the navigator and were found to be eligible, 21 completed screening during the study period (25.6% vs 10.4% of controls, p=0.004). Among the 56 patients who agreed to work with the navigator, 19 (33.9%) completed screening during 6 month study.

CONCLUSIONS: The results of this randomized controlled trial showed that a PN is a feasible intervention and can significantly improve CRC screening rates in community health center patients with MI and SUD compared to usual care. Larger studies in diverse care settings are needed to demonstrate generalizability and explore which modality of CRC screening is most acceptable and which specific navigator activities are most effective for this disadvantaged population.

COMMUNICATING DIAGNOSTIC UNCERTAINTY IN PRIMARY CARE: DEVELOPMENT OF 7-ELEMENT TOOL OPERATIONALIZED BY VOICE ENABLED INTEGRATION INTO CLINICAL WORKFLOW

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BACKGROUND: A key challenge in establishing good communication between physicians and patients and ultimately improving health outcomes is more transparently and effectively communicating uncertainty about diagnosis. While most studies focus acknowledging uncertainty, few explore practical strategies for dealing with uncertainty in the clinical encounter in a way that respects workloads, workflow, and limited visit time. This study aimed to develop and test a practical tool for documenting and communicating uncertainty about diagnostic decision-making during primary care face-to-face encounters.

METHODS: The study was conducted in two stages and included personal interviews with 20 clinicians (10 master clinicians to review 4 common primary care scenarios (headache, URI, backpain, suspicious lymph node) to develop content; 10 MD's to react to workflow issues) and 5 informatics and communication experts, as well as 20 patients (via 3 focus groups). Initial stage was designed to develop themes and content for the tool. In the second stage, we obtained feedback which we iteratively refined tool to a one-page form incorporated into the patient assessment note via voice recognition.

RESULTS: Interviews distilled a 7-element tool for communicating diagnosis and associated uncertainties: explaining the most likely and differential diagnoses, follow-up observation, testing/treatment plan, acknowledging tests' limitations, expected improvement/time frames, facilitating access with clinician contact info, and space for patients to convey input/questions. The interviews pointed to challenges faced by physicians mainly integrating communicating uncertainty into the workflow, time required for electronic documentation, and tailoring uncertainty to different clinical problems and levels of patient health literacy. Patients universally expressed desire to be more engaged in these conversations; operationalizing this aim raised a myriad of conceptual and logistical issues. Physicians believed they the tool accurately identified key communication elements, though suggested it was also patients' responsibility to raise questions when needed. Patients mostly did not share this belief and expressed desires for more information verbally and in writing.

CONCLUSIONS: We identified 7 key elements for communicating uncertainty about diagnosis, which in turn were the basis for design and operationalizing a tool that incorporated the elements into the voice-text generated assessment portion of the note as well as a customized educational leaflet for patients. Implementing this tool enables verbal communication with the patient, simultaneous recording of patient assessment (via voice recognition), and provision of a patient-friendly customized visual diagnosis handout. This represents a novel and potentially time-saving approach for more effectively communicating diagnostic assessments and uncertainty and warrants larger scale testing and deployment.

COMMUNICATION STRATEGIES TO ENGAGE HIGH-NEED VETERAN PATIENTS IN VA'S PRIMARY CARE INTENSIVE MANAGEMENT (PIM) TEAMS: PATIENT PERCEPTIONS

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BACKGROUND: Patient engagement among complex high-need patients in intensive primary care programs can be challenging, as many patients experience medical, social, and behavioral barriers to active participation in their care. The Veterans Health Administration (VA) has implemented and tested intensive primary care programs called PACT Intensive Management (PIM). Using a qualitative approach, our goal was to describe how patients experienced communication strategies employed by PIM providers to get them more fully engaged in their healthcare.

METHODS: Semi-structured interviews were conducted with 51 patients who had at least four encounters with the PIM team regarding their experiences with and reflections on PIM. Interviews were recorded, professionally transcribed, coded in ATLAS.ti, and analyzed to identify what engagement communication strategies employed by providers were discussed and/or perceived by patients to have made a difference.

RESULTS: Communication strategies enacted by PIM providers/staff that were most frequently highlighted by patients were 1) good provider bedside manners; 2) holding patients accountable; 3) simplifying language and taking extra time to explain; 4) active listening; and 5) eliciting questions or additional concerns. Good beside manners included non-judgmental body language, showing respect and minimizing power differentials, smiling, being polite and courteous, being nurturing and showing genuine concern, speaking kindly to patient's family members, remembering patients' names, conveying interest in knowing the patient as a person, and not taking patient moods personally. Patients detailed how PIM providers held them responsible in areas such as diet habits, medication adherence, and following through on recommended exams, in a way that was frank and persistent, but conveyed caring. A patient explained, "….It's not so much nagging; it's just kind of coming from a person that cares.". Patients said PIM providers took extra time to explain and simplified medical language regarding the chronic conditions, the purpose of medications and potential side effects, as well as difficult-to-understand paperwork. Patients also underscored how active listening by PIM providers often consisted of undivided attention. A patient explained, ""They make you feel like they really care, somebody is really listening. ….[With other providers] it's almost like they half-listen because they're on a schedule and they've got to keep that schedule." Finally, some patients described being pleasantly surprised by how PIM providers encouraged patients to ask questions during appointments, even if their concerns differed from their official stated reason for the visit.

CONCLUSIONS: Patients enrolled in PIM identified numerous provider communication strategies that influenced engagement with their healthcare and with PIM. Increased awareness of such strategies may inform intervention design for intensive primary care programs and other services for high-need patients.

COMMUNITY HEALTH WORKERS AS AN EXTENSION OF CARE CO-ORDINATION IN PRIMARY CARE: IDENTIFYING PATIENTS' UNMET SOCIAL DETERMINANTS OF HEALTH NEEDS

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BACKGROUND: Social determinants of health (SDOH) affect the functional status and the onset, progression, and effective treatment of

disease in patients and populations, and are important mediators of health outcomes, influencing healthcare delivery across the age spectrum and multiple disease conditions. Interventions targeting these factors may lead to improvement in health outcomes and utilization. However, assessment of SDOH and impact on unmet needs remains a significant challenge for clinical teams, a gap which may be filled by working in partnership with outreach professionals, such as Community Health Workers (CHWs). In this study we sought to determine if there were significant differences between patients SDOH needs as identified by clinical team versus those identified by CHWs, who serve as an extension of care-coordination for patients with medical and social complexity.

METHODS: *Setting:* Academic primary care practice in the Midwest

Study Design and Population: This was a retrospective chart review of patients referred to a CHW by clinical teams during a 6 month period to identify the following: 1) reason for the referral as identified by the clinical team and, 2) needs identified by the patient during a CHW visit. These were grouped into 5 categories: Health insurance navigation; Health system navigation; Non-Health system navigation/Basic Needs; Health education and promotion and Psychosocial support. The two were then compared for agreement. A determination of whether the patient needs were met following the CHW intervention was also made.

Data Analysis:

Summary statistics were used to describe the demographic characteristics of the patients, and the differences between patients SDOH needs as identified by clinical team versus those identified by CHWs, were determined.

RESULTS: 204 patients were referred to a CHW during the 6 month period. Demographic characteristics: female- 128 (63%); White -140 (69%); Not Hispanic or Latino-176 (86%); Government issued insurance- 187 (92%); > high school education- 81 (40%) and unemployed or retired- 134 (66%).

Majority of patients had more than one need identified by the clinical team and CHW. There were significantly more non-Health system/Basic needs and Psychosocial support needs (63% of patients compared to 51%), and less health insurance navigation needs (15% of patients versus 29%) identified by the CHW compared to the clinical team. For the 137 cases where a determination could be made, following the CHW intervention, patients' needs were fully or partially met in 88 (45%) and not met 39 (19%).

CONCLUSIONS: Identifying needs of patients with unmet SDOH needs is the critical first step towards addressing these needs. Clinical teams should consider working in partnership with CHWs, not only for a more comprehensive assessment of SDOH needs, but also for intervention. The impact of these intervetnions on health outcomes and health care utilization needs further inquiry.

COMMUNITY HEALTH WORKERS EMBEDDED IN FOOD BANKS AND FOOD PANTRIES IN FRONTIER IDAHO

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BACKGROUND: Community health worker (CHW) programs can improve health outcomes and health- related social needs. In rural communities, which often have high medical and social needs and unique barriers to healthcare access, CHWs may play an important role. In frontier North-Central Idaho, CHWs at St. Mary's/Clearwater Valley Hospitals & Clinics (SMH-CVHC) conduct health screenings at food distribution sites (FDSs) (e.g., food banks and pantries), to reach high-risk populations. This mixed-method study examines the factors influencing early implementation of FDS health screenings.

METHODS: CHWs (n=6) and FDS coordinators (n=10) participated in semi-structured interviews describing food distribution users (FDUs) and early successes and challenges with embedding CHWs at FDSs. Two reviewers independently coded interview transcripts and discussed codes to reach consensus. Quantitative data were obtained from health screening tests and survey responses. Data from FDUs (n=73), defined as participants in health screenings at FDSs, were compared with non-FDS screening data.

RESULTS: FDUs had significantly ($p \leq 0.05$) higher hemoglobin A1c levels (5.9 vs. 5.6%), systolic blood pressure (139 vs. 133 mm Hg), and BMI (29.6 vs. 27.2 kg/m^2), and were less likely to have insurance (10 vs. 33%) or regular healthcare provider (13 vs. 24%), than those screened at non-FDS sites.

Trust and relationships between community members were prominent themes in all interviews. FDUs were described as isolated, distrustful of institutions and outsiders, and unlikely to engage with community services other than food distribution. Therefore, CHWs described FDSs as ideal settings to reach high-risk and isolated populations. Interviewees were divided as to whether formal social needs screenings would be beneficial or engender distrust, and instead relied on a trusting environment where FDUs volunteered information about social needs.

FDS screenings were described as successful at reaching, building trust with, and providing referrals for high-risk populations. Personal relationships and often volunteer-dependent structure of FDSs simplified the process for establishing the FDS-CHW partnership. However, the informal structure also made FDSs vulnerable to changes in leadership, funding, or space. Other challenges included logistical issues, inability to reach some community members, and time required for CHWs to build and maintain relationships. Suggested changes included adding a nutritionist, mental health provider, or benefits counselor into screenings.

CONCLUSIONS: CHWs are integrated within their communities and are therefore well-suited to overcome the geographic isolation and distrust preventing some frontier residents from accessing healthcare.

Embedding CHWs in frontier FDSs appears to be a promising strategy to reach vulnerable and isolated residents. Further research should examine the unique nature of distrust in frontier communities and how deploying CHWs to frontier FDSs can improve access to care and health outcomes.

COMMUNITY RESOURCE REFERRAL TECHNOLOGY: LESSONS FROM EARLY ADOPTERS

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BACKGROUND: Several new technology products have emerged over the past five years that facilitate health care-based social risk screening, risk documentation, and community agency referrals. Little is known about the adoption and use of these platforms. The objective of this study was to explore health care organizations' experiences implementing community resource referral platforms and to distill lessons learned from early adopters' implementation experiences.

METHODS: Semi-structured interviews with leaders or managers at 35 U.S. health care organizations that were implementing community resource referral platforms. Participating organizations were identified through web-based research and by field experts familiar with platform adoption initiatives. Recorded interviews were professionally transcribed and subsequently analyzed by two researchers.

RESULTS: Regardless of the platform used, informants uniformly reported that implementation was slowed by challenges related to staff and CBO partner buy-in, privacy protections, IT integration, and workflow issues. Although most health systems were able to implement the directory search and make referrals, few had achieved closed-loop referral tracking with CBOs. Involving CBO partners early in the process facilitated adoption of referral tracking. None of the organizations had yet evaluated their platform's impacts on efficiency and effectiveness of social need referrals or patient health impacts. Overarching adoption and implementation recommendations included: engaging both internal staff and external partners to clearly define a collective vision for the platform's purpose; comparing costs and other users' experiences before purchasing a platform; leveraging existing community resource data and the expertise of staff familiar with CBOs; and building learning time into implementation rollout.

CONCLUSIONS: Lessons learned by organizations implementing community resource referral platforms include the importance of early communication and alignment with CBO partners and internal staff.

Technology-based products can support but do not replace the time-intensive process of building support internally and nurturing partnerships with CBOs to strengthen health care systems' social care programs. Future research should focus on the effectiveness of platforms and potential impacts of these systems on CBOs.

COMORBID MENTAL HEALTH ILLNESS AMONG ADULTS WITH CHRONIC PAIN TREATED WITH PRESCRIPTION OPIOID THERAPY WHO ARE NEWLY CERTIFIED FOR MEDICAL CANNABIS

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BACKGROUND: Medical cannabis use is common and is increasing, particularly among adults with chronic pain. Until recently, chronic pain has been managed with prescription opioids, now resulting in adults taking both prescription opioids and medical cannabis. In addition, many adults report using cannabis to address mental health symptoms. Despite opioid use, medical cannabis use, and cannabis use to address mental health symptoms being common, little is known about their relationship with each other. Therefore, we sought to explore how opioid use and mental health symptoms are related among adults who are newly certified for medical cannabis.

METHODS: We conducted a cross-sectional analysis of participants enrolled from 11/2018-12/2019 in an observational cohort study of adults with chronic pain, opioid use, and new medical cannabis certification in New York. Questionnaires included: sociodemographic characteristics; opioid use (past 14 days), pain (Pain, Enjoyment, General activity scale), depression (Patient Health Questionnaire-9), anxiety (General Anxiety Disorder-7), post-traumatic stress disorder (PTSD, Abbreviated PTSD Checklist), and attention deficit hyperactivity disorder (ADHD, Adult ADHD Self-Report Screening Scale for DSM-5). We used chi-square and t-tests to explore how differing doses of prescription opioids affected mental health symptoms. Opioid use was categorized as high-dose opioid prescription (>90 morphine milliequivalents [MME]/day), less than high-dose opioid prescription (<90 morphine MME/day), and no opioid prescription based on the distribution of data and Center for Disease Control definition of high-dose opioids.

RESULTS: Of 54 participants, mean age was 53 years, 67% were female, and 42% were white. Eighteen percent used recreational cannabis. Of 63% taking opioids at baseline, median number of days of opioid use was 14 (in a 14-day period), and median daily dose was 45 MME. Nearly one-quarter (24%) took high-dose opioids. Mean PEG score was 7.6 (range=0-10). At least moderate symptoms of depression or anxiety were present in 44% and 33%, respectively. For PTSD and ADHD, 56% and 46% screened positive, respectively. Participants with (vs. without) high-dose opioid use were more likely to have higher pain levels (PEG score: 8.5 vs. 7.3, $p<0.05$) and at least moderate symptoms of depression (69.2% vs. 36.6%, $p<0.05$).

CONCLUSIONS: Adults with chronic pain, opioid use and new certification for medical cannabis in NY had high levels of mental health symptoms. Those with high-dose opioid use had particularly high symptoms of depression. Although medical cannabis use continues to increase, the effect of medical cannabis on mental health symptoms over time is unknown. Our findings suggest the importance of monitoring mental health symptoms in patients with chronic pain who are initiating medical cannabis. Understanding relationships between pain, opioids, mental health symptoms, and cannabis is critical, and can inform policies and patient care.

COMPARATIVE EFFECTIVENESS OF DIGITAL BREAST TOMOSYNTHESIS FOR BREAST CANCER SCREENING AMONG OLDER WOMEN

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BACKGROUND: Digital breast tomosynthesis (DBT) is a breast cancer screening modality that may provide incremental improvements over standard 2-dimensional mammography, including lower recall rates and higher cancer detection rates. However, DBT has not been well studied among older women, particularly women 75 and older. The benefits of breast cancer screening in this age group are uncertain and whether to adopt a new, more expensive screening technology is particularly unclear. The goal of this study was to evaluate screening outcomes for DBT compared to 2-D mammography alone among older women.

METHODS: We used data from the Surveillance, Epidemiology, and End Results (SEER)-Medicare database to evaluate the comparative effectiveness of DBT and 2D mammography in women 67-74 and among women 75 and older. We included women who had no history of breast or other cancer prior to January 2015 and who received a screening mammogram during 2015. We assessed recall (defined as diagnostic mammography or ultrasound) and biopsy in the 4 months following initial screening. We also assessed breast cancer diagnoses by stage within 4 months of screening using SEER registry data. We used logistic regression to adjust for age, race, screening history, use of screening ultrasound, comorbidity, and measures of poverty and education.

RESULTS: The study included 43,417 women who were screened for breast cancer, of whom 21% received DBT. In adjusted analyses, among women 75 and older, DBT was not associated with a statistically significant difference in recall (91 vs 97 per 1000 women screened with DBT versus 2-D respectively, p=0.30) or biopsy (19 vs 17 per 1000, p=0.30). Among women 67-74, recall rate (117.0 vs. 99.5 per 1000, p <0.001) and biopsy rate (22 vs 16 per 1000, p=0.001) were higher among women screened with DBT.

Among women 75 and older, DBT was associated a higher rate of stage 1 invasive cancer diagnosis (6.0 vs 4.9 per 1000, p=0.005) and carcinoma in-situ diagnosis (2.6 vs 1.5 p<0.001), with no differences in the rates of more advanced cancers. Among women 67-74, DBT was also associated with a higher rate of Stage 1 invasive carcinomas (4.7 versus 3.5 per 1000, p=0.003), but not other stages.

CONCLUSIONS: Previous studies have suggested that DBT is associated with lower rates of recall and higher cancer detection rates in women. We found that DBT is not associated with lower recall among older women, and further, that in situ diagnoses represent a large proportion of additional cancers detected among women over 75. Important questions remain about whether this increased cancer detection improves morbidity and mortality or whether increased sensitivity simply increases overdiagnosis.

COMPARING CORE VALUES BY PATIENT RACE IN TWO TRIALS USING VALUES AFFIRMATION TO REDUCE HEALTH DISPARITIES

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BACKGROUND: We have shown values affirmation (VA), or affirming core values, before a medical visit increases patient engagement and communication during the visit. We compared the importance of values selected among African American, American Indian/Alaskan Native (AI/AN) and White participants enrolled in two trials using VA to reduce racial disparities.

METHODS: The trials are ongoing patient-level, randomized controlled trials enrolling non-Hispanic African American, White, and AI/AN participants with uncontrolled hypertension. At enrollment, participants complete a double-blinded VA writing exercise prior to a medical visit. Instructions for the exercise vary by treatment arm; from a list of 11 values, intervention patients pick their 3 most important and control patients pick their 3 least important. We compared the values chosen by participant race controlling for age and gender.

RESULTS: Of 365 participants, 38.4% were African American, 14.8% were AI/AN and 46.8% were White. White participants were older; more AI/AN participants were men. Age and gender did not vary by treatment arm. "Relationships with friends/family" and "independence" were the most important values selected in all groups. White participants selected "sense of humor" as important more often than Black participants. Black participants selected "religious values" as important more often than whites. Politics, artistic and athletic ability were least important in all groups; differences in the lack of importance of "religious values" were noted. (Table)

CONCLUSIONS: In trials using a VA intervention, the most and least important values chosen were similar across race with the exception of the importance of religion and humor. Affirmation of these core values prior to clinical visits may play a role in improving patient engagement, activating patients and reducing racial disparities in outcomes.

Values most often selected as "Most Important"

	White N = 85	African American N = 74	American Indian N = 28
Relationships w/ friends/family	82.4%	75.7%	92.9%
Independence	41.2%	47.3%	50.0%
Sense of humor	52.9%	33.8%*	39.3%
Religious values	30.6%	64.9%*	35.7%

Values most often selected as "Least Important"

	White N = 95	African American N = 79	American Indian N = 26
Politics	31.6%	39.2%	57.7%
Artistic ability	34.7%	31.6%	38.5%
Athletic ability	53.7%	41.8%	38.5%
Religious values	32.6%	16.5%*	38.5%

* Significant difference compared to White participants when adjusted for age and gender.
** Dark gray > 50% of participants selected, light gray > 30% of participants selected
***Values to choose from include: sense of humor, religious values, relationships with friends/family, music, politics, community, living in moment, independence, creativity, artistic ability and athletic ability

COMPARING RESPONDERS VERSUS NON-RESPONDERS OF A SURVEY COLLECTING SOCIAL DETERMINANTS OF HEALTH AMONG PATIENTS IN A LARGE URBAN HEALTHCARE SYSTEM

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BACKGROUND: There is growing interest from healthcare systems to address health disparities through collection of Social Determinants of Health (SDoH). However, many health systems are struggling to find ways to collect determinants that will not affect clinical encounters, be overly intrusive, or place additional burden on their staff. As a result, many systems have opted to collect SDoH via surveys through patient portals. Surveys are often ridden with nonresponse bias, and surveys that ask for sensitive information (education level, financial strain, health literacy) are especially vulnerable to higher rates of non-response. The objective of this study was to understand demographic differences in responders versus non-responders to a SDoH survey deployed within

the University of Miami's Health System (UHealth) from September 2016 to July 2019.

METHODS: A survey collecting SDoH was developed and disseminated throughout the UHealth system. Initially, adult patients with a primary care appointment received a message via their electronic patient portal. In the message, patients were invited to complete the survey by navigating to the questionnaire tab of their patient portal. The survey was later expanded to include patients from all UHealth Clinics. Patient characteristics were compared using a chi squared test (Table 1).

RESULTS: The total number of patients included in the analysis was 14,616 where 12,414 were responders and 2,202 were non-responders, resulting in an overall response rate of 84.93%. The response rate was very similar for males and females, 85.25% and 84.55%, respectively. The lowest response rates by age were observed in adults aged 75 and older (60.59%). The response rate by race ranged from 82.68% (Black or African Americans) to 93.75% (Native Hawaiian or Other Pacific Islanders). Response rates by ethnicity were lowest among Hispanics (82.92%). Lastly, our lowest response rates were by patients that indicated that their preferred language was Creole (50%).

CONCLUSIONS: There are not major differences in response rate by gender, age, race, ethnicity and preferred language when collecting SDoH information through electronic patient portals. Although response rates were high, offering surveys using a different interface (paper versus patient portal) and in a patient's preferred language (ex. Creole) may expand reach of the survey and, as a result, the implications this survey may have on patient health. There may also be value in understanding whether patients seeking care in primary vs specialty clinics are more likely to report SDoH information.

COMPARING SPENDING DIFFERENCES BETWEEN BENEFICIARIES IN MEDICARE ADVANTAGE AND THE MEDICARE SHARED SAVINGS PROGRAM

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BACKGROUND: Medicare program rules tie spending benchmarks in its Medicare Advantage (MA) program to spending among fee-for-service (FFS) beneficiaries, including FFS beneficiaries at risk for total cost of care through the Medicare Shared Savings Program (MSSP). Comparisons between MSSP and MA populations are difficult because of differences in clinical risk, selection effects, and differences in coding patterns. In this study, our goal was to improve upon prior literature comparing MSSP and MA beneficiary spending by comparing patients of similar clinical risk, assessed using electronic health record data.

METHODS: We conducted a retrospective cohort study among beneficiaries at one large non-profit academic health system in which care patterns were similar across beneficiaries. Our cohort consisted of 15,772 patients who were alive at December 31st, 2014; were continuously enrolled from 2014 to 2018; and had a diagnosis in 2014 of either diabetes mellitus (DM), congestive heart failure (CHF), chronic kidney disease (CKD), or hypertension (HTN). We merged claims and electronic health record data containing demographic, comorbidity, pharmacy, vital sign, laboratory, and utilization-related information. Descriptive statistics were used to compare baseline characteristics. We constructed condition-based cohorts and used validated clinical risk models to compare spending among MSSP and MA beneficiaries with similar clinical risk. We created propensity-score matched cohorts within each disease group; all propensity matching and adjustment was based on 2014 data, prior to the system's participation in MA. Spending was assessed between 2015 and 2018. We also adjusted for changes in coding patterns between MA and MSSP.

RESULTS: Compared with MA enrollees, MSSP enrollees were more likely to be younger, female, non- White, from a low-income zip code, obese, and have high baseline emergency room and hospital utilization. In 2015, unadjusted per-member per-year MSSP vs. MA spending, by cohort, was $12,174.80 vs $9,515.30 for DM, $19,716.30 vs $15,832.00 for CHF, $14,047.50 vs $11,124.90 for CKD, $11,095.40 vs $8,555.70 for HTN. In propensity-matched analyses, adjusted spending in 2018 was higher for MSSP than MA beneficiaries (26% in DM, 57% in CHF, 34% in CKD, and 26% in HTN). Detailed matching and adjustment for clinical risk-stratification criteria and coding trends reduced spending differences by 20.6% in the HTN cohort, but widened spending differences by 9.1% in the DM cohort, 6.3% in the CKD cohort, and 38% in the CHF cohort.

CONCLUSIONS: Even after controlling for granular clinical data, clinical risk, and trends in coding patterns, residual spending differences were sizeable between MSSP and MA patients. Unmeasured selection effects into MA likely account for the majority of spending differences between MSSP and MA and should be taken into consideration in any spending comparisons between FFS and MA, such as setting benchmarks.

COMPARISON OF AN OPT-IN VERSUS PROGRAM-DIRECTED PHARMACIST POST- DISCHARGE TELEPHONE MEDICATION RECONCILIATION ON 30-DAY HOSPITAL READMISSIONS

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BACKGROUND: Prior studies have demonstrated the impact of pharmacist intervention on reducing medication errors during transitions of care (TOC). The Interactive Home Monitoring (IHM) program is a post-discharge care program implemented at the University of Virginia (UVA) Health in October 2017 to facilitate TOC and reduce 30-day hospital readmissions for internal medicine and family medicine patients. During the initial phase (opt-in), patients elected to receive a medication reconciliation (MR) call from a pharmacist. A 2018 UVA study concluded that patients in this initial phase who received a post-discharge pharmacist-led MR call had a significantly lower rate of 30-day hospital readmission and ED visits (19.7% vs. 25.1%, p=0.008). Since November 2018 (program-directed), the MR call has been included as a standard component of the program to reach more patients and more quickly resolve medication-related issues. This change along with other factors that may influence readmissions such as timing of MR completion, receipt of bedside medication delivery and existence of language barriers have not been explored.

METHODS: This was an observational, retrospective cohort study of patients enrolled in the IHM program from October 2017 to November 2019. Data was collected from the electronic medical record and a UVA data repository. The primary objective was to compare the prevalence of 30-day hospital readmissions and emergency department (ED) visits between the opt-in and program-directed phases. The secondary objective was to identify factors that may influence readmission risk. Statistical analysis was performed using chi- square tests.

RESULTS: The IHM program enrolled 4,084 patients during the study period, with 2,307 in the opt-in phase and 1,777 in the program-directed phase. A change in program structure did not further reduce 30-day hospital readmissions (9.2% vs. 8.9%, p=0.802) or ED visits (10.2% vs. 13%, p=0.065). In the program- directed phase, significantly more patients received a MR than in the opt-in phase (59% vs. 30%, p<0.001) and those who received a MR continued to have significantly lower rates of readmission (9.2% vs. 14.9%, p<0.001). A reduction in ED visits (10.2% vs. 15.3%, p=0.001) was an improvement compared to the opt-in phase. On average, the MR was completed on post-discharge day three – one day sooner than in the opt-in period. There was no significant difference in readmission rate when the MR was completed within 48 hours post-discharge. Receipt of bedside medication delivery and native language did not significantly impact readmission rates.

CONCLUSIONS: A program-directed approach for post-discharge MR did not result in incremental readmission reduction when compared to an opt-in approach. However, readmission and ED reduction continued to be significant in the pharmacist-led MR group. Further study may focus on alternate prioritization strategies for these efforts.

COMPARISON OF LENGTH OF STAY AND HOSPITAL COST AMONG TEACHING INTERNAL MEDICINE AND HOSPITALISTS SERVICES IN A TERTIARY CENTER: A PROSPECTIVE COHORT STUDY

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BACKGROUND: Hospitalists are considered as the largest internal medicine sub-specialty in the U.S with three quarters of hospitals utilizing their services for inpatient care. There are several retrospective studies comparing teaching internal medicine services to hospitalists but there are no prospective studies. We ought to compare length of stay and cost of hospitalization in patients treated by teaching internal medicine versus non-teaching hospitalist services at a single institution.

METHODS: We conducted a classical prospective cohort study. Consecutive patients were recruited dynamically between 2/25/2019 -4/30/2019. Patients included were ≥18 years admitted to internal medicine services for any reason. Excluded patients who did not consent and patients admitted to academic services. We collected following data: age, sex, ethnicity, assistance at home, food security most the year, residence prior to admission, type of insurance, admission diagnosis (16 categories) and comorbidities (17 categories).

Length of stay and hospital cost were outcomes of interest. Propensity score by inverse probability of treatment weighting followed by multiple linear regression was used to compare teaching and nonteaching services to determine average treatment effect. Baseline characteristics were compared using parametric and non-parametric analysis. Diagnostics were used to assess propensity score model and multiple regression models.

RESULTS: A total of 1273 patients were admitted in study period. The mean age of 61 ± 19 years and females were 52%. Teaching IM admitted 526 patients and Non-teaching admitted 747 patients. Baseline characteristics were well balanced with standardized biases less <0.1 post propensity matching (figure 1.). Using average treatment effect as an estimand, teaching IM provided a shorter adjusted hospital stay by 0.7 days (CI: -0.2- -1, p-value=0.0028) compared to non-teaching medicine. Hospital cost in patients treated by teaching services was 168 dollars more than nonteaching, however this was not statistically significant (CI: -560-896, p-value= 0.64).

CONCLUSIONS: Teaching internal medicine services care was associated with shorter stay and no increased cost, readmission or mortality compared to non-teaching hospitalist services.

COMPARISON OF SHORT-TERM IN-HOSPITAL OUTCOMES OF REVASCULARIZATION VIA CABG VERSUS PCI IN PATIENTS CHRONIC KIDNEY DISEASE

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BACKGROUND: Previous studies have compared the long-term outcomes of patients who have undergone either coronary artery bypass graft (CABG) or percutaneous coronary intervention (PCI). Primary outcome consisting of death, stroke, or myocardial infarction has been shown to be higher at five years for PCI, with death of all causes higher in PCI as well. However, cerebrovascular events were decreased in PCI patients. This study aims to investigate the effects of chronic kidney disease on patients on short-term outcomes on patients who underwent PCI and CABG.

METHODS: We performed this retrospective cohort study utilizing the 2012-2015 Nationwide Inpatient Sample (NIS) database. Utilizing ICD-9 procedure codes, we identified patients who underwent either PCI (ICD-9 procedure codes 36.03-36.09) or CABG (36.10-36.19) while omitting those who had codes for both procedures. We then identified those patients who had a diagnosis of chronic kidney disease (CKD) and grouped them by stage; No CKD (n=415,516), Stage 1 (585.1, n=472), Stage 2 (585.2, n=4,084), Stage 3 (585.3, n=26,657), Stage 4 (585.4, n=5,767), Stage 5 (585.5, n=600) and end-stage renal disease (585.6, n=13,648). We omitted individuals with conflicting staging diagnoses. We utilized chi-square to analyze the effects of CKD on mortality while utilizing independent-samples t-test to investigate influences on length of stay and total charges.

RESULTS: 324,804 PCIs (248 stage 1, 2,443 stage 2, 16,887 stage 3, 3,961 stage 4, 438 stage 5, and 9,615 ESRD) and 141,940 CABGs (224 stage 1, 1,641 stage 2, 9,770 stage 3, 1,806 stage 4, 162 stage 5, and 4,033 EDRD) were performed. Mortality was significantly higher in CABG patients with Stage 3 (3.26% vs. 2.45%, p<.0005) and ESRD (6.48% vs. 4.17%, p<.0005) compared to PCI. Length of stay and total charges were both was significantly higher in CABG patients with all stages of CKD (p<.0005); stage 1 (9.15 vs. 3.17 days and $150,145.49 vs. $77,362.80), stage 2 (9.33 vs. 4.42 days and $155,149.91 vs. $82,037.68), stage 3 (10.75 vs. 5.36 days and $170,981.18 vs. $90,014.21), stage 4(13.28 vs. 6.67 days and $199,847.96 vs. $100,300.39), stage 5 (13.57 vs. 6.97 days and $215,150.99 vs. $103,477.65), and ESRD (14.52 vs. 6.42 days and $248,513.58 vs. $113,669.59).

CONCLUSIONS: While previous studies have indicated long-term outcomes, including death and stroke favoring CABG, the results of this study indicate that PCI has immediate advantages in those with chronic kidney disease. Both length of stay and total charges were significantly lower for PCI compared to CABG, and mortality was decreased in both stage 3 and ESRD. These results suggest that a patient's chronic kidney disease status should be taken into consideration in determining the most appropriate procedure for revascularization.

COMPARISON OF THE 7TH AND 8TH EDITIONS OF THE AMERICAN JOINT COMMITTEE ON CANCER (AJCC) STAGING FOR OROPHARYNGEAL SQUAMOUS CELL CARCINOMAS (OPSCC): A SURVEILLANCE, EPIDEMIOLOGY AND END RESULTS PROGRAM (SEER) DATABASE ANALYSIS

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BACKGROUND: The recently released eighth edition of the American Joint Committee on Cancer (AJCC) Staging Manual, Head and Neck Section, incorporates significant changes to the prior seventh edition. These changes reflect the improved understanding of tumor biology, prognostic factors and molecular markers that effect outcomes in Head and Neck cancers. Key updates restage oropharyngeal squamous cell carcinoma (OPSCC) by human papilloma virus (HPV) positivity as data demonstrates that these tumors have markedly improved prognostic outcomes compared to HPV negative tumors, which is better reflected by the eighth edition staging.

METHODS: Using the Surveillance, Epidemiology, and End Results (SEER) database from 2004 – 2014, we identified male patients with squamous cell carcinomas of the tonsil, base of tongue and soft palate aged between 21 and 64 years old, using these clinical characteristics as surrogate markers for HPV positive status. We re-classified them by the AJCC 7th edition staging for HPV positive OPSCC as well as by AJCC 8th edition staging. The prediction performance by two staging editions were compared for overall survival (OS) and Disease free survival (DFS). Kaplan-Meier method and Cox proportional hazard model were applied, and the discrimination performance was measured by the concordance statistics (C-statistics).

RESULTS: A total of 8202 eligible patients were included in the analysis with a median follow up period of 51 months. After comparing the change of 7th edition and 8th edition staging groups, the clinical staging changed for 93.9% of patients. 10-year overall survival (OS) for AJCC 8th stages I (74%), II (78%), III (55%) and IV (32%). Using Stage I as reference, the hazard ratio for stage II, III, and IV is 0.98 (95% CI: 0.87-1.09), 2.29 (95% CI: 2.04-2.57), and 5.88 (95% CI: 4.96-6.98). Similar results were noted for ten year disease free survival. The C-statistics measured overall discrimination for 7th and 8th edition was 0.63 and 0.68 (P<0.001), respectively.

CONCLUSIONS: Based on this SEER analysis, the overall performance of discrimination improved from AJCC 7th to 8th edition incorporating HPV status more effectively with >93% change in clinical staging. Despite not having statistically significant differentiation of Stage I and II, it does so more effectively for Stages III and IV. Potential study limitations include the use of surrogate markers for HPV status and continued need for staging guideline improvement.

COMPREHENSIVE CARE CLINIC. A MULTIDISCIPLINARY APPROACH TO THE CARE OF HIGH-RISK PATIENTS IN AN URBAN AMBULATORY RESIDENCY CLINIC; ITS IMPACT ON UTILIZATION

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BACKGROUND: Our clinic provides medical care for many of the most medically and socially complex patients in our health care system. Our ACO has a vested interest in reducing cost and unnecessary hospitalizations. In September 2017, we started our Comprehensive Care Clinic (C3), a multi-disciplinary visit type designed to identify barriers to care for our high-risk patients. These visits are 60 minutes in length, allowing us to screen for non-medical determinants, and address care gaps with the patient's resident, social worker, and pharmacist. We develop personalized care plans for each patient with the goal of reducing unnecessary utilization.

METHODS: Each quarter we determined which of our patients were eligible for C3, defined as having poorly controlled diabetes or HTN or greater than 3 ED visits or 2 hospitalizations in a single year. Eligible patients were offered appointments. A generalized linear model with Poisson distribution comparing number of visits pre and post C3 visit for 3 groups of patients: those seen in C3, those eligible, but not yet seen, and those not eligible. All statistical models were run using Proc Glimmix (SAS: version 9.2; SAS Institute Inc, Cary, NC).

RESULTS: The C3 group saw a significant decrease in number of ED visits (2.24 [1.88, 2.65] to 1.26 [1.01, 1.58], p<0.0001, mean [95% CI]). Non-C3 clinic patients saw a decrease which approached significance (0.93 [0.86, 1] to 0.85 [0.81, 0.9], p=0.0848). Conversely the C3 waitlist patients saw a significant *increase* in ED usage (1.37 [1.13, 1.65] to 1.83 [1.54, 2.17], p=0.0004).

Inpatient use; The C3 group saw a significant decrease in number of inpatient visits per patient (1.69 [1.4, 2.05] to 1.25 [0.98, 1.6], p=0.0096). The non-C3 patients also saw a significant decrease in inpatient visits (0.88 [0.84, 0.92] to 0.58 [0.52, 0.64], p<0.0001). The C3 waitlist patients saw no detectable change in inpatient visits (0.97 [0.89, 1.05] to 0.95 [0.83, 1.07], p=0.763)

CONCLUSIONS: C3 is an opportunity to identify individual barriers to care and offer targeted solutions for our high-risk patients. As a result of this effort we were able to significantly reduce both ED and inpatient utilization identified by our reporting system as high-risk. High risk patients identified but not seen experienced increased utilization of the ED and no change in their inpatient usage. We offer personalized care coordination, screen for the non-medical determinants of care and address medication issues. This patient- centered model of care allows us time to offer immediate assistance with medications, transportation and care gaps and allows our residents time to make longer term health goals. Patients are educated to use same day visits (in lieu of the ED) for primary care problems. Patients and residents have expressed high satisfaction for this approach to complex care. Going forward, we will be conducting interviews to determine which aspects of C3 seemed most useful to our patients.

CONCOMITANT PROBLEMS AND OUTCOMES IN PATIENTS HOSPITALIZED FOR ACUTE HEART FAILURE

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BACKGROUND: Patients hospitalized with acute heart failure (AHF) often have multiple co-morbid conditions, which may contribute or exacerbate the current presentation and lead to worse outcomes. In this study, we used in-hospital consults as a proxy for acute concurrent problems to evaluate the impact of these problems on AHF outcomes.

METHODS: We evaluated 440 patients admitted to Stony Brook University Hospital with a diagnosis of AHF during the 2017 calendar year. Requests for consults were identified and verified through individual chart reviews. Reasons for consults were grouped into clinically relevant clusters. Follow-up data was collected for a minimum of 1 year or till death. The primary endpoint was 1-year mortality or readmission. The secondary endpoint was 30-day mortality or readmission. The impact of each consult-prompting condition on outcomes was quantified trough logistic regression models adjusting for baseline characteristics.

RESULTS: Mean age was 75 (14) years; 43.9% were women. Among the 440 patients, 24 (5.5%) had NYHA Class IV HF, 213 (48.4%) had a previous hospitalization for HF within 1 year, 126 (28.6%) were on medications for chronic pulmonary disease, 45 (10.2%) were on dialysis, 228 (51.8%) had diabetes, and 50 (11.4%) had active cancer. In terms of medications, 293 (66.6%) were on angiotensin-modulating agents, 348 (79.1%) were on beta-blockers, and 300 (68.2%) were on diuretics.

Overall, 222 (50.4%) of 440 patients had ≥ 1 consult. The frequencies of different consult types include 137 (31.1%) renal consults, 70 (15.9%) pulmonary consults, 25 (5.7%) psychiatry consults, 31 (7.1%) endocrine consults, 25 (5.7%) oncology consults, and 24 (5.5%) palliative consults.

Mean length of stay was 5 (3-8) days. Out of 440 patients, 222 (50.5%) had a readmission; 72 (16.4%) within 30 days, 136 (30.9%) within 90 days, and 218 (49.6%) within 1 year. 54 (12.3%) of patients had experienced death within 1 year.

Table 1 presents a summary of the impact of each type of consult, reflecting a related problem, on patient outcomes. Renal consults were associated with elevated risk for death or readmission in 1 year and in 30 days. Oncology consults were associated with elevated risk for death or readmission in 30 days but not in 1 year. None of the other consult types showed a significant associated risk.

CONCLUSIONS: Acute concurrent problems are common in patients hospitalized with AHF. Renal problems have the most prominent impact on outcomes. Further research is needed to identify the optimal time for preventive interventions to reduce the impact of these concomitant conditions on patient outcomes.

CONTEMPORARY ESTIMATES OF PREDIABETES AND DIABETES PREVALENCE IN THE UNITED STATES BY SEX, RACE/ETHNICITY, AND SOCIOECONOMIC STATUS, 2015-2016

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BACKGROUND: Significant disparities in cardiometabolic health exist by race/ethnicity and socioeconomic status (SES). Contemporary prevalence estimates of prediabetes and diabetes (DM) in key age, sex, race/ethnicity and SES subgroups are needed to inform prevention strategies.

METHODS: We used cross-sectional data from the National Health and Nutrition Examination Survey (NHANES) (2015-2016). We included adults ≥ 20 years who completed measurement of fasting glucose. Prediabetes was defined as a fasting glucose 100-125mg/dL or Hemoglobin A1c (HbA1c) 5.7 – 6.4%. DM was defined as a fasting glucose ≥ 126 mg/dL, HbA1c ≥ 6.5%, or a self-reported diagnosis of DM. We calculated unadjusted prevalence estimates overall and by age (20-39, 40-59, 60+ years), and age- standardized prevalence estimates by sex-race (non-Hispanic white [NHW], non-Hispanic black [NHB], and Mexican American [MA] men and women), education (<high school, high school graduate and >high school) and poverty income ratio tertiles using the projected 2000 US Census population for standardization (SAS v9.4, Cary, NC).

RESULTS: Overall prevalence of prediabetes was 48.0% (95% CI: 44.2, 51.8) and consistently high among each subgroup even among younger adults aged 20-39 years (Table). The prevalence of DM was 16.4% (95% CI: 13.9, 18.9). Within each race/ethnicity, there was a higher prevalence of DM among males than females, except among NHBs in which the prevalence was similar. The prevalence of DM was higher in MAs and NHBs, and in lower education and income strata.

CONCLUSIONS: Almost 2 in 3 US adults have prediabetes or DM. Increasing prevalence estimates in key race/ethnicity and SES demographics highlight the need to focus on social determinants of health to elucidate and address disparities in the burden of poor cardiometabolic health. Furthermore, the substantial burden of prediabetes in young adults reinforces the need for prevention and screening efforts earlier in life.

CONTEMPORARY USE AND DRIVERS OF PREOPERATIVE CARDIAC STRESS TESTING

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BACKGROUND: Current guidelines recommend preoperative stress testing for patients whose predicted risk of a major adverse cardiac event exceeds 1% and whose functional status is poor or unknown, when stress testing would change management. However, each of those three decision points likely vary by provider, and real-world use is unclear. In order to understand contemporary use and drivers of preoperative cardiac stress testing, we set out to explain variation in preoperative stress testing using rich clinical data from a large integrated health system.

METHODS: The Internal Medicine Preoperative Assessment, Consultation and Treatment (IMPACT) Center assesses patients prior to noncardiac surgery at the Cleveland Clinic. Between 1/1/2008 and 12/31/2018, we identified 118,552 patients seen in that clinic by 104 providers across 159,795 visits. Using a multivariable multilevel logistic regression model, we tested variables linked to stress test ordering and completion rates from six constructs: measures of perioperative risk (RCRI, MICA, and surgical categorizations), measures of functional status (METs, functional class), measures of social and financial support (race, marital status, neighborhood deprivation index), medical comorbidities (age, BMI, numerous diagnoses), measures of physician tendencies and experience (years of previous experience, number of patients seen previously in this clinic), and date (continuous and dichotomized at the most recent guideline's publication date). We used multiple imputation to address missing data and tested models clustering visits by either physician or by patient.

RESULTS: Of 159,795 visits to the IMPACT clinic, 8,300 (5.2%) resulted in a referral for cardiac stress testing, 8,085 (5.1%) of whom completed the test before surgery or within 30 days. Key patient factors associated with preoperative stress testing included predicted surgical risk, patient functional status, type of surgery, a previous diagnosis of ischemic heart disease, and BMI. Type of surgery under consideration had the largest effect: a patient scheduled for aortic surgery had an estimated marginal stress testing rate of approximately 21%, and a patient undergoing peripheral vascular surgery has an estimated marginal rate of approximately 7.1%. Patients living in either the most deprived census tracts or the least-deprived census tracts were more likely to be referred for stress testing. Even after fully adjusting for patient factors, provider effects had a substantial impact on rates of preoperative stress testing (3.3% in the lowest decile, compared to 6.5% in the highest decile). Rates of stress testing appear to be decreasing over time.

CONCLUSIONS: In this large cohort of patients seen for preoperative risk assessment at a single health system, key drivers of preoperative stress testing included estimated perioperative risk and functional class, but also socioeconomic, physician, and procedure factors.

CONTINUITY OF CARE IN AN OUTPATIENT SETTING AMONG CHILDREN AND YOUNG ADULTS WITH COMPLEX CHRONIC CONDITIONS

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BACKGROUND: The Institute of Medicine (IOM) has identified continuity of care as a core attribute of primary care. Better continuity has been shown to reduce ED utilization and costs in specific patient populations including asthmatics, children with medical complexity, and older adults.

METHODS: The aims of this study are to: (1) describe continuity of care in both primary care and subspecialty care settings for children and young adults with complex chronic conditions, and (2) identify factors associated with improved continuity. This project is an observational retrospective cohort study that collected data from the electronic medical record (EMR) across multiple outpatient sites in a large, urban academic health system. Patients were identified as having a complex chronic condition (CCC) based on ICD-10 codes previously published by Feudtner et al. Patients were included if they were 2 to 26 years old, seen in at least one of the institution's outpatient sites from 2016 to 2019 and had >4 outpatient visits within the same practice. For each of the patients, the continuity of care index (COCI)(a.k.a. Bice-Boxerman Index) was calculated for each patient at each practice he/she sought care based on the billing providers seen. The COCI provides a score from 0 to 1 where 1 indicates perfect continuity with only one provider is seen consistently and 0 indicates a different provider is seen at each visit. Primary care visits were considered those that occurred in general internal medicine, family medicine, general pediatrics, and adolescent medicine practices.

RESULTS: There were 5551 unique patients in the cohort with a mean age of 19.5 years (range 2 to 26 years old). 53.7% (n=2982) were female and 12.2% (n=4870) had a preferred language other than English. The majority of patients were white (48.9%), and the remainder were Black (15.2%), Asian (5.6%), and other (17.4%) with 9% having an unknown ethnicity according to the EMR. 13% identified as Hispanic or Latino. The majority of patients had 1 CCC (range 1-5). The mean COCI score of the entire cohort was 0.69. When comparing continuity in primary care vs. subspecialty care, continuity was significantly higher in subspecialty care (0.59 vs. 0.73, $p<0.01$).

CONCLUSIONS: Patients with complex chronic conditions are at high risk for adverse health outcomes.

Although primary care may serve as their major source of both routine preventative and acute care, continuity between providers is lower compared to subspecialty care. Future studies are needed to examine how improvements in primary care continuity could affect health outcomes in this patient population.

CONTRASTING MENTAL AND BEHAVIORAL HEALTH WORKFLOWS TO IMPROVE PROCESSES ACROSS PRIMARY CARE CLINICS IN A LARGE ACADEMIC HEALTH SYSTEM

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BACKGROUND: Health systems struggle to design reliable processes for providing high-quality care. Workflows for common care activities, such as referring a patient to a mental health specialist, often vary widely within health systems, and best-practice workflows are not widely established. We examined variation in clinical workflows and barriers for patients requiring mental health services at primary care clinics within one academic health system to identify improvement opportunities.

METHODS: From a sample of 15 primary care clinics, we selected 5 representing the distribution of performance on a national staff survey, which measured how often (1=least, 5=most) staff completed clinical process tasks related to facilitating mental health referrals ("mental health integration").

We interviewed 6 primary care physicians (PCPs; at least 1 from each clinic), 4 administrators, and 2 PCP/admins to understand workflow processes, challenges in obtaining mental services for patients, and improvement opportunities. For each clinic, we coded emergent themes and created and confirmed workflow process maps.

RESULTS: Average mental health integration for sample clinics (3.9) was similar to the average for the health system overall (4.1) and the 59 clinics from the 20 health systems in the national study (3.9). Process maps revealed different processes at all 5 clinics. Differences included thresholds for positive screens for depression, breadth of resource lists to help patients find mental services, and extent to which PCPs provided counseling and first-line drugs and leveraged their informal networks to access specialists.

Promising practices included using in-house social workers to counsel and link patients with services and using EHR tools to assign patients health tasks and to set reminders for PCP follow-up. Some clinics had a culture of going-the-extra-mile, e.g., searching online for counselors for patients and calling insurers to get patients referred to specialists.

Barriers for patients included costs and lengthy provider waitlists. Process barriers also emerged: Clinics had no passive mechanisms for receiving information from specialists outside the health system. PCPs relied on patients to inform them of medication changes and treatment efficacy. PCPs bemoaned a lack of consultation that would allow them to manage medications with more certainty and timeliness.

Interviewees identified opportunities for system-level improvement. Resource lists could be consolidated across the system rather than created by individual PCPs. A standard assessment for depression could more reliably identify patients requiring mental services. Dissemination of standard treatment guidelines and workflow tools could reduce PCP stress and improve the standard of care for patients.

CONCLUSIONS: Our study of 5 clinics in one health system revealed contrasting and inadequate processes for mental health referrals and opportunities to improve referrals through standardization of organizational best practices and EHR tools.

COORDINATING HEALTH SERVICES FOR HOMELESS VETERANS IN VETERANS AFFAIRS AND COMMUNITY SETTINGS

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BACKGROUND: With passage of the 2014 Veterans Access, Choice and Accountability Act, the U.S. Congress committed to ensuring Veterans' access to care in Veterans Affairs (VA) and non-VA community settings. However, vulnerable Veteran subpopulations could feel poorly received in non-VA healthcare environments. In particular, homeless-experienced Veterans (HEV), who have high rates of co-occurring medical, mental health, and social service needs, may experience challenges with coordination of care between VA and non-VA settings. We leverage data from a national survey of HEV to examine use of non- VA community care under the Veterans Choice Program, satisfaction with non-VA community care, and perceptions of access and coordination of services from a VA primary care environment.

METHODS: The Primary Care Quality and Homeless Service Tailoring study recruited HEV for a survey of VA primary care experience in 2018. Use of community care was assessed with 1 item; satisfaction with 2 items, and accessibility & coordination of needed services from a VA primary care environment with a validated scale (11 Likert-type items) categorized as unfavorable or not. We used cross-tabulations to characterize community care use and satisfaction with community care. We used survey-weighted multivariable logistic regressions to examine whether use of community care (compared to no community care) related to patients' likelihood of reporting unfavorable experiences with accessibility/coordination from the VA primary care envrionment, and on 2 specific coordination items. Models controlled for demographics, medical conditions, alcohol/drug problems, and history of being unsheltered and chronic homelessness.

RESULTS: Respondents included 3,394 HEV receiving VA primary care services, of whom 3,142 (91%) had data on study variables and 809 (26%) used community care. Most HEV who used community care reported being somewhat or very satisfied with the care they received (84%) and with their time to receiving care (79%). A greater percentage of HEV who used community care reported unfavorable experiences with access/coordination from a VA primary care environment, compared to HEV not using community care (31% vs 25%, adjusted odds ratio [AOR]=1.31, p=0.001). HEVs who used community care were also more likely than HEV with no community care to disagree that their VA provider reduced hassles following referral (21% vs 16%; AOR=1.41, p=0.005) and to agree that they wait too long for needed services (37% vs 28%; AOR=1.43, p<0.001).

CONCLUSIONS: One-quarter of VA primary care patients with recent homeless experiences received community care under the Veterans Choice Program. High ratings of satisfaction with the quality and timeliness of community care suggest these services are valued by HEV and could mitigate access barriers experienced in some VA settings. Improvements in referral processes may be needed to facilitate care coordination and ensure high quality care for homeless Veterans in VA and non-VA healthcare settings.

CORRELATES OF PATIENT PORTAL ACTIVATION AND USE IN A FEDERALLY QUALIFIED HEALTH CENTER NETWORK

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BACKGROUND: Patient Portals(PP) allow access to medical records and interaction with providers; however activation(PPA) and use (PPU) are limited by language barriers, low health/computer literacy, and poor internet access which are prevalent issues in Federally Qualified Health Centers(FQHC). Little is known of the drivers and patterns of PPA in such settings. We aimed to describe the prevalence of PPA and PPU in adult patients of an FQHC; describe PPU activity, and test demographic, condition, and utilization-related correlates of PPA and PPU.

METHODS: We conducted a retrospective chart review in an FQHC that launched a PP in September 2016. We extracted demographics, PPA status(active/not) at data pull, PPU activities, presence of a chronic condition on the problem list, # emergency department, inpatient, subspecialty visits over past year (utilization summed, dichotomized >1 vs. 0-1 visit). Missing values for homelessness were coded to majority category(0). Analyses included descriptive statistics, bivariate analyses, then logistic regression to test odds of PPA and PPU by. demographics, chronic conditions, and utilization. We report [adjusted odds ratios(confidence interval)].

RESULTS: Data were analyzed for 62,610 adults [mean age 45(SD 17), 21% Black, 47% Hispanic, 46% Medicaid, 25% Selfpay, speaking English(60%), Spanish (31%), Chinese(6%), Other(3%), with: hypertension(19%), diabetes(11%), depression(8%), asthma(6%), CVD(5%); 21% had utilization>1. Overall 23,104(37%) activated the PP. PPU included viewing test results(69%), medications(62%), immunizations(51%), billing (38%), asking advice (29%), and scheduling appointments(16%). PPA and PPU varied by demographics, chronic condition, and utilization, but were consistently higher for females, those who were not Medicaid recipients or Self-pay, English speakers and those with asthma, hypertension, and depression.

CONCLUSIONS: PPA was lower for non-whites and poorer patients, but higher for patients speaking the predominant languages of this FQHC, suggesting that language concordance helps engage patients. Patients with chronic conditions and more healthcare utilization had greater odds of PPA and PPU. On the other hand, Spanish-speakers were less likely to actively use the portal for functions such as scheduling appointments, suggesting that improvements in language capabilities of the platform are needed.

COVERAGE, FORMULARY RESTRICTIONS AND AVERAGE RETAIL PRICES OF SGLT2 INHIBITORS AND GLP-1 RECEPTOR AGONISTS ACROSS MEDICARE PART D PLANS IN 2019

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BACKGROUND: Access to SGLT2 inhibitors (SGLT2i) and GLP-1 receptor agonists (GLP-1RA) may be limited by high drug prices and insurance related barriers including prior authorization or step therapy

requirements. These barriers are particularly challenging for seniors covered under Medicare's prescription drug benefit (Part D).

METHODS: We used Q1 2019 national Part D Formulary files to examine: 1) the proportion of plans (weighted by enrollment) that cover a SGLT2i or GLP-1RA without prior authorization or step therapy and 2) the average retail price [IQR] for a 30-day supply of each medication.

RESULTS: Among 3,992 plans (enrolling at least 37,980,936 beneficiaries), weighted coverage without prior authorization or step therapy for canagliflozin, dapagliflozin and empagliflozin was 53.2% (95% CI: 49.1 to 57.4), 63.7% (95% CI: 60.1 to 67.3) and 95.4% (95% CI: 94.3 to 96.4), respectively. Coverage without prior authorization or step therapy for GLP-1RA of ranged from 3.2% (95% CI: 1.8 to 4.6) for lixisenatide to a high of 87.4% (95% CI: 85.5 to 89.3) for dulaglutide. The mean retail price [IQR] for a 30- day supply of a SGLT2i or a GLP-1RA ranged from $295 [$285-$303] (ertugliflozin) to $512 [$501-$527] (canagliflozin) and $641.38 [$629-$657] (lixisenatide) to $946.17 [$930-$968] (liraglutide), respectively.

CONCLUSIONS: In 2019, coverage without prior authorization and step therapy for SGLT2i and GLP-1RA were mixed across Part D plans. Most beneficiaries enrolled in plans that covered at least one SGLT2i and one GLP-1RA without restrictions. Cost sharing (i.e. high out-of-pocket payments) may be more problematic for patients than either prior authorization or step therapy.

CROWDING OUT: TRENDS IN INTENDED UTILIZATION OF THE NATIONAL HEALTH SERVICE CORPS AND THE PUBLIC SERVICE LOAN FORGIVENESS PROGRAMS BY MEDICAL SCHOOL GRADUATES PURSUING PRIMARY CARE, 2010-2018

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BACKGROUND: Recent studies have estimated a deficit of 20,000 – 46,000 primary care physicians by 2025, particularly in underserved areas. The federally funded National Health Service Corps (NHSC) aims to encourage physicians to pursue primary care in underserved areas by forgiving educational debt. However, a federally funded program, the Public Service Loan Forgiveness (PSLF) program offers more generous loan forgiveness terms, less restrictive employment requirements and may compete with the NHSC program. We sought to compare trends in intended loan forgiveness participation among indebted medical school graduates pursuing a career in primary care.

METHODS: We used deidentified data from the 2010-2018 Association of American Medical Colleges Graduation Questionnaire sent to all medical students graduating from schools accredited by the Liaison Committee on Medical Education (LCME). To reflect medical school graduates likely to pursue primary care, we restricted our analysis to: (1) graduates reporting no plans to complete subspecialty training and (2) graduates intending to pursue the following specialties: family medicine, internal medicine, pediatrics, preventive medicine, and combined internal medicine and pediatrics. Within this group, we examined intentions to pursue loan forgiveness programs.

RESULTS: PSLF requires only that physicians be employed for ten years in government or nonprofit settings, making nearly 75% of U.S. hospitals eligible. NHSC participants receive tax exempt loan repayments of $50,000 after 2 years of full time service in underserved areas and participants who continue working with the NHSC may apply for additional loan repayment awards subject to available funds. Ten years of NHSC loan repayment awards would total $150,000. The same physician might receive $226,000 after ten years of PSLF participation (tax-exempt). From 2010 to 2018, 9,332 to 11,529 (approximately 63%-80%) of medical school graduates responded to both specialty and loan forgiveness plans. Among those graduates, 846 to 1871 were classified as aiming toward primary care; of those, 358 to 825 (43%-56%) intended to pursue loan forgiveness. The PSLF and NHSC were the two most popular loan forgiveness responses. From 2010 to 2018 interest in the NHSC program decreased from 25% of graduates pursuing primary care to 15% and interest in the PSLF program increased from 22% to 56%.

CONCLUSIONS: Our analysis shows a decline in NHSC interest alongside an increase in PSLF interest among medical school graduates intending to pursue primary care. This analysis suggests that interest in PSLF may be crowding out interest in NHSC. If the federal government aims to increase the number of primary care physicians working in underserved areas, it should reexamine the incentives it is providing to physicians participating in this program. The NHSC program may attract more interest if it provides the same or greater financial benefit than other federally funded programs such as the PSLF program.

CURRENT PRACTICE AND KNOWLEDGE REGARDING USE OF HUMAN PAPILLOMAVIRUS VACCINATION FOR ADULTS AGED 27-45 YEARS: SURVEY OF U.S. PRIMARY CARE PHYSICIANS, 2019

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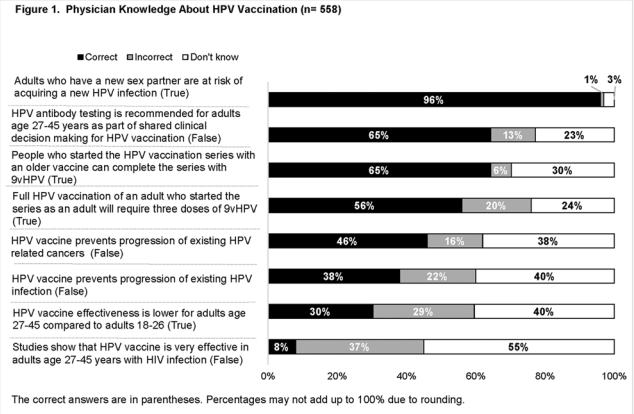
BACKGROUND: In October 2018, the licensed age range for HPV-9-valent vaccine (9vHPV) was expanded from 9-26 years to 9-45 years. In June 2019, the Advisory Committee on Immunization Practices (ACIP) recommended shared clinical decision-making regarding potential HPV vaccination for adults age 27-45 years. Our objectives were to assess among primary care physicians: 1) current practice regarding 9vHPV use in adults 27-45 years and whether the 2019 ACIP recommendation will change their practice, and 2) knowledge about HPV vaccination and shared clinical-decision making recommendations for this vaccination.

METHODS: In October to December 2019, we administered an Internet and mail survey to national networks of 494 general internist (GIM) and 474 family physician (FP) members of the American College of Physicians and American Academy of Family Physicians, respectively.

RESULTS: Response rate was 58% (558/968). 57% were aware of the new ACIP recommendation. 76% stocked 9vHPV. Before the 2019 recommendation, physicians reported recommending 9vHPV to adults 27-45 years for those without known risk factors (21%), and for those with risk factors, including multiple sex partners (35%), a new sex partner (29%), an immunocompromising condition (26%), or men who have sex with men (33%). The majority would be more likely to recommend 9vHPV in all these patient populations because of the new recommendation. In the 3 months before the survey, 73% reported not giving 9vHPV to any adults 27-45 years; 22% to 1-3 patients. Figure 1 shows knowledge about HPV vaccination. 55% agreed that they were unsure what to emphasize in a shared clinical decision-making conversation about 9vHPV with an adult 27-45 years.

CONCLUSIONS: Although ACIP does not recommend routine catch-up vaccination of adults >26 years, physicians report the new ACIP recommendations will increase their likelihood of recommending 9vHPV to adults 27-45 years. Our data demonstrate substantial knowledge gaps about HPV disease and vaccination among primary care physicians, and that many were unsure about how implement shared decision-making recommendations for this vaccination.



DEARTH OF HOSPITAL MEDICINE CLINICIAN INVESTIGATORS ACROSS UNITED STATES ACADEMIC MEDICAL CENTERS

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BACKGROUND: Hospital medicine is the fastest growing subspecialty within internal medicine, growing from 10,000 hospitalists in 2002 to over 50,000 in 2016. Despite this growth, there remain relatively few hospitalists who are clinician investigators. We sought to quantify the number of clinician investigators, their dedicated time for research, and identify potential gaps in resources for researchers at major United States academic medical centers.

METHODS: We performed a survey of hospital medicine programs at academic medical centers in the United States affiliated with the Hospital Medicine Reengineering Network (HOMERuN), a hospital medicine research collaborative. Questions regarding the number of hospitalists and full-time equivalents (FTE) were free response. Questions regarding research services available, mentorship and services needing improvement were multiple choice. Surveys were distributed via email to division/section chiefs and/or senior leaders of unique hospitalist groups between January and August 2019. Responses are reported as numbers and proportions or median and interquartile range (IQR) as appropriate.

RESULTS: We received responses from representatives of 43 hospital medicine groups from 86 invitees (50%). The number of hospitalists per program ranged from 4 to 150 with a median of 50. The median number of total clinician investigators per hospital medicine group was 0 (IQR 0-2). Similarly, the median protected FTE (including grant support and dedicated salary support) for all clinician investigators within each program was 0 (IQR 0-1.6). Most groups reported having research services available, but these were most often shared with another department/division; some programs reported having no access to statisticians (22%), statistical programmers (31.7%), or research assistants (56.1%). Most clinician investigators primarily reported mentorship from faculty within their hospitalist group (53.5%), but large proportions obtained mentorship from generalists outside the group (27.9%) or from subspecialists (34.9%). The following were identified as needing improved support for junior researchers: mentoring "at a distance" (53.5%), networking with other researchers (60.5%), access to administrative and clinical data from multiple sites (62.8%), consultation around developing researchers in hospital medicine (60.5%), and fellowships (53.7%).

CONCLUSIONS: Across many major U.S. academic medical centers, there are very low numbers of hospitalist clinician investigators. The limited availability of research resources, training, and mentorship within hospital medicine may contribute to this phenomenon. Further research is needed to understand why there are relatively low numbers of hospitalist clinician investigators compared to ambulatory general internal medicine investigators.

DECLINE IN COUNTY-LEVEL EVICTION RATES AMONG VULNERABLE POPULATIONS AFTER MEDICAID EXPANSION: A DIFFERENCE-IN-DIFFERENCES STUDY

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BACKGROUND: As critical as housing is to health, the health care system can be a source of serious financial strain related to housing instability and eviction. Medical bills commonly push families to spend less on food, deplete their savings, or take on more loans. Medical debt may even lead to housing eviction. We hypothesize that statewide Medicaid Expansion may reduce eviction rates.

METHODS: This study employed a quasi-experimental difference-in-difference design to estimate the change in eviction rate before versus after exposure to the Affordable Care Act (ACA) 2014 Medicaid Expansion among renters across the US, stratified by vulnerable populations. We used publicly available county-level Eviction Lab, Census, and County Health Rankings data from 2012 to 2016, to estimate the eviction rate. We excluded early Expansion states: Arizona, Delaware, Hawaii, New York, Vermont, District of Columbia, Massachusetts, and Maryland; and counties that had undergone renaming or restructuring that rendered it infeasible to merge our data sources. The final sample consisted of 15,000 observations: 3,000 counties followed over the study period. Our Poisson models included county fixed effects, robust standard errors clustered at the state-level, and population weights. Covariates included median property value, median household income. Additionally, our sensitivity analyses included a 1-year lag, least squares fitting, and adjusting for county and state-level variables commonly seen in the literature.

RESULTS: Our primary analysis showed that overall counties that experienced Medicaid Expansion showed a 14% reduction in the rate of eviction compared to counties that did not expand (IRR=0.86, 95% CI: 0.76-0.98), when controlling for median property values and median

household income at the county level. In Expansion counties with large representation of Hispanic/Latino residents, the effect estimate showed a 24% reduction in rate of eviction (IRR=0.76, 95% CI: 0.70-0.83). Among Expansion counties with a high proportion of renters, rate of eviction was reduced by 14% (IRR=0.86, 95% CI: 0.75-0.99). In Expansion counties with high rent burden, there was an 18% reduction in rate of eviction compared to non-Expansion states (IRR=0.82, 95% CI: 0.68-0.99), when controlling for median property value and median household income. Conversely, Expansion was not protective for counties with a large representation of African- American residents as eviction rate increased by 32% (IRR=1.3, 95% CI: 1.0-1.7).

CONCLUSIONS: This study showed that county-level eviction rates decreased significantly among vulnerable populations after Medicaid Expansion was in effect, deeming such policies as an important part in addressing the current affordable-housing crisis occurring in many US cities.

DEFINING ACCESS MANAGEMENT

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BACKGROUND: Managing patient access to care in healthcare delivery organizations is critical for shaping patient healthcare experiences. Conceptual work to understand the components of access and access management is critical for improvement initiatives. The work aims to advance primary care access management practice and research to support healthcare delivery organizations.

METHODS: We convened a stakeholder panel, informed by evidence review, to establish access and access management definitions. Stakeholders were selected based on a patient-centered framework and included patients, healthcare providers, policy makers, product makers, payers, and purchasers of healthcare. Methods included evidence review; written surveys; in-person stakeholder panel discussions; and concurrent subpanels to establish recurring, cross-panel themes.

RESULTS: Literature review results showed variation in the definition of the concept "access" but consistent operationalization of the temporal measure “time to third next available appointment” as an indicator of access. Panel deliberations highlighted the importance of patient-centeredness and resulted in three comprehensive definitions: 1) “*Access management* encompasses the set of goals, evaluations, actions and resources needed to achieve patient-centered healthcare services that maximize access for defined eligible populations of patients; ” 2) “*Optimal access management* engages patients, providers, and teams in continuously improving care design and delivery to achieve optimal access;” and 3) “*Optimal access* balances considerations of equity, patient preferences, patient needs, provider and staff needs, and value.”

CONCLUSIONS: Access to healthcare is substantially determined by how healthcare delivery organizations manage it. The developed concepts of access management suggest that access management, improvement initiatives, and research studies require ongoing attention to organizational processes and multiple–often mutually exclusive–relevant outcomes. Healthcare organizations and researchers can use the definitions as starting points for initiatives to improve access management and evaluations of access initiative success.

DELAYS IN CLINIC VISITS FOR CONTRACEPTION DUE TO NOT WANTING A PELVIC EXAMINATION AMONG YOUNG WOMEN WITH A HISTORY OF PHYSICAL, SEXUAL, OR VERBAL ABUSE

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BACKGROUND: Avoidance of pelvic examinations may be heightened among women experiencing intimate partner violence, representing an important barrier to preventive healthcare, including contraception or other reproductive health services. Our current analysis aims to understand women’s attitudes towards pelvic examination by history of physical, sexual, or verbal abuse.

METHODS: We conducted a secondary analysis of data from a cluster-randomized trial on contraceptive access. 1500 women aged 18-25 receiving contraceptive counseling and not desiring pregnancy in the next 12 months were recruited at 40 health centers across the United States. Data were collected between 2011 and 2013. We examined variation in positive responses to this question: “In the past, I have put off going to the clinic for birth control because I did not want to have a pelvic examination” by history of physical, sexual, or verbal abuse, coded by frequency (never, rarely, sometimes, often). We used multivariable logistic regression with generalized estimating equations for clustered data. Covariates included age, race, parity, health insurance, site type, and trial arm.

RESULTS: Of 1500 participants, mean age was 21.5 (SD 2.2). 49.6% identified as White, 27.2% as Latina, 14.8% as Black and 8.4% as other. Physical abuse was reported in 10.2% of participants. Pressured sex was reported by 32.4%, with 16.5% reporting it “rarely”12.1% reporting it “sometimes”, and 3.8% reporting it “often”. Forced sex was reported in

10.8% participants. Verbal abuse was reported in 19.4% of participants. Overall, 13.1% of participants reported delaying going to the clinic for birth control because they did not a pelvic exam. In multivariate analysis, the odds of delaying going to clinic was 76% higher in women reporting pressured sex "rarely" (aOR 1.76 95%CI 1.31-2.37 p<.005) and 210% higher among women reporting pressured sex "often" (aOR 3.10 95%CI 1.39-6.93 p=.006). No significant associations were found for verbal abuse or physical abuse.

CONCLUSIONS: Women with a history of sexual abuse are more likely to delay clinic visits for contraception due to not wanting a pelvic examination. Communicating that routine pelvic examinations are no longer recommended by professional societies could potentially remove barriers and increase preventive health care visits for these women.

DEMOGRAPHICS OF FOOD INSECURITY IN AN URBAN COUNTY HOSPITAL

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BACKGROUND: Food insecurity is a modifiable social determinant of health (SDH), which is associated with chronic disease management, cost-related medication underuse, and annual healthcare expenditures. As little is known about food insecurity in the inpatient setting, we seek to characterize its prevalence and the relevant circumstances of food insecure patients to better understand how to intervene on future patients who screen positive.

METHODS: We conducted two sets of surveys with patients hospitalized on the general medicine service in an urban, county hospital in Los Angeles, CA. In the first survey, patients were screened for food insecurity using the Hunger Vital Signs tool. In the second survey, we aimed to illustrate the nuances of food insecurity by collecting targeted questions on access in this same population. Data was analyzed using Microsoft Excel. Incomplete responses were excluded from analysis. To compare ZIP codes of food secure versus food insecure patients, we used the Community Needs Index (CNI), which analyzes data at the ZIP code level and assigns a score to each area, ranging from 1.0 (lowest need) to 5.0 (greatest need).

RESULTS: The combined survey data (n=225) demonstrates that 39% of our patient population experiences food insecurity, and 44% of our food-insecure patients are homeless. In the second survey (n=75), we found that 68% of patients enrolled in CalFresh, known federally as the Supplemental Nutrition Assistance Program, still experience food insecurity. Yet, only 53% of all food insecure patients in the sample reported enrollment in CalFresh. Of patients who were food secure, 81% reported access to a grocery store that stocks healthy and varied fruits and vegetables, while only 34% of food insecure patients reported such access. For both groups, CNI scores ranged from 3.6 to 5.0. Among food secure patient ZIP codes, the average score was 4.54. Among food insecure patients, the average score was 4.70.

CONCLUSIONS: Food insecurity is extremely prevalent, over four-times the national rate, among patients hospitalized the general medicine service in an urban county hospital. Providers may assume food insecurity affects only the significantly disenfranchised, but our data shows that nearly half of food insecure patients are not homeless. Despite enrollment in CalFresh, the majority of food insecure patients continue to report food insecurity and poor access to healthy foods. ZIP code data shows that food insecure patients live in areas with greater need than food secure patients, and these environmental factors may further contribute to food insecurity and poor health. Further research is needed to better characterize how food insecurity may manifest differently amongst different populations, such as homeless versus housed, what other interventions beyond supplemental resources may better address food insecurity, and its impact on health outcomes.

DEPLOYMENT OF AN INPATIENT EARLY WARNING SYSTEM WITH CENTRALIZED MONITORING: A QUALITATIVE ASSESSMENT ON NURSING COMMUNICATION AND WORKFLOW

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BACKGROUND: Early warning systems (EWS) use patient data, such as vital signs, nursing assessments, laboratory values, and cardiac tracings, to continuously compute a composite score of a hospitalized patient's condition. In June 2018, we deployed a commercially available EWS (Rothman Index) using the above data points across a 600-bed academic hospital with the goal of reducing mortality. EWS alerts triggered based on absolute or relative score decline. Unique to this deployment, a centralized virtual team of experienced nurses monitored EWS alerts and investigated the alert's cause in the patient's record before contacting the patient's bedside nurse to communicate risk and offer suggestions. The objective of this quality improvement study was to understand the effect of the EWS implementation on nursing workflow.

METHODS: We conducted and audio-recorded semi-structured focus groups during nurse staff meetings on six inpatient units sampled across alert frequency. Discussion guide topics included EWS experiences, scenarios where the EWS was helpful/unhelpful, EWS implementation, and ideas for improvement. Investigators analyzed the focus group transcripts using grounded theory and agreed on a coding scheme. Transcripts were coded accordingly, and themes emerged.

RESULTS: Each of six units completed at least two focus groups. We conducted 28 focus groups with 227 bedside nurses across all shifts. Nurses reported that the impact of the implemented EWS was muted by 6 themes: (1) *alert timeliness,* as nurses reported being aware of the patient's deterioration before the EWS alert, (2) *lack of accuracy,* with most alerts being perceived as false positives, (3) *workflow interruptions* caused by EWS alerts, (4) questions of *actionability of alerts,* as nurses were often uncertain about next steps, (5) concerns around an *underappreciation of core nursing skills* via reliance on the tool, and (6) the *opportunity cost* of deploying the tool. Nurses reported value in the implementation of the EWS as a *safety net* and to prioritize sicker patients at the beginning of their shifts.

CONCLUSIONS: EWS benefits were tempered by nurse concerns related to both the system itself as well as the implementation. The lack of clear actionability related to alerts led to confusion about next steps and was possibly intertwined with concerns around accuracy. While a centralized team reviewed alerts, calls to notify the bedside nurse about the EWS warning often caused workflow interruptions. Nurses wondered if the cost of the tool may have been better invested elsewhere, citing the need for hands-on support rather than virtual support. Our study provides information to organizational leaders making decisions about further deployment of the tool. The next steps are to review implementation design with

nurse engagement and provide more discretion to virtual nurses for when to engage the bedside nurse when a patient triggers an alert.

DEPRESSION SCREENING IN A SAFETY NET CLINIC

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BACKGROUND: Depression is a common and often undertreated problem. In the US, 6.7% of adults have reported at least one major depressive episode, but less than half receive treatment[1][2]. Untreated depression is a leading cause of disability among adults and carries significant mortality due to suicide[3]. Therefore, in 2009 the USPSTF recommended annual screening for depression in the adult population[4]. Increased barriers exist to screening and treatment of depression in racial and ethnic minorities due to stigma, lack of culturally competent care, inadequate mental health services, etc[5]. For this reason, effective depression screening in primary care settings is necessary to facilitate treatment strategies. The Highland Adult Medicine Clinic is a hospital-based safety net clinic in Oakland, CA. Depression screening rates in this clinic lagged behind state and national benchmarks. This project identifies strategies to improve screening rates in an urban, multi-lingual, safety net clinic. [1] National Institute of Mental Health. Major depression. 2017. [2] Olfson M, et al. Treatment of adult depression in the United States. JAMA Intern Med. 2016;176:1482-1491. [3] Friedrich MJ. Depression Is the Leading Cause of Disability Around the World. JAMA.2017;317(15):1517. [4] USPSTF Final Recommendation Statement: Depression in Adults – Screening. [5] Cooper LA, et al. The acceptability of treatment for depression among African-American, Hispanic, and white primary care patients. Med Care. 2003;41:479-489.

METHODS: Depression screening rates, defined as the completion of the Patient Health Questionnaire-2 (PHQ2), were audited pre and post- intervention. Interventions included: (1) adoption of system-wide standard work to increase screening frequency from annual to every visit, (2) modification of the screening form to improve usability, and (3) same-day auditing of outpatient visits and outreach to patients to complete depression screening telephonically. When screening all patients, we used the PHQ2 and followed up with the PHQ9 if the PHQ2 was positive.

RESULTS: Depression screening rates in the Highland Adult Medicine clinic increased from 53.1% (April, 2019) to 54.5% (May, 2019) after implementation of the system wide standard work. Rates further increased to 66.5% (July, 2019) with implementation of interventions 2 and 3. Other primary care clinics within the system showed increased rates with the system-wide standard work with increases of 6.8% compared to Highland's rate increase of 12.0% during the same time period.

CONCLUSIONS: The three documented interventions had a positive effect on depression screening rates in a safety net clinic. The two interventions outside of the standard work had an even stronger effect on screening rates. Next steps may include using population health outreach workers to conduct similar outreach as our volunteer. With rates of screening still below HEDIS targets, there is still much more that needs to be done to address underscreening in a safety net clinic.

DESCRIBING FACULTY EXEMPLARS OF MEDICAL PROFESSIONALISM

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BACKGROUND: Internalizing a strong medical professional identity (PI) is a critical part of medical education. Recent studies of medical students have documented that students' PI, measured by the Professional Identity Essay (PIE), a reflective writing assessment of PI based on Kegan's theory of adult development and Bebeau's developmental model of PI, vary and are impacted by education. Little is known about the PI of exemplary professional physicians. We sought to: 1) describe the PI of physicians who exemplify the highest principles of the medical profession, and 2) evaluate NYU faculty identified as professional exemplars by peers to provide data and demonstrate clear role models for learners

METHODS: We elicited nominations for professional exemplar physicians from NYU faculty, chief residents, and 4th-year students, using the definition of professionalism developed by Colby and Damon (1992). Participants were recruited after receiving at least 3 nominations; select participants who received 1 or 2 nominations were also recruited to diversify the participants in terms of specialty, years of practice, gender and race. We also used snowball techniques to get nominations from study participants. After consenting, faculty received the 11-question PIE. We analyzed demographic data of nominated faculty and completed a content analysis of the PIE.

RESULTS: 206 individual faculty were nominated at least one time by 70 community members. 32 individuals were recruited to the study; to date 22 have completed the PIE. The 206 nominees/22 participants represent: 34/12 specialties, average years in practice 17.6/23.8, range of years in practice 62 for nominees/44 for participants. We identified 3 primary themes through the content analysis: (1) Response to Expectations, "Everything. The profession demands everything… As much as this profession takes from me, it is dwarfed by what I have received in return." (2) Response to Failure: "I fail to live up to expectations every day. Some days this motivates me, other days I disappoint myself." (3) Learning from Others: "I view teaching as integral to medical professionalism." There was a range of developmental levels in the responses with some focusing more on external rather than internal motivations: "I can say that the [malpractice] process for me was very threatening, emotionally consuming and had the potential to alter professional behavior in the wrong way."

CONCLUSIONS: Nominated faculty represented a diverse group with respect to PI. Many participants demonstrated great professionalism and a sense of internal PI in responses to the PIE questions, while others focused on more external motivations to drive their professional behaviors. Further analysis is needed to define the qualities of a true exemplary professional. The range of responses of the exemplars can both serve as role models for learners and provide multiple pathways for learners and faculty to strengthen their own professional identities.

DESIGNING A CANCER PREVENTION COLLABORATIVE GOAL SETTING APPLICATION FOR PRIMARY CARE PATIENTS: AN ITERATIVE, PATIENT-LED PROCESS

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BACKGROUND: Evidence suggests up to 80% of the cancer burden is related to modifiable lifestyle behaviors, such as diet, exercise, smoking cessation, and maintaining a healthy weight. Despite this, we lack primary care interventions that promote lifestyle changes for the purpose of cancer prevention. This study iteratively designed and evaluated a collaborative goal setting application (CCPG) that utilizes evidence- based behavior change techniques to facilitate cancer prevention goal setting, tracking, and sharing with known and unknown social ties.

METHODS: We conducted semi-structured interviews with primary care patients (n=33) in batches of 5 to 7 per week. The study focused on non-Hispanic black patients, as the application was specifically conceived to help reduce the disproportionate cancer burden in racial and ethnic minority communities. Initial interviews elicited feedback on intervention modality and content by asking participants (n=16) about their technology usage, experiences setting health goals, and attitudes about sharing health information. We also showed these participants paper mock-ups of the app and elicited their preferences on specific features, functions, and content. These findings informed the digital prototype, which was shown to different participants (n=17) for feedback on content, features, function, and overall usability. The study team analyzed all participant feedback weekly to iteratively refine and optimize the application. Two study team members further coded and analyzed the data in NVivo to identify overarching themes.

RESULTS: Of total participants (n=33), 79% self-identified as female and the mean age was 49 (SD 13). Initial testing revealed that 14 of the 16 (88%) participants owned a smartphone, 13 (81%) tracked their health in some way and 15 (94%) expressed comfort in sharing health information with close ties. Qualitative data showed that participants valued both setting goals to promote health behaviors and sharing health information with others to facilitate achieving these health goals. Iterative analysis of user feedback informed the optimization of the digital prototype, leading to: 1) modification of the user "leaderboard" to a progress board to emphasize cooperation over competition; 2) addition of an intra-app messaging tool; 3) enhancements in functionality to allow for ease in selecting and modifying pre-determined goals. Among participants providing feedback on our digital prototype (n=17), 17 (100%) rated the app as easy to use and 13 (76%) stated they would like to use the app frequently.

CONCLUSIONS: This study used an iterative process to design and evaluate a novel, participant endorsed mobile application that facilitates setting, tracking, and sharing health goals with known and unknown social ties in a collaborative rather than competitive way. These findings suggest the acceptability and utility of a future mobile CCPG application to promote healthy behaviors among primary care patients.

DESIGNING AND DEPLOYING A PHARMACIST-MEDIATED ADVERSE DRUG REACTION SURVEILLANCE SYSTEM USING A PATIENT PORTAL.

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BACKGROUND: More than half of the US population reports using a prescription medication in the past year, and approximately one in four patients prescribed a new medication experiences an adverse drug reaction (ADR)[1-6]. Presently, however, there is no ubiquitous system by which ADRs are tracked and reported in the clinical setting, nor is there a way for providers to monitor and act on feedback from patients regarding any medication-related issues. To fill this gap, our team is conducting a study to screen for ADRs through a patient portal. The primary aim of this study is to design and deploy a comprehensive surveillance system to monitor potential ADRs in patients newly started on medications.

METHODS: We generated daily Epic data pulls of medications newly prescribed at two Brigham and Women's Hospital Primary Care clinics. Certain categories of medications (e.g., vitamins) were excluded. Only patients with an active portal account were included. We sent messages approximately one week after a new medication was prescribed asking if: a) they had started the medication and b) were experiencing any new symptoms. Two study pharmacists communicated with the participants on the portal and, when needed, by phone. The main activities of the pharmacists were to provide guidance for potential ADRs, assist in adherence, address other medication concerns, and route the correspondence to the patient's PCP when appropriate. A second follow-up message was sent to all participants 2-4 weeks after the initial message.

RESULTS: Between 8/1/19 and 12/9/19 8,129 new prescriptions were written for study patients. A total of 1,349 patients met eligibility criteria and were contacted via the patient portal. Of these, 302 (22.4%) patients replied. Respondents were on average 48 years old (range 24-69). 22.7% of males, 22.3% of females and 14.5% of Hispanic patients replied. Of the 279 patients who responded to the symptoms question, 77 (27.6%) reported an ADR, a rate similar to previous studies[1,4]. The patients' PCP was contacted in 46 cases. 120 (48.4%) patients replied to the follow-up messages, of whom 20 reported new symptoms.

CONCLUSIONS: Results of this study show that monitoring of ADRs via a patient portal can be an effective way to identify symptoms that may be otherwise undetected, as well as a way to assist patients in addressing other medication-related issues, including those that impacted adherence. Demographic data showed similar participation rates between sexes and lower participation from Hispanic patients. These participation rates may reflect the general pattern of patient portal use and could be used to inform policies to improve patient engagement with health information technology. Further research is needed into ways to scale up such a pharmacovigilance system to be rolled out across multiple primary care clinics and to increase patient engagement across the demographic categories.

DESPITE HIGH MORBIDITY AND MORTALITY, AFRICAN AMERICANS WITH ESRD MISS EOL CARE DISCUSSIONS

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BACKGROUND: End-stage renal disease (ESRD) is associated with high mortality and morbidity and disproportionately impacts minorities. The adjusted 5-year survival rate of ESRD patients is 42% which is lower than that for all adult cancer patients. Prior work has shown that African Americans with ESRD are less likely than their White counterparts to have discussed end-of-life (EOL) care preferences. We sought to examine the causes of the low rates EOL care planning among African American dialysis patients.

METHODS: From June to September 2019, we surveyed African American adults receiving hemodialysis at three urban Midwest dialysis clinics about experience with and views on EOL care planning. Surveys included questions about their prior EOL care planning and preferences in various EOL situations. We analyzed summary measures of patients' EOL care

views with bivariable and multivariable logistic regression models using several covariates including age, gender, education level, income, insurance, and previous experience with EOL care discussions.

RESULTS: Of the 101 African American ESRD patients interviewed, the mean age was 58.7 years, 52% were female, 42% had >5 years on dialysis, 91% had hypertension and 46% had diabetes. Almost 70% (69/101) of patients denied prior EOL care discussion with any healthcare team member. Of this group, 95% (64/69) stated their healthcare team never initiated EOL care conversations, even though 37% (25/69) desired them. Of 32 patients who reported having an EOL care discussion with a healthcare team member; they most commonly had these discussions with the dialysis unit social worker (62.5%, 20/32) and their primary care physician (50%, 16/32). The majority of patients (53%, 17/32) reported these EOL discussions occurred within the first year of dialysis, while only a few (15.6%, 5/32) reported having regular EOL care discussions. Prior EOL care discussions with the healthcare team was significantly associated with an increased likelihood of having spoken to family members about EOL care wishes (OR 3.1, p>0.05). In a multivariable model, there was no association between any patient clinical or demographic patient co- variates, and likelihood of prior EOL care discussion. In addition, the relationship between prior EOL care discussions with a medical team member was significantly associated with a decreased preference for life- extending care in one EOL care scenario.

CONCLUSIONS: Most African American patients with ESRD reported no prior EOL care discussions, even among those with important clinical risk factors including older age, recent hospitalization or longer time on dialysis. EOL care discussions are associated with better EOL care communication with family members and, to some extent, an increased preference for less aggressive measures at the EOL. Many patients are open to speaking about EOL care with healthcare team members, but may be unwilling to initiate these discussions.

DETECTING COGNITIVE IMPAIRMENT AND DEMENTIA AND PRIMARY CARE: CURRENT PRACTICES AND FEASIBILITY OF THE MYCOG DETECTION PARADIGM

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BACKGROUND: As the age of the US population increases, so does cognitive impairment (CI); therefore early detection of CI is critical for ensuring its appropriate management. While primary care is an ideal setting for identifying CI, it frequently goes undetected. Available screening tools may be unsuitable for implementation in this setting due to their administration time, cost, or need for specialized equipment or highly trained administrators. As part of a NINDS Consortium to detect CI and dementia in primary care (DetectCID), we are implementing and evaluating a brief 2-step CI detection paradigm (MyCog) that can be delivered in clinics with diverse populations. The first step is case finding via a brief questionnaire administered through the electronic health record (EHR), and the second step is an iPad-based cognitive assessment. We sought feedback from primary care practices to inform the implementation of our CI detection paradigm.

METHODS: We conducted focus groups with 25 clinicians and administrative leaders from academic and community primary care practices to 1) understand how CI is currently being assessed, and 2) evaluate the feasibility of implementing the MyCog paradigm into existing primary care workflows. The research team took detailed notes during the discussion groups and reviewed them for common themes across participants.

RESULTS: No proactive detection strategy for CI was regularly used outside of the Medicare Annual Wellness Visits (AWV); variable assessments including the Minicog, MoCA, or MMSE were used to fulfill the AWV requirement. Regarding the feasibility of our MyCog Paradigm, our 2-step process was positively received, with the brief case-finding step 1 satisfying AWV requirements and replacing the longer assessments currently being used. Clinicians preferred that step 2 be self-administered due to limited clinician time for wellness visits, and highlighted logistical challenges such as room availability and storage and maintenance of the iPad. Clinicians emphasized the importance of the direct transfer of results into the EHR. There was also some concern that addressing cognitive issues could detract from the management of patients' other chronic conditions. Overall, clinicians felt that the identification of CI was valuable and supported standardization, but indicated regular case finding was unlikely without clear guidance on clinical decision- making.

CONCLUSIONS: CI is not routinely detected in primary care outside of the Medicare AWV. Overall, clinicians felt that the identification of CI was valuable and supported standardization, but indicated regular case finding was unlikely without clear guidance on clinical decision-making.

DETECTION AND EFFECT OF POSITIVE SCREENS FOR GERIATRIC SYNDROMES AT THE MEDICARE ANNUAL WELLNESS VISIT

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BACKGROUND: The Medicare Annual Wellness Visit (AWV) is an annual office visit to update preventive health needs and screen for health risk in older adults. Little is known about how often geriatric syndromes are detected or how positive AWV screens impact care. We examined the prevalence of positive screens for three geriatric syndromes: falls, cognitive impairment, and impairment in activities of daily living (ADL), and we assessed referrals, orders and diagnoses generated from positive screen(s).

METHODS: We used electronic health record (EHR) data from Medicare beneficiaries age ≥65 who received primary care in a large group practice between 2014-2017. This group completed AWVs using a standardized EHR template. Patients were identified using AWV billing codes. Fall risk, memory concern, and ADL impairment were determined by positive responses to a standard questionnaire. For each geriatric syndrome, we identified referrals and orders from the AWV for those who screened positive vs. negative. In patients who screened positive for falls or cognitive concerns, we assessed for high-risk medications based on 2019 Revised Beers Criteria. We compared the incident number of dementia diagnoses in the year following the cognitive screen. Statistical significance was determined using a two-sample test of proportions.

RESULTS: We identified 21,080 adults ≥65 years who were eligible for the AWV. Seventy-one percent received at least 1 AWV and of those 78% had questionnaire data to assess geriatric syndromes. Prevalence of positive screens was 37% for falls, 23% for cognitive screen, and 31% for ADL impairment. Older adults with a positive fall screen were more likely to be referred to physical therapy (PT), occupational therapy (OT) or home care than those with a negative screen (36% v 20%, p<0.0001), however those with a positive fall screen were also more likely to be given a medication known to increase fall risk in the year after the screen. Those with a positive cognitive screen were more likely to have vitamin B12 or TSH ordered (43% v 36%, p<0.0001), more likely to have a referral to memory clinic, geriatrics or neurology (15% v 6%, p<0.0001), and more likely to receive a medication that should be avoided in cognitive

impairment in the year after the screen. There also was an increase in dementia diagnosis by screening status (2% v 0.2%, p<0.0001). Older adults with a positive ADL screen were not more likely to have a referral to PT, OT or home care than those with a negative screen (21% v 12%, p<0.0001).

CONCLUSIONS: A significant minority of older adults who received the AWV in our sample had a positive screen for a geriatric syndrome (falls, cognitive impairment, ADL impairment). Positive screens generated a higher rate of referrals and testing; however, a positive screen did not change prescribing patterns related to the condition of concern. These results may indicate a need for enhanced geriatrics education in primary care.

DEVELOPING AND TESTING THE HOMELESS-FOCUSED PRIMARY CARE ORGANIZATIONAL EVALUATION (HOGE)

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BACKGROUND: Homeless persons experience barriers to primary care (PC) access, and describe problems even when care is obtained. The US Department of Veterans Affairs (VA) tailors service design to serve this population by varying hours of service, staffing arrangements, support for clothing or food, training, and other program features. However, the optimal service package is not known. Research to guide the delivery of PC for homeless populations requires a credible method to describe variations in how care is organized so that service variations can be evaluated. We developed and tested an organizational survey capable of detecting plausibly important distinctions.

METHODS: A multidisciplinary team conducted 57 semi-structured interviews across five VA and non-VA homeless PC clinics. Interviews queried access arrangements, care coordination/continuity, and PC team culture. Interview notes were thematically coded, then used to develop structured survey items member-checked with 4 homeless healthcare providers. The survey was administered to the lead nurse and prescribing provider of the 29 largest VA homeless PC clinics. We revised proposed scales based on dimensionality as supported by principle component analyses and internal reliability statistics. We also developed inventories of yes/no descriptive items to buttress the scales. Additionally, we described participants' response patterns.

RESULTS: The resultant Homeless-focused primary care OrGanizational Evaluation (HOGE) has 6 scales with 4-10 items each, along with 6 inventories. Cronbach α's for the scales range from .58 to .81 (Table). In 29 homeless PC clinics; 45% of clinicians reported it was not likely for the prescribing provider to see a non-emergent walk-in at the end of the day. Among the yes/no descriptive items, variation among was seen in how clinics handled tangible needs; 28% offered laundry, 52% clothes, and 62% food assistance. Also, opportunities to coordinate/integrate services were often problematic: 31% had no pharmacy in or near the clinic, and 35% had no specialty medical services in or near the clinic.

CONCLUSIONS: Understanding the optimal design of tailored PC for persons experiencing homelessness requires a method to measure the tailoring itself. Here we report the first effort to offer a survey of that nature. Future work will need to assess whether scale scores correlate meaningfully with patient-level outcomes, and whether the HOGE scales and inventories produce valid insights for clinics seeking to improve care and the agencies that fund them.

Scale (alpha)	Example Likert-type item
Staff and Team Dynamics (.81)	All team members feel free to express their feelings with the team.
Access (.58)	How would you characterize your patients' access to specialty medical services (Endocrine, ID, cardiology)?
Coordination (.72)	How often is there a personal warm handoff (phone or in person) between staff of the Emergency Department and the H-PACT team?
Accommodation (.68)	H-PACT staff include patients in treatment planning and decision making.
Leadership Support (.74)	Senior leaders help resolve problems and barriers we experience.
Intraorganizational Networks and Communication (.59)	Please indicate how much Formal Meetings help your team work together.

DEVELOPMENT OF A NEW PREDICTIVE MODEL FOR FALLS AMONG INPATIENTS USING BEDRIDDENNESS RANK IN DAILY LIVING; A RETROSPECTIVE OBSERVATIONAL STUDY OF 7,858 PATIENTS IN ACUTE CARE SETTING

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BACKGROUND: Falls can be devastating events leading to severe injuries and reduced activities of daily living. Previous studies have identified a variety of risk factors and several predictive formulas for falls have been developed; however, they require examinations and techniques seldom used in routine clinical settings as well as time-consuming assessment items, which pose a serious impediment to its use. Therefore, we have developed and subsequently validated a more straightforward predictive model that uses information routinely obtained at admission in Japan. We use the classifications for abilities of daily living advocated by the Japan Ministry of Health, Labour and Welfare, which are commonly used evaluation tools in the National Nursing Care Insurance System in Japan.

METHODS: We retrospectively analyzed data from Japanese adult inpatients in an acute care hospital from April 2012 to January 2015. Data including age, sex, activity of daily living, the MHLW classifications for abilities of daily living (Bedriddenness rank: normal; J, independence/autonomy; A, house-bound; B, chair- bound; C, bed-bound), referral letter, medications, previous fall, and the route of admission were derived from hospital records. Available data were randomly divided into the test set and validation set at a ratio of 2:1. The candidate predictive factors that fulfilled the following conditions—(i) be assessable at admission, (ii) had low collinearity with each other (coefficient of correlation [r] <0.7), and (iii) can be assessed by an ordinary person—were included in the multivariate model (model 1). A parsimonious model was also made by using predictive factors that showed a significant difference by multivariate logistic regression of model 1 (model 2). A predictive model was created from the multivariate model. The predictive performance was assessed by area under the receiver-operating curve (AUC) for the validation set.

RESULTS: During the study period, total 7,858 adult participants were enrolled. In the test set of 5,257 patients, the median age was 77 years, 34% were men. Model 1 was consisted of 12 factors: age, sex (male), emergency admission, use of ambulance, referral letter, admitted department (Neurosurgery, Internal Medicine), use of a hypnotic, permanent damage by stroke, history of falls, visual impairment, eating, and bedriddenness rank. Model 2 was consisted of 8 factors: age, male, emergency admission, department of Neurosurgery, use of hypnotic, previous falls, requiring assistance with eating, and bedriddenness rank.

Regarding the validation set, the ROC-AUC as the predictive performance of model 1 was 0.789 (95% CI: 0.757–0.821) and that of model 2 was 0.787 (95% CI: 0.755–0.819).

CONCLUSIONS: We developed a new and accurate predictive model for falls in adult inpatients using bedriddenness rank, which is more easily gathered than variables used in previously reported models.

DEVELOPMENT OF A UTILIZATION-BASED ALGORITHM TO IDENTIFY A POTENTIALLY COST-SENSITIVE HOUSING FIRST TARGET POPULATION IN MEDICAID CLAIMS DATA FOR THE CHICAGO FLEXIBLE HOUSING POOL

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BACKGROUND: The Chicago Flexible Housing Pool (FHP) combines public/private investments to create new supportive housing units for homeless individuals with chronic health conditions, and its sustainability depends on early evidence of associated societal cost savings. However, rigorously conducted trials to date indicate that societal cost savings are obtained only among select subpopulations. In particular, top-tier high utilizers, despite their largest potential effect size, were less likely than lower-tier but persistent/emergent utilizers to be associated with relative cost savings upon provision of supportive housing. Our objective was to develop a portable data algorithm for the FHP that can reliably identify homeless individuals who (1) exhibit characteristics of the Housing First target population, and (2) are most likely to experience reductions in utilization-related costs with supportive housing.

METHODS: In October 2018, we linked CountyCare (an Illinois Medicaid managed care program) claims, the electronic health record of Cook County Health inclusive of jail-based healthcare, and Chicago's Homelessness Management Information System (HMIS). We empirically developed a utilization-based algorithm to identify persistent utilizers, and confirmed they experienced serious mental illness or substance use disorder, without introducing new measurable disparities. We assessed their utilization phenotype with respect to their potential for cost savings using sequence analysis and successfully replicated 6 clusters of 2-year utilization patterns previously observed among homeless beneficiaries of New York City Medicaid. We assessed the proportion of persistent utilizers that mapped to phenotypes validated in NYC to be associated with housing-attributable relative cost reductions.

RESULTS: N=1045 individuals in HMIS were beneficiaries of CountyCare. Our algorithm flagged n=232 (22%) persistent utilizers. Persistent utilizers compared to others were similar in age (mean (95% CI): 48 (47, 50) vs. 47 (45, 47)), %women (34% vs. 29%), and jail registrations (median (IQR): 2 (1, 2) vs. 2 (1, 2)), but used EDs more frequently (median (IQR): 8 (8, 16) vs. 2 (1,4), Mann-Whitney p<0.001), used more hospital days (median (IQR): 10 (6, 30) vs. 7 (4, 16), Mann-Whitney p=0.002), and were more likely to be assigned diagnosis codes for serious mental illness (73% vs. 40%, p<0.001), or substance use disorders (72% vs. 33%, p<0.001). Ninety-six percent exhibited 2-year utilization patterns of sequence clusters associated with a greater likelihood of yielding cost reductions.

CONCLUSIONS: Based on an evidence-based assumption that service utilization patterns better inform phenotype than potential effect size for predicting societal cost-effectiveness of a supportive housing intervention, we developed an algorithm capable of identifying a target population that may exhibit housing- related cost reductions in an Illinois Medicaid program.

DIABETES DISTRESS IS ASSOCIATED WITH AMBULATORY CARE-SENSITIVE HOSPITALIZATIONS AMONG ADULTS WITH DIABETES COVERED BY ALABAMA MEDICAID

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BACKGROUND: Diabetes distress, the emotional burden of living with diabetes, is common in adults with diabetes and associated with reduced adherence to diabetes self-management behaviors and worse glycemic control. The relationship of diabetes distress with healthcare utilization has been minimally studied.

METHODS: We conducted a cohort analysis as part of a larger observational study of the quality of care of adults with diabetes covered by Alabama Medicaid. Participants completed a one-time survey, which was linked to their Medicaid claims data. We included adults (ages 18-64 years old) with a diagnosis of diabetes and continuous enrollment in Alabama Medicaid for the 6 months prior to and following the survey date. We assessed diabetes distress using the 17-item Diabetes Distress Scale. We classified utilization as the number of months with a diabetes-related ambulatory care-sensitive (ACS) hospitalization for uncontrolled diabetes, short-term or long-term complications in the 6 months after the survey date. We performed stepwise, Poisson regression models to evaluate the association diabetes distress and the number of months with an ACS hospitalization. Model 1 was unadjusted; in model 2, we adjusted for demographics (age, sex, race, ethnicity, education, marital status, income, eligibility, and rurality), and in model 3, we adjusted for demographics plus clinical variables (comorbidities, diabetes duration, insulin use, and diabetes education).

RESULTS: In total, 363 participants were included in this analysis. Participants' average age was 53.7 years (SD 9.2); 258 (71.1%) were women, 134 (36.9%) were white and 224 (61.7%) were black. The average duration of diabetes was 14.5 years (SD 12.0); 49.3% used insulin; 39.4% had previously received diabetes education. One third (N=121) had elevated diabetes distress (DDS ≥2). For healthcare utilization, 70 (19.3%) had a month with an ACS hospitalization; 23.1% of participants with elevated diabetes distress had a month with an ACS hospitalization versus 17.4% of participants with low distress, p= 0.21. In regression analyses, diabetes distress was associated with an increased incidence rate ratio (IRR) of number of months with an ACS hospitalization; in model 1, the IRR was 1.25 (95% CI 1.12, 1.38), 1.34 (1.21, 1.47) in model 2, and 1.29 (1.14, 1.44) in model 3.

CONCLUSIONS: We found elevated diabetes distress was associated with increased diabetes-related ACS hospitalizations among adults with diabetes covered by Alabama Medicaid while accounting for key demographic and clinical factors. Diabetes distress may be an important indicator of increased healthcare utilization, including diabetes-related preventable hospitalizations.

DIABETES SCREENING AMONG OVERWEIGHT AND OBESE PATIENTS IN NORTHERN NEW ENGLAND ACCORDING TO RURALITY

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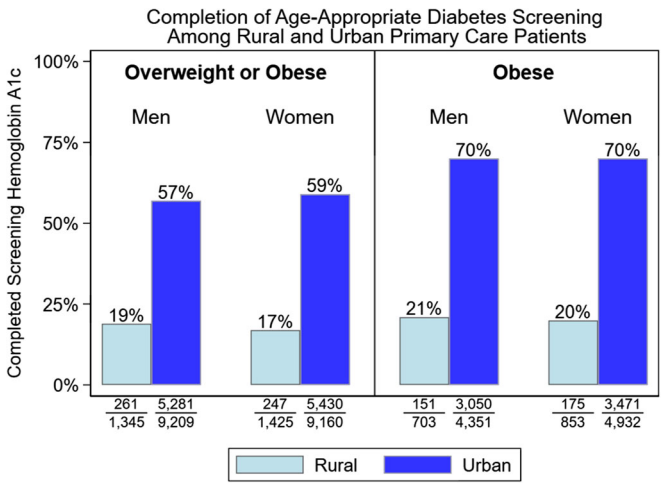
BACKGROUND: National guidelines recommend diabetes screening among adults aged 40-70y with body mass index (BMI) ≥25 kg/m^2, since overweight and obesity are risk factors for diabetes. Relative to urban, rural adults experience a greater prevalence of overweight and obesity. We sought to quantify the proportion of age-appropriate diabetes screening among rural vs. urban primary care patients with overweight and obesity.

METHODS: We included adults aged 40-67 at the first visit receiving primary care between 2010-2018 at University of Vermont affiliates. We excluded those with <2 visits and prevalent type 1 or 2 diabetes. We defined rural and urban status applying home ZIP to Rural-Urban Commuting Area codes. We tabulated proportion of overweight or obese (≥25 kg/m^2) and obese (≥30 kg/m^2) by rural/urban status. Among these BMI groups, we tabulated proportions ever receiving diabetes screening with a hemoglobin A1c by rural/urban status, stratified by sex. Comparisons used χ^2.

RESULTS: Among 86,864 in the cohort, we excluded 52,966 not aged 40-67, 3,620 with <2 visits, and 598 with prevalent diabetes. Of the 29,670 participants (mean [SD] age 54 (8) years, BMI 29 (7) kg/m^2), 56% were women, 93% were white, and 12% lived in rural areas. In comparison to urban dwellers, overweight or obesity was more common among rural adults (men 85% vs. 81%; women 72% vs. 63%, P<0.001 for each sex), as was obesity (men 44% vs. 38%; women 43% vs. 34%; P<0.001). As shown in the *Figure*, a majority of urban overweight or obese patients (men 57% and women 59%) underwent diabetes screening, whereas only a minority of such rural patients underwent this screening (men 19% and women 17%; P<0.001 for sex- stratified comparisons). Similar patterns were seen among those with obesity.

CONCLUSIONS: In a cohort of overweight or obese primary care patients, age-appropriate diabetes screening with hemoglobin A1c occurred in 1-in-5 rural patients, which was 1/3rd of the frequency of urban adults. Targeted interventions to increase guideline-concordant diabetes screening is a critical step to addressing rural health disparities.



DIFFERENCES IN BONE MINERAL DENSITY BY PRIMARY SPOKEN LANGUAGE STATUS IN WOMEN OF HISPANIC ETHNICITY

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BACKGROUND: The public health burden of osteoporosis in older women is substantial for both Hispanic and non-Hispanic women. Those of Hispanic ethnicity comprise the largest ethnic minority in California, with varying levels of acculturation. Primary language is a field typically captured in the electronic health record (EHR) and can be been used to identify patients self-reporting potentially limited English proficiency. This study reports bone mineral density (BMD) and BMD T-scores in Hispanic women and examines whether having Spanish versus English as a primary spoken language is associated with differences in skeletal health.

METHODS: We utilized data from Hispanic women age 50-79y who underwent BMD testing on Hologic DXA densitometers in a large Northern California healthcare system during 1998-2017, excluding those who received osteoporosis therapy in the 2 years prior to BMD testing and those with recent fracture, secondary metastatic cancer, metabolic bone disease, kidney dialysis or transplantation. Hispanic ethnicity was captured from the EHR and BMD data input. Primary (or preferred) spoken language was derived from EHR. Femoral neck BMD was classified as normal (T ≥ -1.0), osteopenia (-2.5 < T-score < -1.0) or osteoporosis (T-score ≤-2.5). Using each woman's first available BMD test acquired during the study period, we compared mean BMD, median T-scores, and proportions with osteoporosis by primary spoken language (English vs Spanish), using Student's t-test, Wilcoxon test, or Chi-squared test.

RESULTS: Among 18,245 Hispanic women with BMD data (age 64.0 ± 7.1y), 6,618 (36.3%) had Spanish and 11,627 (63.7%) had English as their primary spoken language. When BMD was examined by 5y age groups, older women age 65-79y with Spanish as a primary spoken language had significantly lower mean BMD compared to those with English as their primary spoken language; these differences were 0.704 vs 0.713 (65-69y); 0.673 vs 0.685 (70-74y); and 0.644 vs 0.656 (75-79y), g/cm2, respectively. As a result, significantly lower median T- scores were found among those with preferred Spanish as their spoken language (65-69y: -1.4 vs -1.3; 70-74y: -1.7 vs -1.6; 75-79y: -1.9 vs -1.8), respectively. As expected from our findings, a slightly greater proportion of older women age 70-79y with Spanish vs English as a primary spoken language had osteoporosis (70-74y: 14.4% vs 17.5%; 75-79y: 23.2% vs. 28.3%).

CONCLUSIONS: Among older Hispanic women with Spanish (compared to English) as a primary or preferred language, there was a slightly higher prevalence of osteoporosis. While differences in BMD were small, future studies should examine whether osteoporotic fracture outcomes differ by language status in Hispanic women and whether there are modifiable fracture risk factors that can be addressed in the primary care setting. Assessing primary or preferred language may be useful for examining the effect of acculturation and skeletal health in other ethnic minorities.

DIFFERENCES IN CARDIOVASCULAR AND MENTAL HEALTH OUTCOMES BETWEEN US VETERANS BORN IN THE US MAINLAND AND TERRITORIES

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BACKGROUND: The US Veteran population comprises veterans who were born in US territories. Evidence from civilian populations shows that place of birth has a significant impact on health outcomes. However, this has not been well studied among veterans. Given the paucity of evidence in the veteran population, we sought to examine differences in health outcomes between veterans born in the US mainland and US territories.

METHODS: Data (n=881,506) from the Women Veterans Cohort Study (WVCS) was used for analyses. Our sample included military personnel 21 and older who: 1) were discharged from the U.S. military after October

1, 2001, and 2) enrolled for Veterans Health Administration (VHA) services or received VHA care before November 19, 2014. Place of birth was based on veterans' self-report during enrollment into the VHA and measured as Territory-born and US mainland-born. We examined cardiovascular and mental health outcomes obtained from electronic health records. They included diabetes, hypertension, stroke, coronary artery disease (CAD), and major depressive disorder (MDD). Chi-square tests and logistic regression were used for analysis to test differences between groups. Models were adjusted for sociodemographic characteristics.

RESULTS: Veterans born in the US mainland were younger on average than those born in territories. A higher proportion of veterans born in territories were men, Hispanic, married, and had a high school education or greater compared to those born in the US mainland. Veterans born in territories were less likely to smoke (44% vs. 29%) but more likely to be obese (35% vs. 33%). Those born in territories had higher prevalence of diabetes (7.4% vs. 2.9%), hypertension (22.9 vs. 13.2), stroke (.45% vs. .29%), CAD (2.0% vs. 0.83%), and MDD (17.5% vs. 9.7%). Results from multivariate analyses showed that after adjustment for covariates, veterans born in territories had greater odds of CAD (OR: 1.4, 1.3-1.6) and MDD (OR: 2.1, CI: 2.0-2.2) compared to those born in the US mainland.

CONCLUSIONS: Findings show important differences in cardiovascular and mental health outcomes between veterans born in the US mainland and territories. Understanding variation according to place of birth could help to identify target areas for intervention to improve health among veteran subgroups.

DIFFERENCES IN PATIENT REPORTED RATES HORMONE THERAPY USE FOR MENOPAUSAL SYMPTOMS BY PROVIDER SPECIALTY

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BACKGROUND: Hormone therapy (HT) is a safe, effective treatment for menopause symptoms. As women age, they may see a generalist more frequently than a gynecologist. Research is lacking on prescribing practices between specialties. This study aimed to determine rates of HT use among women who see a gynecologist versus a generalist most frequently.

METHODS: This was a cross-sectional analysis using a US-population-based sample of individuals aged 39-90. Data were collected via telephone interview and self-administered questionnaire. Current HT use and most frequently seen healthcare provider type were each assessed by a single question. Univariate logistic regression was used to assess factors that may be related to HT use. Variables with $p<0.10$ were used in a multivariable model.

RESULTS: Of the 2,362 postmenopausal female respondents, 1,602 (78%) saw a generalist most frequently and 57 (2%) saw a gynecologist most frequently; 270 (14%) currently used HT for menopause symptoms. Type of most seen healthcare provider was not associated with HT use when controlling for other factors. More chronic conditions, higher self-rated health, past hysterectomy, more frequent hot flashes and seeing a gynecologist at all were associated with greater odds of HT use. Higher BMI and current smoking were associated with lower odds of HT use.

CONCLUSIONS: The overall rate of HT use for menopause symptoms was low. The rate did not significantly vary by which specialty was seen most frequently. However, seeing a gynecologist for care had three times higher odds of HT use. Given that this data is cross-sectional, causality of cannot be determined. Ensuring that generalists feel comfortable prescribing HT in appropriate scenarios may help eliminate disparities in care among menopausal women as they are the most seen provider type by nearly ¾ of women.

DIFFERENCES IN PREFERRED LANGUAGE FOR LIMITED ENGLISH PROFICIENCY PATIENTS BETWEEN THE ELECTRONIC MEDICAL RECORD AND USE OF PROFESSIONAL INTERPRETERS

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BACKGROUND: Patients with limited English proficiency (LEP) face communication barriers and worse clinical outcomes than English proficient (EP) patients. Therefore, accurate identification of LEP status is critical for patient communication and quality improvement efforts. The need for a professional interpreter is likely a very close surrogate for LEP status. However, there is no standardized way to document LEP status. We measured the concordance of a combined, EMR-based metric – patient-described preferred language plus need for language interpretation – with the language used during video-mediated interpreter (VMI) calls.

METHODS: We performed a retrospective cohort study at a linguistically-diverse urban academic medical center. We included all patients who used VMI to speak with their inpatient medical providers from July 2018 to April 2019. VMI data were obtained from billing records from Language Line Solutions, an interpreter services company. The EMR provided the patients' preferred language for healthcare and preferred need for an interpreter ("Yes" / "No"). We classified the patients into four categories: Non-English / Interpreter needed ("True LEP"), Non-English / No interpreter needed ("Bilingual"), English / No interpreter needed ("True EP"), and English / Interpreter needed ("Misclassified English"). We then calculated the sensitivity of True LEP compared to the gold standard of actual VMI use. For True EP and Misclassified English patients, we examined the VMI languages they used and quantified their VMI use.

RESULTS: The 2,410 patients in our dataset used 21,144 VMI calls across the ten-month period, accounting for 281,717 minutes and 29 languages. The most common languages by VMI and EMR, were Spanish (39% / 31%), Cantonese (31% / 26%), Russian (10% / 7%), and Mandarin (7% / 8%); EMR-reported English speakers used 13% of VMI calls. 81% of patients that used VMI were True LEP, 6% were Bilingual, 10% were True EP, and 3% were Misclassified English. For the True EP patients, 46% of VMI calls were in Spanish. Most of the VMI calls made by the Misclassified English patients were in Russian (26%), Spanish (24%), or Cantonese (23%). The average number of VMI calls made per hospitalization were 7.6 for True LEP patients, 5.5 for Bilingual patients, 2.3 for True EP patients, and 5.1 for Misclassified English patients.

CONCLUSIONS: Classifying patients as LEP by the True LEP definition is only 81% sensitive compared to the gold standard of interpreter use. In fact, a large number of VMI users are currently classified as True EP in the EMR. Underreporting LEP status could lead to underutilization of interpreter services and patient difficulties communicating with medical providers. LEP patients could also be missed by quality improvement initiatives. When using EMR-based definitions of LEP, hospital systems should have a flexible approach to classification that involves frequent audits by front-line providers and administrators to ensure better care for LEP patients.

DIFFERENCES IN SOCIAL DETERMINANTS OF HEALTH AMONG PATIENTS ON CHRONIC OPIOID THERAPY FOR NON-CANCER PAIN WITH MENTAL HEALTH CONDITIONS AND HIGH-DOSE PRESCRIPTIONS

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BACKGROUND: Epidemiologic surveillance of the opioid crisis has demonstrated several correlates of substance use, misuse and mortality including socioeconomic status, family stress, social isolation, psychiatric conditions as well as increased availability of and access to prescriptions. In addition to safe opioid prescribing practices, providers must incorporate social determinants of health (SDoH) assessments and tailored case management as a risk mitigation strategy.

METHODS: This retrospective observational study examined race and sex differences in SDoH among chronic opioid users within an integrated delivery health system in Louisiana. The cohort included patients on opioid therapy for non-cancer pain seen within the health system between January 2017 and November 2019. Chronic opioid use was defined as have been prescribed an opioid for three of the last four months. Patients are included in the chronic opioid health maintenance registry if they are age 18 and older and do not have cancer or enrolled in hospice or palliative care. Registry patients with the SDoH questionnaire completed within Epic electronic health records and opioid prescriptions documented within 12 months of joining the registry were included in the data analysis. Chi-squared tests for association between questionnaire items by race and sex were conducted.

RESULTS: Among 27,747 registry patients, 1,644 were included in the analysis. Among the 1644, most patients were white, non-Hispanic (76%), female (69%) with an average age of 56.6 years; had depression (41%), anxiety (44%), or substance abuse disorder (19%). Also 82% were prescribed opioids with MEDD <50mg; 13% MEDD 50-89mg; and 5% MEDD>90mg. A higher proportion of patients with mental health conditions compared to patients without reported major financial resource strain (8% vs. 3%); worry about food insecurity often (10% vs 3%); have medical transportation needs (12% vs 5%) and other transportation needs (11% vs 5%); report daily stress (23% vs 10%); and never engage in socialization with relatives or friends (13% vs 8%, all P<0.001). A lower percentage of patients with depression compared to those without reported phone communication with family/friends more than 3x/week (61% vs. 66%, P<0.03) as did patients with substance abuse compared to those without (60% vs. 65%, P<0.02). A larger proportion of patients prescribed high-dose opioids compared to lower dosages worry about food insecurity (MEDD 90 vs. 50-89 vs. <50: 17% vs 7% vs 7%) and reported having medical transportation needs (22% vs 9% vs. 9%) as well as other transportation needs (18% vs 8% vs. 8%, all P<0.02).

CONCLUSIONS: This study confirmed differences in SDoH by mental health condition and prescription dosage among patients on chronic opioids for non-cancer pain within a single healthcare institution. To combat the opioid crisis, it is imperative that health systems collect measures of SDoH to inform risk mitigation and population health management strategies.

DISCONTINUATION OF CHRONIC OPIOID THERAPY AMONG MEDICARE BENEFICIARIES, 2012-2016

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BACKGROUND: Even though opioid prescribing has been falling since 2011, millions of Americans still use chronic opioid therapy (COT). Many have raised concerns that increasingly restrictive state policy on opioid prescribing is leading to increased rates of abrupt withdrawal of treatment for COT patients, resulting in untreated pain, mental distress and even suicide. Guidelines strongly discourage discontinuing COT with a dosage taper faster than 10% per week. However, little is known about national patterns of COT discontinuation or adherence to these recommendations nationally.

METHODS: In a 20% sample of Medicare beneficiaries, we defined patients on COT as those with at least 4 consecutive quarters with >60 days of opioids supplied quarterly with an average morphine-milligram equivalent (MME) daily dose of >25. Our primary outcome was discontinuation of COT, defined as >60 consecutive days of no opioids supplied. We additionally examined whether discontinuation was "tapered" or "abrupt" by comparing COT users' daily MME dose in the last month of therapy to their average dose in the 6 months prior (i.e. 2 to 7 months before discontinuation). Patients with "abrupt" discontinuation had a decrease of 10% or less in daily MME, representing the absence of a meaningful taper against guideline recommendations. Any reductions in dose >10% we considered potentially "tapered" to at least some extent. We used linear regression to estimate trends over time in discontinuation patterns, controlling for beneficiary demographics.

RESULTS: From 2012-2016, we identified 197,484 COT users, 12,792 of whom discontinued therapy. Adjusted rates of discontinuation increased from 5.0% of COT users in 2012 to 7.3% in 2016, a 46% relative increase (p<0.001). There was a similar increase in annual discontinuation rate for users on lower (26-90 MME, 5.3% to 7.4%, p<0.001) vs. higher doses (>90 MME, 4.3% to 6.8%, p<0.001). Discontinued users were more likely to be Medicaid eligible than continuing users (54% vs. 47%, p<0.001) but were otherwise similar demographically. The majority of COT discontinuations, 84%, were stopped abruptly, including 63% of those on >90 MME daily dose. The proportion of abrupt discontinuations changed little over time (83% to 82.5%, 2012-2017). COT users with abrupt discontinuation were demographically similar compared to potentially tapered users, though they were much less likely to be on high >90 daily MME doses (20% vs. 33%, p<0.001).

CONCLUSIONS: Medicare beneficiaries on COT for a year or more are increasingly likely to have their therapy discontinued. The vast majority of discontinuing users, even those on extremely high doses, had no meaningful reduction in dose prior to discontinuation. This abrupt withdrawal of COT is extremely likely to have caused severe opioid withdrawal and implies that physicians are largely ignoring guidelines for cessation of COT. These results raise questions about potentially unintended consequences of policies designed to curb chronic opioid use.

DISCONTINUING DOCUSATE

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BACKGROUND: Docusate is one of the most commonly prescribed medications in many hospital systems. However, the evidence in support

of docusate is poor, and there is an increasing body of high-quality evidence showing docusate to be no more effective than placebo for the purposes of treating constipation and increasing stool water content. Both the American Journal of Gastroenterology and the American Society of Colon and Rectal Surgeons recommend against docusate and endorse other more effective agents for first- line therapy. Despite this, it remains a preferred option for many clinicians, leading to increased healthcare costs, increased pill burden, and delay of effective treatment. We hypothesized that the removal of docusate as an inpatient treatment option would significantly decrease the number of patients for whom docusate is prescribed on dischargre.

METHODS: Our method was a chart review of the number of patients for whom docusate was prescribed on discharge. We reviewed a 90-day period prior to the discontinuation of docusate from formulary and a 56-day period afterwards. Included were all inpatients discharged from our city hospital on any service with docusate in their home medication reconciliation, either as a new medication or a continued home medication. Excluded were patients discharged within the ten days after the formulary change, to allow time for full implementation and avoid carried-over orders. We compared the frequency of these cases on a per-month basis.

RESULTS: In the 180 days prior to the formulary change, there were 1,191 patients for whom docusate was either continued as a home medication or prescribed as a new medication at the time of discharge. This equated to 198.5 discharges on docusate per 30-day period. In the 58 days after the formulary change, there were 102 discharges on docusate, equating to 52.8 discharges per 30-day period. This was a reduction of 74.4%.

CONCLUSIONS: Our findings support the idea that clinical inertia and convenience are major factors when choosing discharge medications. In this case, the amount of patients being sent home on docusate was cut to nearly a quarter simply by limiting its inpatient use. The availabilty of different drugs on the hospital formulary has an impact that reaches beyond the inpatient stay. Therefore, the importance of keeping a formulary updated based on the latest evidence-based guidelines cannot be understated.

DISCUSSING CERVICAL CANCER SCREENING OPTIONS: OUTCOMES TO GUIDE CONVERSATIONS BETWEEN PATIENTS AND PROVIDERS

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BACKGROUND: In 2018, the US Preventive Services Task Force endorsed 3 strategies for cervical cancer screening in women ages 30-65: cytology q3 years, testing for high-risk types of human papillomavirus (hrHPV) q5 years or cytology plus hrHPV testing q5 years. It further recommended that women discuss with their health care provider "which testing strategy is best for them". To help inform such discussions, we used decision analysis to forecast screening outcomes for each strategy over a short-time (15-year) horizon, similar to what is used for breast cancer screening.

METHODS: We constructed a Markov decision model using estimates of the natural history of HPV and cervical neoplasia. Transition probabilities between health states were age- and HPV type-specific. The cohort started at age 10 with no existing HPV infection and was followed until age 45. Every year, women were at risk of HPV infections that could clear, persist or progress to cervical intraepithelial neoplasia (CIN); CIN lesions could regress, persist or progress to higher grades or to cancer. Validation was by comparison with SEER data and with outcomes from a randomized trial of hrHPV testing compared with cytology. Management of abnormal test results and CIN were based on current guidelines. Outcomes were colposcopies with biopsy, false-positive testing, treatments, cancers and cancer mortality. We evaluated current recommended strategies and no screening (Table). A 15-year horizon allowed comparisons of 5 rounds of q3 year screening with 3 rounds of q5 year screening.

RESULTS: All strategies resulted in substantially lower cancer and cancer death rates compared with no screening. Strategies with the lowest likelihood of cancer and cancer death generally had higher likelihood of colposcopy and false-positive testing (Table).

CONCLUSIONS: Informing women of the potential benefits and harms of these screening strategies will help ensure their preferences are consistent with their goals.

DISCUSSING THEIR CREATIONS: ANALYSIS OF REFLECTION IN CLINICAL MEDICINE WORKSHOPS FOR THIRD-YEAR MEDICAL STUDENTS

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BACKGROUND: Reflective writing and expression has been increasingly incorporated into medical education as a means to increase empathy, foster professional development, and encourage well-being. To this end, we introduced a mandatory exercise and workshop for third-year medical students in the inpatient medicine clerkship in the 2019-2020 academic year. In addition to allowing for written and non-written forms of expression, we integrated an additional opportunity for reflection with peer-driven discussion of student pieces. This study examines the value of both reflective expression and subsequent workshops for students during their clinical training.

METHODS: As part of the third-year inpatient medicine clerkship, students were asked to create a reflective piece, which could be written (including prose or poetry), photographic, or any other expressive form, including multimedia and performance. Pieces were disseminated within the clerkship cohort for each block (approximately 8-10 students). Subsequently, the clerkship cohort met for an hour-long, student-led discussion of their pieces and their clinical experiences with the help of a faculty moderator. Students were then asked to complete an anonymous survey, using Likert scales and short response format, regarding their enjoyment and perceived benefit from the experience.

RESULTS: Interim analysis of students from July-November 2019 was performed. 41 students completed the exercise and survey with a 100% survey response rate. 19.5% of students anticipated that they would find the overall experience "very" or "extremely" enjoyable. Following completion of the workshop, 68.3% found the overall experience "very" or "extremely" enjoyable indicating that over half of the students found the experience more positive than they anticipated. Student feedback indicated that the subsequent discussion portion was more enjoyable than the creation process: 75.7% enjoyed the creation process compared to 95.1% who enjoyed the small-group discussion of the pieces. In short answer responses, many students counted the "open and honest," "cathartic" discussion as the greatest strength of the process, with one student

commenting, "It is healthy to reflect on these experiences and refreshing to hear from other students."

CONCLUSIONS: These results have promising implications on how creative reflection can be used to promote well-being in medical students. While the creation process was perceived as valuable, nearly all the students found the subsequent small-group discussion enjoyable and valuable. This implies that reflective, medical humanities exercises are more constructive in conjunction with group sessions that provide an opportunity for students to receive feedback and support from their peers. Future studies could characterize the components of what guides a positive group discussion and how to incorporate formal debriefing through the clerkship.

DISPARITIES AFTER DISCHARGE: HOW LIMITED ENGLISH PROFICIENCY PATIENTS FARE AFTER HOSPITALIZATION

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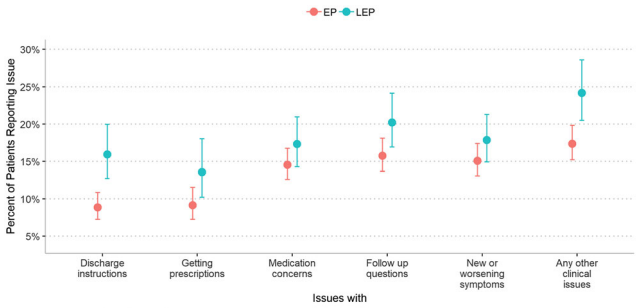
BACKGROUND: Patients with limited English proficiency (LEP) face barriers communicating with clinicians and understanding their treatment plans. Prior works shows limitations in LEP patients' understanding of discharge instructions. However, little is known about disparities in care transitions outcomes between LEP and English proficient (EP) patients. To address this gap, we measured the prevalence of patient-reported, post-discharge outcomes among 18,000 patients.

METHODS: We performed a retrospective cohort study at an urban academic health system. We included patients ≥18 years discharged home from a medical or surgical services between May 2018 and April 2019. We obtained demographic and clinical data from the EMR. Within 72 hours of discharge, patients received an automated phone call asking about six post-discharge outcomes: discharge instruction questions, follow up care questions, new or worsening symptoms, medication concerns, help obtaining prescriptions, and other issues. Patients could answer in English, Cantonese, or Spanish. Program nurses called patients who did not respond to the automated system or reported an issue. We classified patients as LEP if, in the EMR, their preferred language was not English and they required an interpreter. We determined the association of LEP and post-discharge outcome using log-binomial generalized linear models adjusting for baseline differences.

RESULTS: Of the 18,463 eligible discharges, 79% responded to an automated or manual call, and 12% were LEP. Compared with EP patients, LEP patients were more likely to be older (median 65yrs vs. 57yrs, p<0.001), Medicaid-insured (37% vs. 22%, p<0.001), Hispanic (41% vs. 14%, p<0.001), and Asian (44% vs. 12%, p<0.001). After adjusting, LEP patients were more likely to report discharge instruction questions (16% vs. 9%, p<0.001), needing help to get prescriptions (14% vs. 9%, p=0.003), medication concerns (17% vs. 15%, p=0.047), follow up care questions (20% vs. 16%, p=0.001), new or worsening symptoms (18% vs. 15%, p=0.036), and having other clinical questions (24% vs. 17%, p<0.001) (Figure).

CONCLUSIONS: Compared to EP patients, LEP patients reported higher rates of all post-discharge issues assessed. These disparities may stem from inadequate communication during the discharge and logistical difficulties after discharge. Discharge processes tailored to LEP patients need to be implemented to mitigate observed disparities.



DISPARITIES IN HIV TESTING RATES: DOES PREDOMINANT CLINIC RACIAL/ETHNIC POPULATION PLAY A ROLE?

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BACKGROUND: Race, ethnicity, and language have been identified as factors impacting uptake of HIV testing. This project sought to compare testing rates between predominant and non-predominant ethnic, racial, or language populations within neighborhood FQHCs.

METHODS: We identified Family Health Center network locations at which more than 50% of patients served identified as the same race, and/or had the same preferred language, and focused our analysis on these sites. We used Excel and SPSS to compare HIV testing rates between predominant and non-predominant population groups at each clinic.

RESULTS: At 2 of 5 sites with a predominant non-English preferred language, speakers of the predominant language were more likely to receive an HIV test than speakers of other languages (p<0.001 for both sites). The other sites showed no difference by language. Of 2 clinics with a predominant racial population, there was no difference between predominant and non-predominant populations in terms of HIV testing. At all included sites, with one exception, Hispanic ethnicity was associated with a significantly higher rate of HIV testing.

CONCLUSIONS: Predominant/non-predominant race did not affect HIV testing rates, but language and ethnicity did. One mechanism for this may be increased trust associated with patient-provider language concordance, resulting in greater uptake of tests. There is a need for future research to further explore the factors associated with these findings.

DISPARITIES IN MORTALITY AMONG DUALLY ENROLLED MEDICARE BENEFICIARIES LIVING IN RURAL VS. URBAN AREAS, 2004-2017

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BACKGROUND: Little is known about rural Medicare beneficiaries who are dually enrolled in Medicaid due to poverty. Therefore, we evaluated whether all-cause mortality rates changed for rural and urban dually enrolled beneficiaries from 2004 to 2017 and if differences between these two groups narrowed or widened over time.

METHODS: We used Medicare denominator files to identify individuals aged ≥65 years that were enrolled in the Medicare Program (Fee-for-Service [FFS] or Medicare Advantage [MA]) from 2004 to 2017. Medicare beneficiaries were considered dually enrolled if they were also enrolled in Medicaid for at least one month within a given year. Dually-enrolled beneficiaries were classified as residing in a rural or urban area based on the rural-urban commuting area codes (RUCA). All-cause mortality rates per 100,000 dually enrolled beneficiaries in rural and urban areas were calculated and standardized by age, sex, and race. To assess whether the difference in outcomes between these two groups narrowed or widened over time, we evaluated the interaction between rural residence and time.

RESULTS: Overall, there were 11.7 million unique dually-enrolled (FFS and MA) beneficiaries. Between 2004 and 2017, mean age decreased among rural (78.0±8.23 to 76.4±8.18) and urban (77.5±7.99 to 76.5±8.14) dually-enrolled beneficiaries, and the proportion of females in both groups also declined (rural: 71.1% to 66.7%; urban: 70.9% to 65.9%). Annual rates of enrollment in MA increased among both rural and urban beneficiaries (rural: 3.1% to 26%; urban: 14% to 46.6%).

Little: In the Medicare (FFS and MA) dually-enrolled population, standardized all-cause mortality rates were consistently higher among rural beneficiaries compared with their urban counterparts. Among rural dually- enrolled beneficiaries, mortality declined from 9,083 to 8,691 per 100,000 from 2004 to 2017. In comparison, among urban dually-enrolled beneficiaries, declines in mortality were more pronounced (8,893 to 7,707 per 100,000). The difference in all-cause mortality between rural and urban dually-enrolled beneficiaries widened from 2004 to 2017 ($p<0.001$ for interaction between rural status and time). In 2017, mortality rates were highest for rural beneficiaries in the Central Northeast (9,722/100,000) and lowest in the Northeastern United States (6,397/100,000).

CONCLUSIONS: Among dually-enrolled Medicare beneficiaries (FFS and MA) age 65 or older, those living in rural areas had higher all-cause mortality rates than their urban counterparts. All-cause mortality rates declined for both rural and urban dually enrolled beneficiaries from 2004 to 2017, but disparities in mortality between these groups widened. These findings suggest that gains in health outcomes have not been equally realized among dually-enrolled individuals living in rural areas compared to those living in urban areas. There is an urgent need for policy efforts to focus on improving care and outcomes for this vulnerable population.

DISPARITIES IN PATIENT CARE OUTCOMES BASED ON MARKERS OF SOCIAL VULNERABILITY IN A RESIDENT CONTINUITY PRIMARY CARE CLINIC

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BACKGROUND: Little is known about social inequities and disparities in care outcomes for patients that self-select into a resident continuity clinic. At our institution, we found that resident continuity patients experience higher rates of loss to follow-up and poorer clinical outcomes compared to faculty patients. We hypothesize that there are clinician, systems and patient-related factors that contribute to these outcomes. Specifically, we hypothesize that there are higher degrees of social vulnerability in the resident practice compared to the faculty practice. The aim of the current study is to describe the social determinants of health among a resident continuity panel compared to a faculty cohort as potential predictors of inequities in care outcomes.

METHODS: We collected a random sample of 300 unique patients, half from the resident and faculty practices at an academic hospital-based teaching practice. We developed an a priori list of variables that we hypothesized would represent markers of social vulnerability under the following domains: low health literacy, economic vulnerability, psychiatric illness burden, high risk behaviors and markers of disengagement with the healthcare system. Using a standardized data extraction tool, we reviewed each chart in our sample to measure these variables. To test for significance, we used chi-squared tests for binary outcomes, and t-tests and wilcoxon ranked sum testing for parametric and non-parametric continuous outcomes respectively.

RESULTS: Across all domains of social vulnerability, resident continuity patients had higher percentages of unfavorable social determinants of health. Compared to faculty patients, resident patients had higher rates of markers of low health literacy (9.4% with limited English proficiency compared to 3.4%; 11.4% with less than a high school education compared to 3.4%). Resident patients had higher levels of economic vulnerability (18.9% required public insurance compared to 7.1%; 24.5% lived in neighborhoods historically marked for disinvestment compared to 14.3%, and 34% required consultation for community resources compared to 14%). Resident patients had higher levels of psychiatric illness burden (17% with a major psychiatric illness compared to 3.6%). Resident patients had higher rates of risky behaviors, including tobacco use (13.2 vs. 5.4%); alcohol use disorder (15.1 vs.10.7%), and substance use disorders (28.3 vs. 3.6%). Lastly, resident patients tended to be more transient participants in healthcare (9.4% were students vs. 3.4%) and tended to be less engaged (18% unkept visit rate vs. 5%).

CONCLUSIONS: In conclusion, patients who select into a resident primary care practice have higher burdens of social vulnerability across many domains. They also tend to have poorer clinical outcomes, in particular for those that rely on practice engagement with the patient. These findings will help inform necessary systems-based interventions to build equity into the care of this vulnerable patient population.

DISPARITIES IN TELEHEALTH USE AMONG PATIENTS WITH LIMITED ENGLISH PROFICIENCY: CALIFORNIA HEALTH INTERVIEW SURVEY, 2015-2018

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BACKGROUND: Telehealth may ameliorate disparities for limited English proficient (LEP) patients. Previous studies revealed gaps in telehealth use by underserved patients, but there is little data on LEP patients. We had two research objectives: 1) assess the association between limited English proficiency and telehealth use and 2) evaluate the impact of telehealth on care for LEP patients.

METHODS: We used data from the 2015-2018 California Health Interview Survey (CHIS), a telephone survey conducted in 6 languages. We defined LEP patients as those who spoke English not well/not at all. The first part of our study examined telehealth use (care through a video or telephone) among LEP patients compared to English proficient patients. For our second objective, we limited our sample to LEP patients and evaluated the association of telehealth use with 1) delays in care and 2) Emergency Department (ED) utilization in the past year. We used survey-supplied weights to produce population estimates. Analyses were performed using SAS software version 9.4.

RESULTS: Our study included 84,419 people, representing 29,406,792 people, and 8,063 were LEP, representing 4,410,605 people. LEP patients were older, female, less educated, poorer, less insured, and less likely to have a usual source of care. In bivariate analysis, LEP patient were less likely to use telehealth (4.8% vs. 12.3%, $p<0.001$). In adjusted analyses, LEP patients still had a lower likelihood of using telehealth (Table). For LEP patients, telehealth use was associated increased ED utilization (OR:

2.47, p= 0.004), but did not impact delays in care (OR: 1.75, p = 0.133) in adjusted analyses.

CONCLUSIONS: Our study reveals disparities in telehealth use among LEP patients. Telehealth use was associated with increased ED utilization. Though the association may be related to selection bias or unmeasured confounders, these results suggests that telehealth may not reduce utilization. Implementation must focus on promoting technology equity and decreasing divides.

Table. Association of English Proficiency and Telehealth Use

	Odds ratio	p-value
English Proficiency (ref: English proficient)		
Limited English proficiency	0.548	**<0.001**
Age (ref:18-29)		
30-39	1.198	0.120
40-49	0.975	0.821
50-64	0.980	0.837
65+	1.030	0.774
Marital Status (ref: Not married)		
Married	1.068	0.262
Sex (ref: male)		
Female	1.375	**<0.001**
Education (ref: College Graduate)		
< High School	0.713	0.119
High School Graduate	0.807	**0.016**
Some College	0.954	0.605
Federal Poverty Level (ref: 0-99% FLP)		
100-199% FPL	0.986	0.9179
200-299% FPL	1.330	**0.0171**
> 300% FPL	1.495	**0.0003**
Race/Ethnicity (ref: white, non-Hispanic)		
African American, non-Hispanic	1.127	0.3458
Asian, non-Hispanic	0.763	**0.0053**
Hispanic	0.873	0.1102
Other	0.935	0.6157
Health Status (ref: Excellent)		
Poor	3.009	**<.0001**
Fair	2.002	**<.0001**
Good	1.579	**0.0004**
Very Good	1.261	**0.0135**
Insurance (ref: Insured)		
Uninsured	0.633	**0.0265**
Source of Care (ref: No Usual Source of Care)		
Has usual source of care	2.520	**<.0001**
Location (ref: Metropolitan)		
Non-Metropolitan	0.598	**<.0001**

DISTRESS EXPERIENCED BY YOUNGER ADULTS NEWLY DIAGNOSED WITH TYPE 2 DIABETES: A QUALITATIVE STUDY

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BACKGROUND: Prognoses may be particularly poor for the growing number of adults diagnosed with type 2 diabetes (T2D) before age 45. These younger individuals present with more severe hyperglycemia and are at significantly increased risk for developing diabetes-related complications that may arise earlier in the life course. Despite the gravity of this diagnosis, little is known about how a new T2D diagnosis is first communicated to and received by younger adults.

METHODS: We conducted six focus groups to learn about the diagnosis experiences of individuals with younger-onset T2D. Participants were members of an integrated healthcare delivery system, had been diagnosed with T2D during the prior two years, and were 21-44 years old at diagnosis. The groups were led by an experienced facilitator, audio-recorded, and transcribed verbatim. Two reviewers coded each transcript using thematic analysis, with discrepancies resolved by team discussion.

RESULTS: The average age of the 41 participants was 38.4 years (SD 5.8 years); 20 were women, 10 were Latino, 12 were Black, 12 were White, and 7 were of multiple or other races. Four main themes regarding T2D diagnosis experiences were noted. First, participants differed in their expectation for the diagnosis, with some anticipating it ("My mouth was super-dry and my mother has diabetes, so I kind of knew") and others surprised by it ("Doctor had me do like bloodwork…for nothing related to that"). Second, there was no standard disclosure process. Some participants were told in-person, others via phone, some received a secure message ("I got an email. 'You got diabetes'"), and several saw their results on the patient portal ("I actually seen my results online…I didn't know what any of it meant"). Third, the perceived tone of the initial conversation ranged from casual ("He called me and was just real nonchalant. He was like, 'Hey, I just want let you know that, you know, you're diabetic'"), to fear-centered ("My doctor scared the crap out of me"), to supportive ("This is hard, but it's going to be easy, because we're going to do it together"). Fourth, common initial emotions included self-blame ("I had done it to myself"), denial ("I was like I don't care no more"), resignation ("I'm going to probably end up with [T2D]. And sure enough, here I am"), and fear, which was often rooted in personal experience ("my dad died from diabetes and I kinda got scared").

CONCLUSIONS: The identified themes highlight opportunities to improve the disclosure of T2D diagnoses to younger patients by: 1) providing information and counseling prior to diagnostic testing, 2) identifying patient-centered diagnosis communication strategies and the preferred mode of delivery, and 3) developing care approaches that address and help mitigate the emotional distress triggered by this life-altering diagnosis. Honing T2D communication processes from the outset may support high-risk, younger patients establish a trajectory towards improved health.

DOCTORS HATE DEDUCTIBLES: PHYSICIANS AND OTHER HEALTH SYSTEM EMPLOYEES PAY THOUSANDS PER YEAR TO AVOID HIGH DEDUCTIBLE PLANS

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BACKGROUND: Employees often have a choice of health insurance plans. High deductible plans offer lower monthly premiums in exchange for higher deductibles before insurance coverage begins. High deductible plans are thought to reduce unnecessary healthcare utilization through cost sharing, making them attractive to employers. Nobel Prize winning economist, Richard Thaler, has stated that many people select plans that are "wrong," meaning a person could have saved money selecting a different health plan, regardless of the health services used in a year. Using data from over 18,000 employees of a large health system, including 1,429 physicians, we examined health insurance plan selection between a high deductible ($3,000 deductible) and a high premium plan (no deductible) to investigate potential employee savings associated with high deductible plans.

METHODS: We completed a cross-sectional, retrospective analysis of plan selection among employees of a large health system from fiscal year 2018. Using this data and the health system's benefits information, we created a tool that uses plan selection, annual premium costs, deductible costs, and coinsurance costs to estimate individual employee spending for a given health plan and coverage type (i.e. family or single) over a range of healthcare spending estimates. We then applied this tool to the employee data to compare potential employee costs in the high deductible plan versus the high premium plan. This allowed us to predict spending

differences and identify opportunities for cost saving across plan types with similar coverage.

RESULTS: Among all physicians, nearly 90% (1,277/1,429) chose the high premium plan. After accounting for the $3,000 deductible, switching to the high deductible plan would save $3,800-$4,182 in annual premium costs for physicians with family coverage (n=632). Cumulative potential savings among all 1,492 physicians ranges from $1-$3.8 million depending on the amount of spending if they were to switch to the high deductible plan. In addition to physicians, we examined potential savings for 4,434 full-time, non-union, non-physician employees with family coverage enrolled in the high premium plan. Switching to the high deductible plan would save up to $4,000, more than the cost of the $3,000 deductible for family coverage.

CONCLUSIONS: Using employee health insurance data from a large health system, we identified potential savings associated with switching to high deductible coverage. Nearly 90% of physicians chose the high premium plan, foregoing $3,800-$4,182 annually in savings for family coverage if they had chosen the high deductible plan. These findings persisted for all employees with family coverage. High deductible health plans are becoming more common, but our study contributes to the growing body of evidence that even highly educated professionals who understand health insurance will pay thousands in extra premiums to avoid deductibles.

DOES INPATIENT NALOXONE ADMINISTRATION ACCURATELY IDENTIFY OPIOID ADVERSE EVENTS?: VALIDATION OF A PROPOSED QUALITY MEASURE

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BACKGROUND: Centers for Medicare and Medicaid Services (CMS) has proposed a new measure of Opioid-Related Adverse Respiratory Events (ORARE) defined as inpatient naloxone administration within 24 hours of opioid administration, excluding reversal immediately following a procedure. This measure may become part of the inpatient quality reporting program that impacts hospital payment. The purpose of this study was to determine if inpatient naloxone administration is an accurate marker of opioid-related adverse drug events.

METHODS: All adult medical admissions at a large academic medical center in a 12-month period were electronically abstracted to identify events of naloxone administration within 24 hours of inpatient opioid administration. We excluded intra-operative naloxone reversal and non-urgent use for opioid side effect management (i.e. itching). Data abstraction included demographic data, diagnoses, opioid and naloxone dose and timing, presence of other sedating medications, and whether the encounter was coded by the hospital as an opioid overdose. Clinical documentation was qualitatively reviewed by study physicians to determine the indication for naloxone and assess whether the patient had a clinical response consistent with an ORARE. Analysis included descriptive statistics.

RESULTS: There were 43 naloxone events in 42 patients from 6126 discharges for an event rate of 0.7%. Acute or chronic kidney disease was present in 47%, liver disease present in 16%, and 42% were >65 years old. In the 24 hours prior to naloxone, the mean+SD Morphine Milligram Equivalents (MME) administered to patients was 28.8+20.1mg in an average of 2.5+1.4 doses. In 63% of events, other sedating medications were given in the same time span including gabapentin (29%), benzodiazepines (22%), anticholinergic medications (25%), and skeletal muscle relaxants (16%).

The most common indication for naloxone was encephalopathy which occurred as a primary or contributing factor in 37 events. Other reasons included hypotension (9), respiratory depression (9) and cardiac arrest (1). After receiving naloxone, 20 patients (46%) showed clinical improvement consistent with an ORARE. Alternative diagnoses in patients not responding to naloxone included sepsis, hepatic encephalopathy, sedation from other medications, and other etiologies of hypercarbic respiratory failure. Hospital coding captured 20.9% of events as an opioid overdose.

CONCLUSIONS: This single-institution study demonstrates that inpatient naloxone was most often given for non-specific alterations in mental status and less commonly for respiratory depression or hypotension. It reversed targeted symptoms less than 50% of the time. The majority of patients also received other non- opioid sedating medications and had decreased clearance due to liver and kidney disease. These results suggest inpatient naloxone may be an inaccurate marker of opioid-related adverse events.

DOES MENTAL HEALTH CARE INTEGRATION AFFECT PRIMARY CARE CLINICIAN BURNOUT? RESULTS FROM A LONGITUDINAL VETERANS AFFAIRS SURVEY

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BACKGROUND: Burnout among primary care clinicians (PCPs) is associated with negative health and productivity consequences. Team-based health care are thought to improve clinician well-being, but it remains unclear if effects are observed in models as implemented broadly in multiple primary care practices. Over the past decade, the Veterans Health Administration (VA) implemented Primary Care Mental Health Integration nationally. This initiative embedded mental health specialists, care managers, and PCPs jointly manage common psychiatric diseases in primary care. This study examined the relationships between PCP- reported burnout and two key mental health integration variables in the VA.

METHODS: 210 PCPs in one VA region (17 clinics in 4 healthcare systems) reported burnout symptoms on the Maslach Burnout Inventory Emotional Exhaustion subscale via 286 cross-sectional surveys in fiscal years 2012 (November 2011 to March 2012; *n*=171; response rate = 54%) and 2013 (August 2013 to January 2014; *n*=115; response rate =48%). Using multilevel regression models, we examined PCP-reported burnout, mental health communication ratings, and clinic engagement in mental health integration (i.e., proportion of clinic patients who saw integrated clinicians) for associations. Models controlled for PCP characteristics (e.g., gender, years in practice), PCP ratings of team functioning (communication, knowledge/skills, satisfaction), and organizational factors.

RESULTS: On average, PCPs in our VA study region reported high levels of burnout (29, range=9-54), unchanged over time. There was no significant variation in aggregated burnout levels across healthcare systems (27 to 32 in 2012, p=.64; 29 to 36 in 2013, p=.23). 46% of PCPs reported that communication with mental health specialists was "very easy." On average, study clinics where PCPs practiced had 9% of their primary clinic patients seeing integrated mental health clinicians. PCP-reported burnout was *not* significantly associated with mental health communication ratings (β=-.96, standard error [SE]=1.29, p=.46), nor with clinic engagement in mental health integration (β=.02, SE=.11, p=.88). The two key mental health integration variables did not appear to have a relationship, and, thus, no mediation analysis was necessary. Among study participants, PCPs with poor team functioning, as exhibited by low team communication ratings, reported highest levels of burnout (β=-1.28, SE=.22, p<.001).

CONCLUSIONS: As locally implemented, primary care and mental health integration did not appear to impact VA PCP-reported burnout. While the VA strives to lead in quality measurement and to achieve high-quality population-based care, it should also consider measurement and interventions to tackle reductions in burnout within the primary care workforce serving veterans. More research is needed to explore team-based care model variation among clinics in order to optimally implement care models that additionally enhance PCP well-being.

DOES NEIGHBORHOOD FOOD ACCESS ALTER LIFE EXPECTANCY IN OLDER ADULTS?

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BACKGROUND: Although a healthier diet has been associated with a lower burden of chronic disease and a compressed period of disability on an individual basis, the impact of dietary built environment (DBE) on life expectancy and disability-free life expectancy are not known. We sought to determine if DBE is associated with life expectancy, disability-free life expectancy, and compression of disability among older adults.

METHODS: In the Cardiovascular Health Study, a cohort of 5888 adults from 4 US communities, we measured counts of supermarkets, non-supermarket food outlets, and fast food restaurants within a 5-km radius of each participant using retail data. Participants were followed for up to 29 years. Disability-free life expectancy was defined as participant study years without reported difficulties in activities of daily living. Compression was defined as the proportion of a participant's life without disability and calculated as disability-free life expectancy/life expectancy. We examined the associations of DBE with these outcomes using linear regression with adjustment for participant and neighborhood characteristics.

RESULTS: We included 4,379 eligible participants. The mean numbers of establishments within a 5-km radius of each participant were 10.8 (SD 8.5; IQR 4-17) for supermarkets, 27.9 (22.4; 8-43) for fast food restaurants and 84.6 (77.6; 24-115) for non-supermarket food outlets. For every additional 100 non- supermarket food outlets, life expectancy was 1 year longer, and disability-free life expectancy was 1.2 years longer (Table), with a borderline increase in disability compression. Sensitivity analyses revealed no effect modification by race or gender. We observed no significant associations of supermarkets or fast food restaurants with any outcomes.

CONCLUSIONS: Non-supermarket food outlets such as convenience stores vastly outnumbered supermarkets and fast food restaurants and were associated with increased life expectancy and disability-free life expectancy in older adults. Food access may be more important than quality in extending life in elders.

DOES NEIGHBORHOOD WALKABILITY PREDICT LONG-TERM SURVIVAL FOLLOWING CABG SURGERY?

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BACKGROUND: Proximity to resources and amenities is an aspect of the built environment that links place to social determinants for better health. Yet while living in more walkable neighborhoods has been associated with lower rates of hypertension and diabetes, less is known about the relationship between neighborhood walkability and mortality. We addressed this question among a cohort of patients with coronary artery disease (CAD) who enrolled in a NIH-funded trial to treat depression following coronary artery bypass graft (CABG) surgery using WalkScores™, a validated measure to determine pedestrian friendliness and distance to amenities.

METHODS: Between 3/04 and 9/07, we enrolled 453 post-CABG patients from eight Pittsburgh-area hospitals. They included 302 depressed (inpatient PHQ-2(+)/2-week outpatient follow-up PHQ-9 ≥10) and 151 randomly sampled non-depressed control subjects (PHQ-2 (-)/PHQ-9 <5). We obtained the WalkScore™ (www.walkscore.com) for each patient's home address on the date of CABG surgery, and then classified each neighborhood into one of four categories: Very Car Dependent (WalkScore™: 0-24); Car Dependent (25-49); Somewhat Walkable (50-74); and Walkable (75-100). We confirmed patient vital status as of 12/31/2018, and then used Kaplan-Meier analyses to calculate patients' 10-year mortality and cox proportional hazards models to assess for statistical significance.

RESULTS: We obtained WalkScores™ for 445 (98%) patients, including 297 (67%) who met criteria for post-CABG depression. Their mean age was 65 (SD:11), 60% were male, 88% were White, 83% had hypertension, and 41% had diabetes. Patient distribution by WalkScore™ category was as follows: 52% Very Car Dependent, 27% Car Dependent, 17% Somewhat Walkable, and 4% Walkable. This distribution did not differ by baseline depression status. The 10-year incidence of all-cause mortality was similar by WalkScore™ category for the overall cohort (36%; P=0.23) and among those depressed at baseline (40%; P=0.62). However, among non-depressed patients, compared to Very Car Dependent (reference group) the mortality hazard ratio was 1.48 (95% CI: 0.67-3.26) for Car Dependent, 2.40 (1.06-5.40) for Somewhat Walkable, and 4.06 (1.46-11.29) for Walkable neighborhoods (P=0.03).

CONCLUSIONS: Neighborhood walkability predicts 10-year survival among non-depressed, but not depressed post-CABG patients. Our findings need to be confirmed for other cardiac conditions and among patients who live in more walkable and less car dependent areas.

DO FUNCTIONAL AND SOCIAL RISK FACTORS EXPLAIN THE HIGHER RISK OF ALL- CAUSE READMISSIONS AMONG DUALLY-ENROLLED MEDICARE BENEFICIARIES?

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BACKGROUND: Prior studies have shown a higher risk of readmission for poorer patients than for their wealthier counterparts. However, the reasons for these findings are incompletely understood. One possibility is that readmissions are partially driven by functional risk factors – frailty, functional dependence, mental health disorders, and potentially disabling conditions – that are more common in poor beneficiaries but not captured in current risk-adjustment. This study's objective was to determine whether functional risk factors explain the worse performance on Medicare's all-cause readmission measure among poor beneficiaries, defined as those dually enrolled in Medicare and Medicaid.

METHODS: Retrospective cohort study of Medicare beneficiaries with a hospitalization from 2012-2015, eligible for one of 5 cohorts in Medicare's all-cause 30-day readmission measure. We compare duals to non-duals using previously published claims-based algorithms to identify frailty, functional dependence, mental health disorders, and potentially disabling conditions. We use random-effects models to determine the odds of readmission for duals compared to non-duals attributed to the same physician group with and without adjustment for functional risk factors. We evaluate the impact of including functional risk and dual status in measure risk adjustment on provider performance.

RESULTS: Of 5.7 million qualifying hospital episodes, 21.8% were for duals. The prevalence of frailty, functional dependence, mental health disorders, and potentially disabling conditions was higher among duals than non-duals. Duals had higher raw readmission rates (19.5% vs. 14.5%) and risk-adjusted readmission rates (18.4% vs. 14.8%) than non-duals. Raw odds of readmission ranged from 1.19 (medical cohort) to 1.52 (surgical cohort); risk-adjusted odds of readmission ranged from 1.08 (medical cohort) to 1.20 (cardiovascular cohort). Of the functional risk factors evaluated, adjusting for potentially disabling conditions reduced the odds ratios for dual status the most (OR 1.01 to 1.08 across cohorts); in particular, dual status was no longer significant for the medical cohort. When all functional risk factors were added to the model, there was little further explanatory power of dual status beyond the functional risk factors alone (OR 1.02 to 1.08). Under the current readmission measure, high-dual practices have a slightly higher readmission rate than other practices (15.7% vs. 15.5%). Adjusting for functional risk reduces the readmission rates to 15.6% and 15.5%, respectively; additional adjustment for dual status does not further reduce the rates.

CONCLUSIONS: Risk-adjustment of Medicare's readmissions measure could be improved, particularly for dually-enrolled individuals and the providers that serve them, without additional data collection, by including claims-based functional risk factors.

DO I HAVE TO WEAR IT FOR TWO FULL WEEKS? CARDIAC PATCH MONITOR ADHERENCE BY LENGTH OF PRESCRIPTION

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BACKGROUND: Ambulatory adhesive cardiac patch monitors are often used immediately after hospital discharge for arrhythmia identification. Almost 90% of arrhythmias detected during a standard 14-day prescription are identified within the first 7 days, but patients often do not wear the device for the full prescription. We aimed to evaluate if patient were more adherent to 7-day prescriptions as compared to 14- day prescriptions, potentially allowing for shorter prescriptions for patients who may refuse longer monitoring.

METHODS: We requested de-identified data from iRhythm for all Zio XT patch monitors prescribed for 7 or 14 days over a 6-month period from 10/1/2018 to 3/31/19 at a single center. Statistical analyses were performed using the Mann-Whitney U test and the Pearson's chi-squared test.

RESULTS: From 10/1/2018 to 3/31/2019, 711 Zio XT devices were analyzed. 638 were prescribed for 14 days and 73 were prescribed for 7 days. The mean and median wear durations were 10.9 days and 13.6 days for 14-day prescriptions, and 6.3 days and 7.0 days for 7-day prescriptions. The adherence (median percent of prescription worn) was higher for 7-day prescriptions, as compared to 14-day prescriptions (p-value < 0.01). The proportion of patients with who wore the patch monitor for fewer than 6 days did not significantly differ by length of prescription (p = 0.18).

CONCLUSIONS: Adherence was significantly higher for 7-day as compared to 14-day prescriptions. There was not a significant association between length of prescription and wearing the patch monitor for fewer than 6 days, suggesting that a shorter duration of monitoring may be able to maintain fair sensitivity for arrhythmia detection for those patients reluctant to undergo two full weeks of patch monitoring.

DO NEIGHBORHOOD FACTORS AFFECT PARTICIPATION IN CARDIAC REHABILITATION IN PATIENTS WITH HEART FAILURE WITH REDUCED EJECTION FRACTION?

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BACKGROUND: Cardiac rehabilitation (CR) has well-established benefits for patients with heart failure with reduced ejection fraction (HFrEF), but is highly underutilized. Little is known about transportation, access to care, and other neighborhood barriers that may contribute to this underutilization. We examined the impact of Area Deprivation Index (ADI), Walk Score™ (WS), and Transit Score™ (TS) on participation in CR among a cohort of depressed HFrEF patients we enrolled into the National Heart, Blood, and Lung Institute-funded Hopeful Heart Trial to treat depression in this population.

METHODS: At 12-month follow up calls, we asked patients if they had ever participated in one or more session of CR. We compared WS, TS, and ADI percentile, by baseline demographics.

RESULTS: Of the 496 depressed patients with EF <=35%, 176 responded. 110 (63%) participated in CR. There were no significant differences in WS (p=0.23), TS (p=0.85) or ADI percentile (p=0.79) between patients who had participated in CR and those who had not. WS and ADI percentile were associated with white race (p<0.001), and better ADI percentile was associated with age>65 (p=0.008) in our cohort.

CONCLUSIONS: Among patients with HFrEF and depression, neighborhood factors including ADI, WS, and TS were not associated with participation in CR. These data suggest that these neighborhood-specific factors are unlikely to explain the underutilization of CR. Further studies are needed to identify other barriers to participation in CR in order to increase utilization.

Table 1. Mean neighborhood scores by participation in cardiac rehab

	No Participation (n=66 (37%))	Participated (n=110 (63%))	p-value
Walk Score	(n= 66) 27.9±25.8	(n=110) 32.7±25.1	0.23
Transit Score	(n= 20) 38.9±22.0	(n= 44) 39.8±16.4	0.85
ADI National Percentile	(n= 20) 59.8±24.8	(n= 39) 61.6±23.4	0.79

Values represented as mean ± standard deviation.

DO PROVIDERS DOCUMENT SOCIAL DETERMINANTS? OUR EMRS SAY…!

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BACKGROUND: There's been a recent shift toward addressing social determinants of health (SDoH) during the clinical encounter through discussion and documentation. SDoH documentation in the problem list and through billing-related z-code use is necessary for accurate, individual patient and population level tracking and may improve quality of care. We sought to better understand if/how providers document their patient's SDoH when elicited during a clinical visit.

METHODS: Unannounced Standardized Patients (USPs) were sent to two safety-net clinics to assess how medicine residents care for a new patient presenting with one of six unique chief complaints, and accompanying underlying financial, housing, and social concerns. USPs assessed resident practices after the encounter through a behaviorally anchored checklist and systematic chart review. USPs volunteered financial concerns while housing insecurity and social isolation needed to be elicited by the provider. Checklist items assessed if the USP was able to fully disclose their SDoH to the provider. Provider documentation in the electronic medical record (EMR) in one of three spaces: the history of present illness (HPI), the problem list, or through use of a social determinant-specific Z-code was examined when a USP was able to share their concerns.

RESULTS: 384 USP visits were sent to medical residents from 2017 to 2019. USPs were able to share their financial concerns during 84% of the encounters, but were less likely to be able to share their housing or social concerns with providers (35% and 28%, respectively). Documentation in the HPI and treatment list remained low across cases (<15%) and only one Z-code was used across all visits. On an individual case level, providers addressed housing insecurity most frequently in the asthma case (discussion 65%; documentation: HPI 39%, Plan 16%) and social isolation in the fatigue case (discussion 57%; documentation: HPI 49%, Plan 2%). Providers were least likely to discuss and document SDoH for patients presenting with acute pain.

CONCLUSIONS: In clinical scenarios where SDoH concerns were elicited, residents documented SDoH in less than half of visits. Omission of SDoH not only effects clinical care but also panel management and SDoH population-level estimations. New education strategies are needed to address resident's ability to elicit and accurately document SDoH.

DOSE EFFECT OF ACA MEDICAID EXPANSION: AN EXAMINATION OF TOTAL JOINT ARTHROPLASTY UTILIZATION

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BACKGROUND: The Affordable Care Act (ACA) resulted in a common eligibility income threshold across expansion states; however, expansion magnitude i.e., dose, varied due to pre-ACA differences in state eligibility thresholds. Total joint arthroplasty (TJA) is a common inpatient elective procedure and has evidence of significant racial/ethnic disparities. We examined changes in TJA rates to test for a dose effect of Medicaid expansion.

METHODS: Using all-payer inpatient data (2011-2015) we identified all discharges with a total knee or total hip arthroplasty for patients aged 45 to 64 from 15 Medicaid expansion states (AR AZ CA CO IA IL KY MA MD NJ NM NV NY OR PA) and 7 non-expansion states (FL GA NC SC TX VA WI). Using census population, we stratified each state by age (45-55; 54-64), sex, and race/ethnicity [Hispanics; non-Hispanic blacks; non-Hispanic whites and others]. Our main outcome was the number of TJA discharges each year for each state cohort (N=1,308). Using each state's Medicaid eligibility criteria in 2011 and 2014 we calculated Medicaid Generosity, i.e., the proportion of state population (aged 18-64) who would be eligible for Medicaid. We then categorized expansion states as high dose (≥ 10 %) vs low dose (< 10 %) stated based on change in Medicaid Generosity between 2011 and 2014. Using a quasi-experimental difference-in-differences study design and Poisson regression models, we estimated changes in TJA rate by dose of Medicaid Generosity change (high vs low), treating non-expansion states as controls. We also estimated rate changes by race/ethnicity. All regression models used state-level fixed effects with standard errors clustered at the state level.

RESULTS: There were 4 low dose expansion states (IL, MA, NJ and MD) with Medicaid eligible population increasing by 3.1% (IL) to 9.2% (MD) between 2011 and 2014. There were 11 high dose expansion states (CA, CO, AZ, NV, NM, IA, NY, KY, PA, OR, AR) with Medicaid eligible population increasing by 10.1% (CA) to 15.1% (AR). Non-expansion states had < 2% increase in Medicaid eligible population. Annual volume of TJA in these 22 states was 234,839 in 2011 and 280,713 in 2015. In 2011, TJA rate by race/ethnicity (# TJA/1000 pop): whites = 4.8; black=3.7; Hispanics=1.70. Between 2011 and 2015, observed TJA rate increased in all groups:13.7% (whites); 21.8% (blacks); 22.3% (Hispanics). Among blacks, TJA rate increased more in both higher dose (9.1%; 95% CI = 3.9% to 14.7%) and lower dose (7.6%; 95% CI = 1.01% to 14.6%) states, compared to non-expansion states. Medicaid expansion was not associated with change in TJA rate among whites or Hispanics. While Medicaid expansion was not associated with a change in TJA rate for Hispanics, white-black and white-Hispanic differences narrowed.

CONCLUSIONS: We observed clear dose effects of Medicaid expansion in changes of population rates for TJA. Narrowed racial and ethnic disparities may reflect improved access to outpatient providers and elective inpatient care.

DO WE ASK NEW MOMS IF THEY ARE DEPRESSED?

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BACKGROUND: Postpartum depression (PPD) is common. While the exact incidence of PPD varies in the literature, 1 in 5-9 mothers experience PPD in the United States. One study reported an increase of PPD for women screened in the hospital during their postpartum course while another set in the ambulatory setting suggested a decrease in PPD. This discrepancy may be due to inconsistent postpartum screening and therefore, less documented PPD. Moreover, in the last decade, the definition of PPD has also expanded to include a 12 month period as opposed to the traditional six-week time frame and to include other Perinatal Mood and Anxiety Disorders (PMAD) as well depression. To understand the gaps and trends in PPD/PMAD screening, we surveyed obstetrics-gynecologists (OB/GYN) at a large urban healthcare center.

METHODS: We conducted a PPD/PMAD screening survey of OB/GYN providers in 2016 and repeated in 2019 at multiple OB/GYN sites within our healthcare system. The survey consisted of key demographic questions, frequency of PPD screening, type of screening tool used, and personal perceptions of PPD screening on a 5-point Likert scale (strongly disagree=1 to strongly agree=5).

RESULTS: The response rates for the surveys were 17% (93/546) in 2016 and 27.4% (87/318) in 2019. Participant cohorts were similar in both the surveys. The average number of patients diagnosed with PPD increased by 8.7% from 2016 to 2019 per participant. While a majority of the OBGYN providers screen for PPD (86.7% in 2016 and 87.2% in 2019), the number of providers who screen at every postpartum visits increased from 36.0% in 2016 to 51.3% in 2019. Edinburgh postnatal depression scale was the most common screening tool used, and its usage increased from 57.1% to 89.2% between 2016 and 2019. All providers strongly agreed that they should screen for PPD (Mean=4.8(2016) and 4.9(2019) on a 5-point Likert scale, p=0.38), and believed that PPD is common enough to warrant screening (M= 4.7(2016) and 4.9(2019), p=0.14). They reported a significantly increased confidence in screening for PPD (M=3.8(2016) and 4.2(2019), p=0.02) and awareness about the difference between postpartum blues and PPD (M=4.1(2016) and 4.5(2019), p=0.03). More OB/GYNs knew the criteria to maintain a diagnosis of PPD (M=3.5(2016) and 3.9(2019), p=0.02), and fewer OB/GYNs felt PPD screening would take too much effort (M=2.2(2016) and 1.8(2019), p=0.02).

CONCLUSIONS: Although there has been an increase in awareness and agreement with PPD/PMAD screening, it is concerning that not all OB/GYNs screen at all postpartum follow up visits. In addition to improving screening during the postpartum course to identify patients with PPD/PMAD, it is important to expand PPD/PMAD screening at primary care since new mothers are more likely to present to their PCP with mood and depression symptoms after their initial OB/GYN postpartum visit. Primary care awareness along with provider education and standardizing screening protocols would further improve PPD/PMAD screening.

DRIVERS BEHIND OPIOID PRESCRIPTION REFILLS WITHIN PRIMARY CARE FOLLOWING A SURGICAL EPISODE

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BACKGROUND: Opioid prescriptions for acute pain play a significant role in the opioid epidemic as they can lead to chronic opioid use, misuse, and addiction. Between 3-7% of opioid naïve patients use opioids long-term following surgery. Within the first three months after surgery, most opioid refills are provided by surgeons, but after three to six months the majority (36%) is prescribed by primary care physicians (PCPs). The reasons for this continuation are unclear and may be driven by physicians' lack of understanding of the distinction between chronic opioid use and chronic pain. By identifying the drivers of PCPs' continuation of post-operative opioid prescriptions, we aim to add to the evidence that could allow health care providers to improve their practices.

METHODS: Between August 2018 and August 2019, we conducted semi-structured interviews (N=13) with Northwestern Medicine affiliated Internal Medicine physicians (n=10) and Family Physicians (n=3). Interviews were audio recorded and transcribed verbatim. Two researchers analyzed the transcripts separately to identify emerging drivers of refills and discussed results with a third researcher to resolve discrepancies. The analysis was both deductive, by applying a framework distinguishing domains of primary care structure and processes, and inductive, based on the interview content. Each driver was further described as a "positive driver" to refill opioids and "negative driver" to delay or avoid refills.

RESULTS: Generally, PCPs reported a lack of comfort with the treatment of post-surgical pain and prescribing opioid refills. The lack of comfort is further driven by structural characteristics (lack of education on pain management), as well as current processes (lack of coordination with the surgeon), the comprehensiveness of care (PCPs' perception that this is the surgeon's duty) and the subjectivity of the patients' pain. Important positive drivers to opioid refills relate to the core dimensions of primary care: accessibility (the PCP is sometimes more accessible than the surgeon) and continuity of care (the PCP knows the patient best). Generally, PCPs reported that the treatment of post-operative pain is the surgeon's duty, whereas treatment of chronic pain is the PCPs' own responsibility. Finally, PCPs reported that refills have become less common these days both due to the context (patients' awareness of the opioid epidemic and low demand) and the structure (combined EMR makes it easy to refer the patient back to the surgeon).

CONCLUSIONS: An improved understanding of reasons for opioid refills following surgery can contribute to physicians' decision-making processes in determining patients' post-surgical needs. We identified a need for improvement of education, as well as increased PCP-surgeon coordination to support PCPs' in making a distinction between chronic use and chronic pain following surgery.

DRIVERS OF INSTITUTIONAL PLACEMENT AMONG A NATIONAL COHORT OF ADULTS WITH INTELLECTUAL / DEVELOPMENTAL DISABILITIES

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BACKGROUND: Long term care is the fastest growing segment of health care spending, particularly Medicaid spending given the growth of aging and disabled populations. The goal of this study is to identify the effect of state of residence and home and community based services spending on long-term care placement for adults with intellectual/developmental disabilities (IDD) who are Medicare and Medicaid dual enrollees.

METHODS: We conducted a retrospective study using 2008-2012 claims data from CMS Medicaid Analytic eXtract (MAX) data files from CA, FL, NY, OH and PA linked with Medicare data. Study cohort included individuals who were 18 to 64 years old, community-dwelling, dually enrolled in Medicare and Medicaid, were continuously enrolled in Medicaid (defined as 10 of 12 months) in each year of enrollment, and had an ICD9 diagnostic code for intellectual disability in any inpatient, outpatient, or long-term encounter. The outcome was the first long-term institutional placement after the baseline year, defined as the presence of at least one claim for services received in a nursing facility or intermediate care facility for the intellectually disabled (ICF-ID) for ≥3 months, obtained from the Long Term Care files of MAX data files. The primary predictors were spend on home and community based services and state of residence. Other independent measures included acute and ambulatory utilization measures; Medicaid or Medicare eligibility status; demographic characteristics; comorbid conditions or medical complexity, including Charlson Comorbidity Index, number of Complex Chronic Conditions, presence of mental health diagnosis; and polypharmacy. Risk of long-term placement were determined by cox regression models.

RESULTS: There were a total of 159,275 individuals with IDD who met inclusion and exclusion criteria. Of those, 14% had a long-term care placement claim. Compared to those without long-term placement, those with long-term placement were more likely to be older, white Caucasian, living in OH, have at least one short-term nursing home or ICF-ID stay, higher levels of acute care or ambulatory utilization, higher Charlson comorbidity scores, higher numbers of complex chronic conditions, mental health diagnosis, and polypharmacy. After adjustment, these factors remained associated with institutional placement. Compared to Florida, residents of Ohio had a HR 2.12 [1.9-2.3, P<0.0001] while every additional $10,000 HCBS spend was protective with a HR 0.97 [0.97-0.98, P<0.001].

CONCLUSIONS: Each $10,000 incremental increase in HCBS services, even for dual-eligible adults with IDD, is protective against long-term care placement. However, significant variation in institutional placement risk exists across states, warranting closer examination of long-term care policy features protective against long-term care placement among severely disabled adults.

DRUG CHARACTERISTICS ASSOCIATED WITH GENERIC UPTAKE AFTER LOSS OF MARKET EXCLUSIVITY

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BACKGROUND: In the US, brand-name drugs are invariably expensive until their market exclusivity ends and lower-cost, equally safe and effective generics become available. Delayed uptake of generic drugs after loss of exclusivity could lead to excess health care spending and reduced patient adherence to essential medications. Factors that influence generic uptake are unknown.

METHODS: We identified all drugs facing new generic or biosimilar competition from 2012 – 2017. Using claims data from a national insurer of commercial and Medicare Advantage patients (Optum Clinformatics DataMart), we identified generic uptake in the first and second years after generic entry, defined as the percent of generic (or authorized generic [AG]) prescriptions. We used linear regression to evaluate associations between generic uptake and 9 drug characteristics identified from FDA and other publicly available sources, adjusted for other characteristics. The characteristics were: route of administration (oral vs. non-oral), novelty (first-in-class vs. new but non-first-in-class vs. modified formulation), priority review, Orphan Drug Act designation, number of FDA-approved generic manufacturers in the first year, whether the first generic manufacturer received 180-day generic exclusivity (a special legislative incentive to encourage generic entry), whether an AG was released in the first 6 months, number of brand-name prescriptions in the year before generic entry (in tertiles), and generic entry date.

RESULTS: Among 226 drugs in the cohort, mean generic uptake was 65.3% (SD 22.6%) in the first year and 82.2% (SD 21.9%) in the second year after generic entry. In the adjusted model, generic uptake decreased 4.6%/year from 2012 to 2017 (95% CI 2.9%–6.2%, p<0.001). Generic uptake was significantly lower among non-oral drugs (mean 54.5% vs 69.7%, p<0.001), drugs with Orphan Drug Act designation (55.6% vs 66.5%, p=0.006), and drugs without an AG (62.6% vs 68.6%, p=0.004). Except for Orphan Drug Act designation, the same characteristics were significantly associated with generic uptake in the second year after generic entry. The R^2 for the model with all characteristics was 0.25 for generic uptake for the first year and 0.20 for the second year.

CONCLUSIONS: We found substantial variability in the extent of early generic uptake after a brand-name drug loses market exclusivity. Early generic uptake has significantly decreased over the past several years, which may be contributing to increased US health care spending and leading to lower patient medication adherence. Drugs with alternate routes of administration (e.g. injected, topical, inhaled) had slower generic uptake than oral drugs, so new policies may be needed to encourage generic competition among these drugs. While AGs were associated with higher early generic uptake, because AGs do not reflect true market competition, they may have less impact on lowering price and spending.

EARLY EXPERIENCES AND PERSPECTIVES OF PEDIATRIC AND ADULT PROVIDERS WHO DELIVER CARE USING TELEMEDICINE

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BACKGROUND: Direct-to-consumer telemedicine is being developed by existing health systems and providers are quickly adapting to the delivery of virtual medicine. How to transition today's workforce and trainees to provide high-quality, safe, and effective telemedicine is uncharted and, therefore, likely unsystematic. Providers may be providing virtual care with minimal training on the best "webside" manner or lack skills for achieving high-quality care virtually. The objectives of this study were to describe the clinical practice experiences of early adopters – providers who have transitioned their career to providing direct-to- consumer telemedicine and capture their perspectives on high-quality telemedicine care.

METHODS: We conducted semi-structured interviews with physician and non-physician providers who care for pediatric or adult patients from six academic medical centers throughout the United States. Providers participated in direct-to-consumer telemedicine services for low-acuity illnesses. Interviews were conducted using an interview guide piloted for this study, audio-recorded, transcribed, coded, and analyzed using the constant comparative technique. Recruitment ended when thematic saturation was reached after 20 providers were interviewed. Six interviews were double coded with an average inter-rater reliability of 0.74. Interviews lasted approximately 30 minutes.

RESULTS: Among the providers interviewed, 90% were female, 65% were nurse practitioners, 30% physicians, 5% physician assistants, and 61% identified as white, non-Hispanic. Overall, providers aspired to deliver high- quality care, equal to in-person care but recognized the constraints of telemedicine such as the inability to conduct full physical examinations and testing limitations. In order to achieve high quality, three key attributes were believed necessary. First, the technology platform must be easy for patients and providers. Second, virtual competency – facial expressions and verbalizing on-screen actions – were important for effective provider-to-patient communications because patients can, oftentimes, only visualize the provider's face. Third, providers needed strategies for addressing the unique clinical pressures of caring for telemedicine patients, such as requests for antibiotics when they were not clinically necessary because these patients were more likely to expect immediate gratification in a virtual medium that is highly convenient and could provide care instantaneously.

CONCLUSIONS: Clinicians who provided telemedicine identified key aspects of delivering high-quality health care: a provider and patient-centric technology platform, the need for providers to develop virtual competency, and clinical pressures unique to patients using telemedicine. As the future of health care will involve more telemedicine, capturing the real-world experiences of providers who have, early on, adopted telemedicine will be informative for future telemedicine providers who will similarly aspire to provide high- quality care.

EARLY LIFE SEXUAL TRAUMA AND LATE LIFE FUNCTIONAL OUTCOMES IN A NATIONALLY REPRESENTATIVE COHORT OF U.S. WOMEN

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BACKGROUND: One in four U.S. women may experience a form of early life sexual trauma, with potentially long-lasting consequences on their health and functioning. Past research on sexual trauma has focused almost exclusively on outcomes in reproductive age women, with little research addressing potential long-term effects in older age.

METHODS: We analyzed cross-sectional data from women aged ≥50 in the National Social Life, Health, and Aging Project, a national cohort of older community-dwelling U.S. adults. During home-based visits from 2010-2011, women answered standardized questions about exposure to two forms of early sexual trauma, 1) childhood sexual abuse (being touched sexually before age 12) and 2) unwanted first sexual experience (forced or coerced first sexual intercourse). Women also completed questionnaires about several types of late life functional outcomes: 1) symptomatic genitourinary dysfunction (including urinary incontinence, other urinary symptoms, pain during sex, or lack of pleasure during sex), and 2) general functional disability (difficulty performing any of 7 activities of daily living [ADLs] or 8 instrumental activities of daily living [IADLs]). We developed multivariable logistic regression models to examine associations between early sexual trauma and late life functional outcomes adjusting for age, race/ethnicity, and education.

RESULTS: Of 1,745 women (age range 50 to 91), 11% reported a history of childhood sexual abuse and 39% an unwanted first sexual experience. In multivariable models, childhood sexual abuse was associated with late life genitourinary dysfunction (pain during sex [OR 1.9, 95% CI 1.1-3.3], other urinary problems [OR 1.9, 95% CI 1.2-3.1]) and difficulty with ADLs/IADLs (walking across the room [OR 1.9, 95% CI 1.2-3.1], getting in or out of bed [OR 2.0, 95% CI 1.2-3.3], bathing [OR 2.0, 95% CI 1.2-3.5], prepping meals [OR 2.4, 95% CI 1.5-3.8], shopping for food [OR 1.6, 95% CI 1.0-2.4], completing light work [OR 1.6, 95% CI 1.0-2.4]). Unwanted first sexual experience was also associated with lack of pleasure with sex [OR 1.7, 95% CI 1.1- 2.5]) and difficulty with ADLs/IADLs (walking one block [OR 1.5, 95% CI 1.1-2.1], completing light work [OR 1.6, 95% CI 1.1-2.1]) in adjusted analyses.

CONCLUSIONS: Early sexual trauma may be an under-recognized marker of risk for aging-related genitourinary and functional decline in women. Findings from this national sample underline the importance of examining the impact of trauma across the lifespan and adopting a trauma-informed approach to care of women even in older age.

EARLY MORTALITY AMONG AFRICAN AMERICANS IN THE JACKSON HEART STUDY

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BACKGROUND: Young black Americans are more likely to die than their white age-matched counterparts, including from chronic conditions that occur later in life among whites. Few studies have explored how social context impacts early mortality among African Americans (AA), including conditions related to 'deaths of despair'. Our research objective was to explore predictors of early mortality among African Americans.

METHODS: We conducted a survival analysis to examine contributors of early mortality among AA in the Jackson Heart Study (JHS). The JHS cohort is comprised of non-institutionalized AA living in Jackson Mississippi. We included JHS adult participants from 18 to 64 years at baseline (n=3,999). Primary outcome was death before 65. Descriptive statistics were calculated by mortality status and differences were detected using chi-squared and Krukal-Wallis tests. We then calculated multivariable adjusted hazard ratios and used multiple imputation techniques for missing data. Our hazard models included clinical, lifestyle, demographic and socioeconomic status covariates, as well as exposure to discrimination and neighborhood safety.

RESULTS: In descriptive analysis, those who died young before 65 years old were more likely to be men (46.6% vs. 36.7%, p<0.01), have poor functional status (30.6% vs. 17.9%, p<0.001), report drug use (40.0% vs. 24.1%, p<0.001), report heavy episodic alcohol drinking (31.2% vs. 13.6%, p<0.001), be current smokers (35.1% vs. 13.9%, p<0.001), and have comorbidities such as cancer (6.9% vs. 3.4%, p<0.05), asthma (14.7% vs. 9.7%, p<0.05), depression (19.4% vs. 12.4%, p<0.01), obesity (64.1% vs. 55.2%, p<0.01), poor blood pressure control (32.4% vs. 16.5%, p<0.001) and poor glucose control (15.0% vs. 8.3%, p<0.001). They were also more likely to be in the lowest income bracket (32.5% vs 19.7%, p<0.001). In multivariate hazard models, those with income < $25,000 were more likely to suffer early mortality than those with an income over $75,000 (HR 1.64, CI 1.004-2.69). Adjusting for cardiovascular health, discrimination, neighborhood safety, education, income, and healthcare access, drug use (HR 1.66, CI 1.20-2.28), heavy episodic alcohol drinking (HR 1.80, CI 1.27, 2.55) and cancer (HR 2.20, CI 1.26-3.85) were predictive of early mortality. Of the cardiovascular risk behaviors measured, predictors included current smoking (HR 2.28, CI 1.65-3.15), poor glucose control (HR 1.85, CI 1.17-2.91), and poor blood pressure control (HR 3.31, CI 2.00-5.49).

CONCLUSIONS: Among AA in the JHS cohort, drug and heavy episodic alcohol drinking, as well as low income were predictive of early mortality. Recent data shows that early mortality is increasing across all racial groups in the US, despite decades of improvement in life expectancy, thus increased attention towards early mortality is needed at this time. Among AA in Mississippi, efforts to invest in smoking and alcohol cessation programs, as well as poverty reduction strategies, may be most effective.

E-CIGARETTE USE BEHAVIORS AMONG CURRENT CIGARETTE SMOKERS AFTER THE OUTBREAK OF E-CIGARETTE LUNG ILLNESS AND A STATEWIDE E-CIGARETTE SALES BAN

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BACKGROUND: The 2019 U.S. outbreak of lung injury cases associated with electronic cigarettes (e-cigs) raised concern about the products' safety and led Massachusetts (MA) to ban the sale of all vaping products for 3 months (9/25/19-12/11/19), after which a new state law banned flavored e-cig sales only. We aimed to assess e-cig use behaviors after these events, focusing on current cigarette smokers because most e-cig users also smoke.

METHODS: We identified adults aged 40-80 years receiving primary care at Mass General Hospital and identified in the electronic health record as a cigarette smoker. A phone survey done 11/07/19 to 1/10/20 asked about current and past e-cig use/vaping, types of e-cigs used, reasons for use, and quit intentions.

RESULTS: Among 189 participants (mean age, 59 yo; 53% female; 81% non-Hispanic white; 35% college educated), 112 (59%) had ever used e-

cigs and 17 (9%) were current (past 30-day) users. Of 112 ever-users, 94 (84%) had vaped nicotine, 35 (31%) vaped marijuana, and 24 (21%) vaped both; a minority vaped flavors only. Of current e-cig users, 15 (88%) were current dual users of cigarettes and nicotine e-cigs, 172 (91%) only smoked cigarettes, and 2 (1%) reported e-cig use only. Current vaping of THC, CBD, or marijuana was rare (1%). Among current e-cig users, JUUL was the most common brand (61%) and menthol/mint was the most common flavor (50%). Over half of ever e-cig users reported quitting smoking as the primary reason for using e-cigs (60%, 56/94). Most current e-cig users reported having tried to quit e-cigs in the past (59%, 10/17) and 91% of current cigarette smokers reported having tried to quit cigarettes in the past (170/187). 9% (10/116) of ever e-cig users reported quitting e-cigs as a result of the EVALI outbreak, 6% (7/116) cut down as a result of the outbreak, and 66% (77/116) quit before the outbreak; 9% had not heard of the outbreak. 2 (2%) ever e-cig users reported having previously quit cigarettes but returning to tobacco cigarette smoking after the EVALI outbreak, and 4 (5%) reported increasing the number of tobacco cigarettes they smoked after the EVALI outbreak. 47% of current e-cig users reported planning to quit e-cigs in the next 6 months (8/17), and 46% of current cigarette smokers reported planning to quit cigarettes in the next 6 months (86/187). While 90% of participants reported being screened for cigarette use by a doctor in the past 12 months (171/189), only 25% (47/189) reported being screened for e-cig use.

CONCLUSIONS: After a statewide ban on e-cig sales triggered by lung injury cases, 10% of adult cigarette smokers in a primary care network still used e-cigs. Interest in quitting e-cigs was high, but few users reported that clinicians screened them for e-cig use. Clinicians should routinely screen for e-cigs as well as cigarettes and offer treatment to those interested in quitting either product.

EDUCATIONAL LAPSES AND SIGNALS IN DISCHARGE CARE: A MULTI-INSTITUTIONAL SURVEY

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BACKGROUND: Hospital discharge is a vulnerable time for patients, which can lead to adverse outcomes and hospital readmissions. Suboptimal communication with patients and their caregivers, as well as inadequate understanding of post-discharge plans contribute to readmissions. Prior health services research and national society guidelines have identified key components to be addressed with patients on the day of discharge. Yet, we don't know whether residents are using these best practices, or if existing transitions of care curricula are effective in fostering these practices. Critically assessing types of educational instruction and communication practices residents report using at discharge is critical to informing how we train physicians to be transitions of care champions within our fragmented healthcare system.

METHODS: Internal Medicine residents at seven large academic medical centers completed a cross- sectional survey characterizing the types of education on transitions of care they received and the self- reported frequency of using six communication practices at discharge. We calculated the proportion of each communication domain done frequently (>60% of the time) for each respondent. Using multiple linear regression, we explored which types of educational exposures were associated with residents using best communication practices frequently. A content analysis was done to examine a free-response question on which factors residents reported as motivation for changing their discharge practices.

RESULTS: The response rate was 63% (613/966). The majority of residents (82.3%) received some form of instruction around transitions of care, although only about one in five (18.9%) reported being observed and getting feedback on their discharge education with patients. Resident discharge communication practices were variable, with less than half of residents reporting frequently addressing symptom expectations or self-management of disease. Notably, less than a fifth of residents (17.0%) reported routinely asking patients to teach back their understanding of the discharge plans. Workplace-based learning, such as explicit teaching on rounds and direct observation and feedback on discharge education, was associated with increased proportion of discharge communication practices reported being done frequently. In open-ended comments, residents pointed to adverse events after the post-discharge continuum as their impetus for practice change.

CONCLUSIONS: This study exposes the gaps in resident discharge communication practices with patients, the impact of adverse events as a source of hidden curriculum, and the benefits of workplace-based training on discharge communication skills. Our results suggest that developing faculty to incorporate transitions of care in their rounds teaching and integrating experiences across the post-discharge continuum will foster systems-minded physicians-in-training.

EDUCATIONAL SCHOLARSHIP NEEDS OF CLINICIAN-EDUCATOR AND EARLY FULL-TIME PHYSICIAN FACULTY AT A LARGE DEPARTMENT OF INTERNAL MEDICINE

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BACKGROUND: Clinician-educator faculty must participate in scholarship to be promoted. This study aimed to determine the educational scholarship training needs for clinician-educator and early full-time physician faculty in a large Department of Medicine.

METHODS: From January to February 2019, an online anonymous survey assessed the educational scholarship needs for full-time physician clinician-educators and instructors and assistant professors not on a designated track in Yale's Department of Internal Medicine. The survey assessed past training, self-perceived proficiency, and desire for more instruction in 20 educational scholarship skills in 4 areas: a) curriculum/program development and evaluation; b) statistical methods; c) library research and IRB navigation; and d) writing for presentation and publication. Training questions were rated from "none" to "a lot" and self-perceived proficiency was rated from "poor" to "excellent".

RESULTS: 119 of 346 (34%) faculty responded. Many faculty (57.4% - 85.6%) indicated little or no training in the 20 educational scholarship skills. In self-assessment, 20.6% - 70.3% rated their proficiency as poor or fair and many (33.3% - 53.5%) wanted a moderate or a lot more training in the 20 skills assessed.

Curriculum/Program Development and Evaluation Skills

Most faculty indicated they had little or no training (69.8% - 82.4%) in the 5 curricular skills assessed. More than half (57.4%) rated themselves as having poor or fair proficiency with 48.3% desiring a moderate or a lot more training in these areas.

Statistical Methods Skills

Faculty indicated the least amount of training in the 4 areas of statistical methods assessed with 72.8% - 82.4% indicating little or no training in these skills. On average, 60.8% rated their proficiency in statistical methods as poor or fair, and 47.5% wanted a moderate or a lot more training.

Library Research and IRB Navigation Skills

Library research and IRB navigation skills were classified into 5 categories with 63.1% - 85.6% of respondents indicating little or no training in these skills. On average, 54.1% rated these skills as poor or fair, and 42.5% wanted a moderate or a lot more training.

Writing for Presentation and Publication Skills

In the 6 skill categories of writing for presentation and publication, many respondents indicated they had little or no training (57.4% - 71.3%). Faculty rated their writing skills as poor or fair in the 6 skills assessed (35.8%) and 40.6% wanted a moderate or a lot more writing skills training.

CONCLUSIONS: Many clinician-educator and early full-time physician faculty in this large Department of Internal Medicine lack training in educational scholarship skills and rate their skills in these areas as poor or fair. Lack of scholarly expertise continues across institutions and can have a detrimental effect on faculty promotion and career satisfaction. Continued work on developing educational scholarship skills for clinician- educators must persist.

EFFECTIVENESS OF ACUTE CARE REMOTE TRIAGE SYSTEMS: A SYSTEMATIC REVIEW

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BACKGROUND: Technology-based systems can facilitate remote decision-making to triage patients to the appropriate level of care. Despite technologic advances, the effects of implementation of these systems on patient and utilization outcomes are unclear. We evaluated the effects of remote triage systems on healthcare utilization, case resolution, and patient safety outcomes.

METHODS: English-language searches of MEDLINE (via PubMed), EMBASE, and CINAHL were performed from inception until July 2018. Randomized and nonrandomized comparative studies of remote triage services that reported healthcare utilization, case resolution, and patient safety outcomes were included. Two reviewers assessed study and intervention characteristics independently for study quality, strength of evidence, and risk of bias.

RESULTS: The literature search identified 5,026 articles, of which eight met eligibility criteria. Five randomized, two controlled before-and-after, and one interrupted time-series study assessed 3 categories of remote triage services: mode of delivery, triage professional type, and system organizational level. No study evaluated any other delivery mode other than telephone and in-person. Meta-analyses were unable to be performed because of study design and outcome heterogeneity; therefore, we narratively synthesized data. Overall, most studies did not demonstrate a decrease in primary care (PC) or emergency department (ED) utilization, with some studies showing a significant increase. Evidence suggested local, practice-based triage systems have greater case resolution and refer fewer patients to PC or ED services than regional/national systems. No study identified statistically significant differences in safety outcomes.

CONCLUSIONS: Our review found limited evidence that remote triage reduces the burden of PC or ED utilization. However, remote triage by telephone can produce a high rate of call resolution and appears to be safe. Further study of other remote triage modalities is needed to realize the promise of remote triage services in optimizing healthcare outcomes.

EFFECTIVENESS OF A LABORATORY-BASED INTERVENTION FOR IMPROVING URINE TOXICOLOGY INTERPRETATION, DOCUMENTATION, AND RESULTS COMMUNICATION FOR PATIENTS RECEIVING CHRONIC OPIOID THERAPY

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BACKGROUND: Despite widespread recommendations and utilization of urine drug testing (UDT) to assess adherence in patients receiving chronic opioid therapy (COT), clinicians often fail to correctly interpret UDT results, particularly those UDTs performed by mass spectrometry. A prior study by our group revealed serious quality gaps with clinicians failing to recognize and document aberrant findings, both potentially harmful/consequential errors. We designed an intervention that featured a lab toxicology expert interpretation of the results based on patients' prescribed medication(s).

METHODS: Prospective cohort study with a matched concurrent control evaluated the effectiveness of a laboratory-generated interpretation of UDT results for clinicians prescribing opioids for COT patients at 4 ambulatory clinics (primary care [2], palliative care, and pain management) in a U.S. academic medical center. The intervention group received a written laboratory interpretation in their electronic medical record in-basket for UDTs ordered from November 2018 to May 2019. A concurrent control group was matched to the intervention group by clinic location, level of training, age and sex. After the study period, two blinded reviewers (Z.V., E.K.) reviewed clinician documentation in the pre-intervention and post-intervention periods for both arms. Our primary outcome was concordance between clinician and laboratory interpretation.

Secondary outcomes included provider documentation of UDT results and documented communication of results to the patient. A logistic regression model using generalized estimating equations was used to assess differences in change between intervention and control groups.

RESULTS: A total of 8 intervention clinicians (7 physicians and 1 nurse practitioner; 2 [25%] women) participated: 4 primary care, 2 palliative care, and 2 chronic pain management. Their mean age (SD) was 57.1 (9.8). There was an 87% match between intervention and control group clinician covariates. In both arms, 201 unique patient charts were reviewed: pretest intervention (n=51), posttest intervention (n=50), pretest control (n=50), and posttest control (n=50). When an interpretation was documented, clinician-laboratory interpretation concordance improved from 69% to 88% in the intervention arm compared to a decline from 84% to 77% in the control arm (p=0.07). There were no differences in clinician interpretation documentation (p=0.71) or documented communication of results to patient (p=0.77).

CONCLUSIONS: Implementation of an innovative laboratory-generated UDT interpretation led to improvement in the accuracy of clinician UDT interpretation but was not statistically significant. While this intervention was unable to demonstrate significant changes in clinician documentation of UDT results or results communication to patients, our findings suggest this is a needed and useful service, warranting consideration for routine use for all UDT results.

EFFECTIVENESS OF AN ONLINE WEIGHT MANAGEMENT PROGRAM INTEGRATED WITH POPULATION HEALTH MANAGEMENT SUPPORT IN PRIMARY CARE: RESULTS FROM THE PROPS STUDY (PARTNERSHIPS FOR REDUCING OVERWEIGHT AND OBESITY WITH PATIENT-CENTERED STRATEGIES)

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BACKGROUND: Online programs offer an important opportunity for improving management of overweight and obesity, but they have not been widely implemented in primary care. The purpose of this study was to examine whether an online weight management program integrated with population health management support is an effective strategy for weight loss among primary care patients.

METHODS: We adapted an existing online weight management program (BMIQ) and integrated it with population health management support at primary care practices. We then conducted a pragmatic, cluster-randomized trial in 15 primary care practices (24 clinics) to compare the effectiveness of the combined intervention (CI) with the online weight management program alone (OP) and with usual care (UC). Participants were ages 20 to 70, had body mass index (BMI) ≥ 27 and < 40 kg/m^2, and had hypertension or type 2 diabetes. They attended routine visits at their primary care practices and completed surveys at baseline and 6, 12, and 18 months after enrollment. The primary outcome was change in body weight at 12 months after enrollment, calculated from weights measured at primary care visits and recorded in the electronic health record. Secondary outcomes included percent weight change, $\geq 5\%$ weight loss, and changes in cardiovascular risk factors, self-reported health status, weight-related quality of life, confidence in ability to lose weight, diet, and physical activity. We used repeated measures mixed effects regression models to compare weight change and other outcomes across the three arms.

RESULTS: A total of 840 participants were enrolled in the trial (326 UC, 216 OP, and 298 CI). There was a significant difference in weight change at 12 months across the arms ($p = 0.0002$), with a mean weight loss of 3.0 pounds in the UC arm, 4.1 pounds in the OP arm, and 7.1 pounds in the CI arm. There also was a significant difference in percent weight change at 12 months ($p = 0.002$), with a mean weight loss of 1.6% in the UC group, 1.9% in the OP group, and 3.1% in the CI group. In addition, there was a significant difference in the percentage of patients who had $\geq 5\%$ weight loss across the arms ($p < 0.0001$), with 16.0% in the UC arm, 21.1% in the OP arm, and 32.9% in the CI arm. Finally, there was a significant difference in change in confidence in ability to lose weight ($p = 0.0001$), with a mean decrease of 0.7 points (on a scale from 1-10) in the UC arm and a mean decrease of 0.4 points in the OP arm, but a mean increase of 0.5 points in the CI arm. There were no significant differences in the intervention effects by age, race, or education.

CONCLUSIONS: We found significant differences in weight change and other related outcomes at 12 months across the three arms. These data provide strong evidence for the effectiveness of the online weight management program integrated with population health management support in primary care.

EFFECTIVENESS OF THE PARTYWISE INTERVENTION IN IMPROVING YOUNG WOMEN'S KNOWLEDGE AND SAFE CONSUMPTION OF ALCOHOL; A RANDOMIZED TRIAL

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BACKGROUND: Alcohol and binge drinking pose significant health risks; nonetheless, binge drinking is relatively common in the United States.

METHODS: We conducted a randomized trial to evaluate the PartyWise intervention which was designed to increase awareness of the risks of binge drinking and sex differences within those risks. Intervention participants received a digital pamphlet by text or email, a link to an educational website http://www.partywise.org/, and up to 8 weekly text messages. A research assistant contacted participants by phone and conducted screening and a brief intervention with referral to treatment if needed. We used social media to recruit 517 women, aged 15-19, who were interested in discussing health issues with their peers and using highly-effective contraception; 260 participants were allocated to the PartyWise intervention; 257 participants were allocated to an attention-control intervention about contraceptive communication. Participants received $25 for each survey they completed. Follow-up data were collected after 3-months from 77% of participants; retention was similar between groups.

RESULTS: Participants' median age was 18 years; 89% were students. Most (70%) were white; 12.5% were Hispanic. At baseline, 60% reported having had more than four alcoholic drinks on at least one occasion in the past month, without differences between groups. Of those who drank alcohol in the past month, more than four alcoholic drinks were reported on a median of 2 (range 1-16) days. Although 91% had participated in a class about alcohol, few could define binge drinking, and only 79% were aware of sex differences in alcohol's effects. Intervention phone calls averaged 6 (median 5, range 4-14) minutes. Risky drinking was identified for 37% of participants who had either consumed alcohol on 6 or more days in the past year and/or had 3 or more alcoholic drinks in a single day in the past year (34%). Of those, who reported risky drinking, 93% accepted referral information and 60% opted to receive weekly text messages for 8 weeks.

At 3-month follow-up, intervention recipients were more likely to know there are sex differences in alcohol's effects (98% vs 82%, $p<0.001$). At 3-month follow up there was a small difference between groups in the median number of days on which alcohol was consumed (3 vs. 4) in the past month; on the days alcohol was consumed, intervention recipients were more likely to report fewer than 3 alcoholic drinks (55% vs 44%, $p=0.05$). In addition, intervention recipients were more likely to report that in the past month they had not consumed 4+ alcoholic drinks on more than one occasion (67% vs 55%, $p=0.054$), although rates of any binge drinking in the past month were similar between groups (40% vs 37%).

CONCLUSIONS: The Partywise intervention is an innovative and promising approach to reducing risks of binge-drinking among young women.

EFFECT OF CAREGIVER BURDEN ON CAREGIVERS' HEALTH BEHAVIORS AND OUTCOMES: A SCOPING REVIEW

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BACKGROUND: At least 17.7 million adults in the US provide unpaid support to older adults, with data suggesting that family caregivers provide as much as 90% of this in-home long-term care. Caregiver burden (a.k.a. caregiver strain), defined as the extent to which caregivers perceive that caregiving has had an adverse effect on their emotional, social, financial, physical and spiritual functioning, has the potential to affect caregivers' own health behaviors and outcomes. Herein, we conducted a scoping review of the literature to examine the effect of caregiver burden on the health behaviors and outcomes of caregivers themselves.

METHODS: Guided by a research librarian, we searched three databases (PubMed, Embase, CINAHL) using pre-specified search terms. We included articles published in English from 1999-2019. Non-English, opinion/perspective articles, and qualitative studies were excluded. We used Covidence software to organize and analyze data.

RESULTS: 457 abstracts were screened, 36 underwent full-text review, and 11 met inclusion criteria. The majority of included studies were published from 2011-18 and focused on adult children and spouse caregivers. Six observational studies discussed caregivers' overall health; among them five found highly burdened caregivers to have lower self-reported physical health. Indeed, the converse was also seen; one study found that caregivers with low burden had better overall health than their non-caregiving counterparts. One five-year prospective cohort study found that caregivers with elevated depressive symptoms were more likely to develop self-reported physically co-morbid conditions. Two studies investigated caregiver health behaviors. One found that highly burdened caregivers exercise less, sleep poorly, and are less likely to seek medical care when ill, compared to their less burdened counterparts. The second study found that caregivers of care-recipients with high care needs were more likely to engage in risky health behaviors, such as smoking and difficulty taking medications. Two large prospective cohort studies examined the effect of caregiver burden on all-cause mortality, both finding that highly burdened caregivers had higher mortality risk, compared to less burdened caregivers. Only one study evaluated underlying pathophysiologic mechanisms of these associations, finding that caregiver burden was associated with higher levels of pro-inflammatory cytokines (IL-6, IL-1).

CONCLUSIONS: The majority of existing studies demonstrate that highly burdened caregivers have worse physical health and engage in less healthy behaviors than their less burdened counterparts. Limited data is available regarding caregivers for adults with specific conditions. Although two studies found caregiver burden to be associated with an increase in all-cause mortality, few studies include adjudicated health outcomes for caregivers. Further research is needed to examine these associations longitudinally, in disease- specific contexts, and in more diverse populations.

EFFECT OF COMBINED DEPRESSIVE SYMPTOMS AND GLOBAL COGNITIVE IMPAIRMENT ON ALL-CAUSE MORTALITY AMONG REGARDS STUDY PARTICIPANTS WITH HEART FAILURE

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BACKGROUND: Depression and cognitive impairment have each been shown to be independently related to premature mortality in heart failure (HF). However, it is unclear if combined depressive symptoms and cognitive impairment present a greater risk for death in HF patients than either condition alone among adult with HF.

METHODS: We utilized Medicare linkage data from the Reasons for Geographical and Racial Difference in Stroke (REGARDS), a biracial prospective cohort of 30,000 US community dwelling adults, aged > 45, recruited in 2003-7, with ongoing follow up. Participants were considered to have HF diagnosis if they had 1 inpatient or 2 outpatient Medicare claims. Depressive symptoms were defined as a score ≥4 on the 4-item Center for Epidemiological Studies-Depression scale (CED-D-4). Global cognitive impairment was a score ≤4 on the Six-Item Screener (SIS) that assessed 3-item recall and orientation to year, month, and day of the week. Deaths were expert-adjudicated. The association between depressive symptoms, cognitive impairment and death were examined in the sequentially adjusted Cox proportional hazard models.

RESULTS: At baseline, 886 REGARDS participants had HF, of them 115 (13%) reported depressive symptoms only, 105 (12%) had global cognitive impairment only and 19 (2%) had both. Over the median of 6.9 years (IQR 3.5-10) of follow-up 599 (68%) persons died. In the unadjusted model, presence of global cognitive impairment only was significantly associated with increased mortality, HR 1.33(95% CI 1.05-1.68), compared to persons with neither depressive symptoms nor cognitive impairment. This was not observed for depressive symptoms only or for a combination of both (table). However, after adjustment for covariates, this association has disappeared. Among covariates, age, gender, income, marital status, history of coronary artery disease, diabetes, smoking, physical inactivity, albumin to creatinine ratio, and lack of statin use were associated with mortality.

CONCLUSIONS: In this nationally representative sample of HF patients neither depressive symptoms nor impaired global cognition nor their combination were associated with all-cause mortality. Rather, increased mortality in HF was explained by health behavior and comorbidities in this study.

EFFECT OF ENTERING MEDICARE FROM PRIVATE INSURANCE ON HEALTH CARE SPENDING, USE, AND PRICE: EVIDENCE FROM THE AGE-65 DISCONTINUITY

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BACKGROUND: As the nation considers expanding Medicare, the effects of transitioning from private insurance to Medicare on spending, use, and price remain poorly understood. Causal effects of Medicare are hard to measure due to the dearth of individual-linked data before and after age 65. To overcome this challenge, this work uses a regression

discontinuity design to study people who transitioned from private insurance into traditional Medicare (TM) or Medicare Advantage (MA) at age 65. Specifically, it studies 4 distinct transitions: from unmanaged or managed private plans (fee-for-service/PPO or HMO) into unmanaged or managed versions of Medicare (TM or MA).

METHODS: This study used 2007-2017 Marketscan claims data from 278,338 individuals who were enrolled in private insurance and entered Medicare at age 65: 123,426 who transitioned from unmanaged plans (fee-for-service, PPO) into TM (cohort 1), 24,707 from managed care plans (HMO) into TM (cohort 2), 98,714 from unmanaged plans into MA (cohort 3), and 31,491 from managed care plans into MA (cohort 4). There was no entry or exit at the age 65 discontinuity. Regression discontinuity statistical models allowed different age trends before and after 65, with time and individual fixed effects. Standard errors were clustered by individual.

RESULTS: The 278,338 individuals averaged 65.0 years with 55.0% male. Descriptive characteristics and risk scores were similar across cohorts.

On average, entering Medicare led to a 28.3% decrease in outpatient spending ($p<0.001$) and 33.1% decrease in inpatient spending ($p<0.001$) across all cohorts. The effect on outpatient spending was explained by lower prices, and the effect on inpatient spending mostly by lower prices (with one-third of the effect explained by fewer hospitalizations).

Cohorts that transitioned into TM saw larger discontinuities in outpatient and inpatient spending: -47.8% and -51.4%, respectively, for cohort 1, and -57.7% and -58.7%, respectively, for cohort 2 (all $p<0.001$). Lower prices in TM largely explained these effects. These cohorts had base (pre-65) averages of $44-46 in outpatient spending and $187-203 in inpatient spending per member per month (PMPM). In contrast, cohorts that transitioned into MA saw smaller effects: +3.3% ($p=0.04$) in outpatient spending and -9.2% ($p=0.03$) in inpatient spending for cohort 3, and -4.5% ($p=0.20$) and -13.3% ($p=0.06$), respectively, for cohort 4. These cohorts had lower base spending of $37 outpatient and $176-189 inpatient PMPM. Differences in use generally explained these effects. There were no effects at age 65 among SSDI beneficiaries (a falsification test).

CONCLUSIONS: Entering Medicare reduced outpatient and inpatient spending, largely explained by lower prices in Medicare and among individuals who transitioned into TM. These causal estimates inform proposals to expand Medicare or change the Medicare eligibility age. Heterogeneous effects across cohorts may be due to selection into cohorts, payer vs. provider market power, or practice patterns.

EFFECT OF MEDICARE ON PRESCRIPTION DRUG SPENDING, VOLUME, AND PRICE: EVIDENCE FROM THE AGE-65 DISCONTINUITY

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BACKGROUND: Prescription drug spending has grown rapidly. Unlike physician and hospital services, for which Medicare sets prices, Medicare is legislatively prohibited from negotiating prices for prescription drugs. To date, little is known about the effect of Medicare on prescription drugs relative to private insurers, particularly whether traditional Medicare (TM) and Medicare Advantage (MA) affect prescription drug spending, volume, or pricing differently. Causal estimates of this effect have been difficult to obtain given the shortage of continuous pharmaceutical claims data at the individual level before and after people enter Medicare.

METHODS: Using 2007-2017 Marketscan pharmaceutical claims data, this study follows 278,338 people as they transitioned from private health insurance into Medicare at age 65. This transition occurred in 4 distinct ways: from unmanaged private plans (fee-for-service, PPO) into TM (cohort 1, N=123,426), from managed care plans (HMO) into TM (cohort 2, N=24,707), from unmanaged plans into MA (cohort 3, N=98,714), and from managed care plans into MA (cohort 4, N=31,491). Regression discontinuity models produced the effect of entering Medicare on spending, volume, and price. The statistical model used second-order polynomials that allowed for different age trends before and after 65, with time and individual fixed effects. Standard errors were clustered by individual.

RESULTS: The 278,338 subjects averaged 65.0 years, 55.0% male, and had descriptive characteristics and risk scores that were similar across cohorts.

Entering Medicare led to a $6 per member per month (PMPM) average decrease in prescription drug spending across all cohorts ($p<0.001$), a -2.9% change from a base of $200 PMPM in pre-65 drug spending. Overall, this effect was explained by a lower quantity of prescribed drugs, averaging 1.9 fewer days PMPM supplied in Medicare ($p<0.001$), a -2.2% change from a base of 86.3 days of supply PMPM. On average, prices were higher in Medicare than in private insurance in most classes of drugs.

Effects on spending were larger among cohorts that entered Medicare from managed care plans: -6.1% in cohort 2 and -11.0% in cohort 4 ($p<0.001$), explained by lower quantities supplied with no effects on price. In contrast, effects on spending were smaller among cohorts that entered Medicare from unmanaged plans: +0.2% in cohort 1 ($p=0.76$) and -3.8% in cohort 3 ($p<0.001$) driven by lower quantities supplied.

CONCLUSIONS: The effect of Medicare on spending for prescription drugs was substantially smaller than its effect on spending for physician services and hospitalizations (which are about -30%). This is likely attributable to Medicare's inability to negotiate prices with manufacturers. In prescription drugs, any savings that Medicare achieves relative to private insurance are derived from lower utilization. That MA achieves slightly larger savings than does TM may be attributable to selection into the cohorts, prescribing differences, or heterogeneous PBMs and formularies.

EFFECT OF PRIMARY TEAM ON HEART FAILURE READMISSIONS

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BACKGROUND: An estimated $30.7 billion is spent on heart failure each year, with a significant portion due to readmissions. While follow-up within 7 days of discharge is associated with better outcomes, readmission rates remain high. Thus, a closer inspection of the patients that avoid readmissions is needed to devise a better discharge plan. This study looks to accomplish this by comparing readmission rates and discharge practices of cardiology and internal medicine services.

METHODS: Patients admitted for a heart failure exacerbation between January 1st, 2018 and December 31st, 2018 were included in this single-center retrospective cohort study. Patients were excluded if they had a ventricular assist device, heart transplant, or the advanced heart failure service functioning as the primary team. Included patients were divided into those on the cardiology service vs internal medicine services. The primary objective was to determine the impact of primary team on discharge medication optimization. Secondary outcomes included length of stay, 30-day readmission, and inpatient and 30-day all-cause mortality.

RESULTS: A total of 168 patients were included, with 100 (59.5%) managed by internal medicine, and 68 (40.5%) by cardiology. There was no statistically significant difference in the primary or secondary outcomes. However, it was found that 97% of patients discharged from the cardiology service had documented follow-up appointments, compared to

85.9% of patients discharged from internal medicine (p = 0.018). Of those with a documented follow-up, those discharged from cardiology were more likely to have their appointments scheduled before discharge (75% vs 56%; p=0.019).

CONCLUSIONS: While there was no statistically significant difference in the primary or secondary outcomes, it was found that patients admitted to the internal medicine service had a lower rate of scheduled outpatient follow-up upon discharge. This finding could imply that interdepartmental communication is needed to ensure that patients obtain consistent follow-ups upon discharge. Further data is needed to evaluate if obtaining a cardiology consult translated to more consistently scheduled follow-up appointments.

EFFECT OF SOCIAL DETERMINANTS OF HEALTH ON HOSPITAL RISK SCORE

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BACKGROUND: The HOSPITAL Risk Score (HRS) is an internationally validated tool used to predict 30- day hospital readmissions. Studies using nationwide datasets have suggested that Social Determinants of Health (SDOH) may have a variable effect on readmission rates. We hypothesized that adding SDOH to the HRS could improve its predictive accuracy.

METHODS: Records of 37,105 inpatient admissions at the University of Chicago Medical Center were reviewed. HRS was calculated for each patient. Census tract-level SDOH were then combined with the HRS and the resultant "social HRS" was compared against the HRS using ROC analysis. Patients were then assigned to 1 of 7 typologies defined by their SDOH (Figure 1) and a balanced dataset of 14,235 admissions was sampled from the larger dataset to avoid over-representation by any 1 sociodemographic group. Principal component analysis was then performed to determine the effect of SDOH on the HRS.

RESULTS: The c-statistic for the HRS predicting 30-day readmission was 0.71, consistent with published values. However, the addition of SDOH to the HRS did not improve the c-statistic (0.68). Patients with unfavorable SDOH (no high-school, limited English, crowded housing, disabilities, and age >65yrs) had higher HRS (p<0.05 for all), although the effect was small. SDOH explained 0.2% of the HRS.

CONCLUSIONS: At an urban tertiary care center, the addition of census tract-level SDOH to the HRS did not improve its predictive power. Rather, the effects of SDOH are already reflected in the HRS, though their overall effects appear very small.

EFFECTS OF A PHYSICIAN COMMUNICATION TRAINING INTERVENTION ON PROCESSES AND OUTCOMES RELATED TO CHRONIC PAIN IN PRIMARY CARE: A RANDOMIZED TRIAL

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BACKGROUND: Primary care physicians and patients report that discussions about chronic pain and prescription opioids are often frustrating and unproductive. Interventions that bolster physician communication skills and self-efficacy may improve processes and outcomes of care related to chronic pain.

METHODS: We conducted a pilot randomized controlled trial of a physician communication training intervention to estimate effects on physician communication behavior (primary outcome), physician self-efficacy for pain and opioid-related communication, physician-reported visit difficulty, and patient-reported pain-related interference and visit experience. The intervention consisted of 2 announced standardized patient visits; trained actors portrayed patients on opioids for chronic pain and then provided immediate feedback on physicians' use of targeted communication skills (history taking and report building, goal setting, and treatment planning); the intervention also included a brief didactic video, a pocket card, and a detailed pamphlet. The control was a CDC handout on opioid prescribing. Resident physicians were recruited from 2 academic primary care clinics. Following the intervention, each physician was audio recorded during 1-2 regularly scheduled clinic visits with established patients taking opioids for chronic pain who agreed to enroll in the study. Trained coders assessed physician communication skills from audio recordings and transcripts. Analyses used generalized linear models, accounting for clustering within physician via generalized estimating equations. Models for pain-related interference and self-efficacy controlled for baseline values.

RESULTS: 45 physicians were randomized and received either intervention or control; 37 had a visit recorded with ≥1 study patient and were retained in the primary analysis. 46 patients were recruited (mean age 60, mean pain-related interference 7 out of 10). There was no between-arm difference in the primary outcomes of the number of targeted communication behaviors coded per visit (Incidence Rate Ratio (IRR) 1.28, 95%CI 0.76, 2.13); however, the intervention was associated with significantly more communication behaviors per visit related to history taking and rapport building (IRR 2.20, 95%CI 1.34, 3.61, $P = 0.003$). The intervention was also associated with significantly greater physician self-efficacy for pain and opioid- related communication (β 0.42 on a 5-point scale, 95%CI 0.12, 0.72, $P = 0.006$). There was no significant between-arm difference in pain-related interference, patient experience, or physician-reported visit difficulty.

CONCLUSIONS: An intervention using standardized patient instructors to improve physicians' pain-related communication skills did not improve pain-related interference or use of targeted communication behaviors but did improve physician self-efficacy and improved communication around history taking and rapport building. The efficacy of a modified intervention should be evaluated in fully-powered trial.

EFFECTS OF A STANDARDIZED COMMUNITY HEALTH WORKER INTERVENTION ON HOSPITALIZATION: RESULTS OF A POOLED ANALYSIS OF THREE RANDOMIZED CLINICAL TRIALS

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BACKGROUND: Low income individuals are at high risk of frequent hospitalizations to multiple hospitals, which is associated with increased mortality and higher costs of care. Social determinants of health are increasingly recognized as targets for reducing healthcare costs,

improving quality, and increasing equity of care. Community health workers (CHWs)—trusted laypeople with similar backgrounds to patients—are well- positioned to address social determinants but evidence of their ability to reduce hospital utilization is limited. *Individualized Management for Patient-Centered Targets* (IMPaCT) is a standardized model utilizing specially trained CHWs to provide social support, health behavior coaching, and health services navigation.

METHODS: We pooled data from our three two-armed, single-blinded randomized clinical trials comparing IMPACT with usual care (n = 1340) at a single academic center between 2011 and 2016. All three trials utilized a common study design, intervention and outcomes, but were not powered to assess hospital utilization. Inclusion criteria included English-speaking adults from high-poverty regions of Philadelphia who were uninsured or Medicaid-insured. Trial one (n=446) tested 2 weeks of IMPaCT among hospitalized medicine patients. Trials two and three (n=302 and 592, respectively) tested 6 months of IMPaCT among outpatients at academic, Veterans Affairs (VA), and Federally Qualified Health Center primary care practices. Our primary pooled outcome is hospital days per patient. Our secondary outcome is fragmentation of hospital care, defined as the proportion of hospitalizations outside patients' primary health system. Hospitalization data were collected from statewide and VA databases. Binary and continuous outcomes were analyzed using mixed effects logistic and linear regression, respectively, with negative binomial regression used for skewed outcomes. We included indicators for trial and recruitment site, with incorporation of random effects to account for within site clustering.

RESULTS: Baseline demographic characteristics were similar between pooled intervention and control groups. Over 9398 observed patient months, the number of hospital days per patient in the intervention versus control group was 1.26 vs. 1.90 (incidence rate ratio 0.66; 95% CI 0.56 - 0.77; p<0.0001). Results were driven by fewer hospitalizations per patient (0.27 vs. 0.34; p<0.0001) and shorter mean length of stay (4.72 vs. 5.57; p = 0.03) in the intervention versus control groups. The intervention decreased rates of hospitalization outside patients' primary health system (18.8% vs. 34.8%; p = 0.0016).

CONCLUSIONS: Pooled data from three randomized clinical trials across multiple settings show a standardized CHW intervention reduced hospital utilization and fragmentation of care among a population of socioeconomically disadvantaged participants. This is the largest analysis of randomized trials to demonstrate reductions in hospitalization with a health-system based social intervention.

EFFECTS OF SOCIAL DETERMINANTS OF HEALTH AS RISK FACTORS FOR GLYCEMIC CONTROL: AN ANALYSIS OF PATIENTS IN THE MIAMI VA HEALTHCARE SYSTEM.

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BACKGROUND: The risk of diabetes continues to rise and will affect half a billion people by 2030. Disadvantaged groups may be at even higher risk of diabetes. Veterans are more likely to experience physical, social or psychological adversities. We aim to evaluate the role that social determinants of health play on incident diabetes among Veterans in South Florida.

METHODS: We conducted a retrospective cohort study of all Veterans who had at least two Hemoglobin A1C values measured between 2015 and 2019 and who receive primary care at the Miami VA Healthcare System. We used a previously validated algorithm to categorize Veterans into 4 mutually exclusive glycemic (A1C) categories at baseline and at follow up: normal<5.7, low risk prediabetes (5.7-6.0), high risk prediabetes (6.1-6.4) and diabetes. We collected from the Computerized Patient Record System (CPRS) demographic data and social determinants of health such as age, sex, marital status, homelessness, census based zip code data (mean household income, median household income, Gini index), mental health diagnoses and attendance to lifestyle modification clinics. We report glycemic control at baseline and its correlates, diabetes conversion rate at follow up and used multivariable ordinal logistic regression models to test predictors of worsening glycemic status.

RESULTS:

In a multivariate ordinal regression model BMI, age, Black race, male gender, marital status, percent of population below the poverty line and GINI index by zip code were significantly associated with worsened glycemic control (p<0.01).

In the cohort of patients with high-risk prediabetes, the 3 year conversion rate was 12% and increased BMI, age, and male gender were highly associated with progression disease (p <0.01). Being separated had worse status compared to being married and compared to non-Hispanic white, being black was associated with worse glycemic outcome (p<0.01), while Hispanic showed a non-significant trend towards worsening glycemic status. Attending at least four visits to either a nutritionist or the MOVE program was significantly associated with better glycemic status.

CONCLUSIONS: Among Veterans, in adjusted models black race, income and GINI index were associated with worse glycemic status at baseline and among high risk prediabetics, black race, not being married were associated with high risk of developing diabetes within 3 years. This risk is mitigated by participation in lifestyle modification clinics.

EFFECTS OF THE AFFORDABLE CARE ACT ON SAFETY-NET HOSPITAL FINANCIAL MARGINS AND QUALITY

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BACKGROUND: Safety-net hospitals (SNHs), which care for uninsured and low-income patients, provide the bulk of uncompensated care in the US. The expansion of Medicaid under the Affordable Care Act (ACA) may have been of particular benefit to SNHs in that its passage has been associated with reductions in uncompensated hospital care. Furthermore, if SNHs can improve their financial circumstances, this could translate to improvements in quality of care. However, whether financial margins or quality at SNHs improved as a result of the ACA remains unknown.

METHODS: Difference-in-differences (DID) linear regression comparing changes over time in financial parameters, patient experience, and clinical outcomes between SNHs in states that expanded Medicaid in 2014 compared to those that did not.

RESULTS: From 2011-2016, we identified 376 SNHs, defined as hospitals in the highest quartile of uncompensated care costs out of total operating expenditures, averaged over a baseline period (2011-2013). Among SNHs, 167 were in states that did not expand Medicaid and 209 were in states that did. SNHs in expansion states were more often in the Northeast (21.0% in expansion states vs. 9.9% in non-expansion states, p<0.001) and were more likely to be non-profit (58.1% vs. 45.2%, p<0.001). Baseline levels of uncompensated care were similar between both groups (1.11 vs. 1.19, p=0.05). Following the ACA, SNHs in expansion states had greater reductions in uncompensated care (DID=-0.21, p=0.003), though other markers of financial health, such as net hospital operating revenues (DID=-$529,769, p=0.80) or operating margins (DID=1.09, p=0.61) did not significantly change. SNHs in states that expanded Medicaid had a small improvement in all-cause readmission

rates following the ACA as compared to SNHs in non-expansion states (DID=-0.37%, p<0.001); however, there were no differences in quality of patient experience (-0.39% change in overall hospital rating, p=0.58), condition-specific readmission rates (-0.09% change in 30-day heart failure readmissions, p=0.69; -0.10% change in acute myocardial infarction 30-day readmissions, p=0.70; -0.38% change in 30-day pneumonia readmissions), or condition-specific mortality rates (0.03% change in 30-day heart failure mortality, p=0.89; 0.13% change in 30-day acute myocardial infarction mortality, p=0.43; -0.04% change in 30-day pneumonia mortality, p=0.86).

CONCLUSIONS: Medicaid expansion under the ACA was associated with reductions in uncompensated care at SNHs; however, other markers of hospital financial status did not improve. Despite reductions in uncompensated care, SNHs only showed modest improvements in quality in the single dimension of all-cause readmissions, with no improvements in other quality measures. Future work should examine why reductions in uncompensated care have not translated into broader improvements in the financial circumstances of these hospitals, and how these barriers might limit their ability to invest in quality improvement efforts.

EFFECTS OF THE ELIMINATION OF THE FREE TEXT FIELD IN ACR SELECT ON ORDERING TRENDS FOR LOW BACK PAIN IMAGING IN THE EMERGENCY DEPARTMENT

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BACKGROUND: Low back pain (LBP) is a common condition that affects around 80% of all adults at some point during their lives, and is the second most common reason for provider visits in the United States. Several studies suggest that routine imaging for acute LBP has no observable benefit and in fact, leads to excess costs and increased risk of patient harm, especially if it leads to unnecessary clinical interventions. The utilization of computerized alerts within electronic medical records attempt to support appropriate clinical decision making. ACR Select is a clinical decision support database which is based on the American College of Radiology (ACR) Appropriateness Criteria, intended to improve advanced imaging decisions for patient care.

Allen Hospital, a 204-bed community hospital located in Waterloo, Iowa, underwent a modification to its clinical decision support system in April, 2017. The "free text" field, which allowed providers to bypass the ACR Select tool within Epic electronic health records, was removed. The intended purpose of this modification was to increase provider adherence to the ACR Select tool, encouraging the ordering provider to match the appropriate advanced image order to the most appropriate documented indication. The objective of our study was to examine the patterns of ordering advanced imaging for the evaluation of lower back pain in the emergency department, after the "free text" field was removed from the ACR Select clinical decision support tool.

METHODS: Quantitative data was retrospectively collected utilizing UnityPoint Health electronic medical records and health informatics after approval by the Allen College IRB. UnityPoint Health is a healthcare organization serving areas in Iowa, Illinois, and Wisconsin. Data was collected from the emergency department of Allen Hospital in Waterloo, Iowa using the primary diagnosis code of "Acute Low Back Pain," and ICD-10 codes of 351, 352, 610, 611, and 612. The number of CT scans and MRIs were tracked 12 months prior to and 10 months after the modification. Monthly trends in ordering patterns were compared using a two-sample t-test. A total of 19,233 records were reviewed for this time period, and 287 scans satisfied the inclusion criteria.

RESULTS: After aggregating the data by month, there was an average of 13 scans per month prior to the modification, and 11.6 scans per month after the modification. However, results from the two-sample t-test indicate that this difference was not statistically significant (p=.54).

CONCLUSIONS: Elimination of the "free text" field within ACR select was not enough to modify provider behavior. This suggests that providers predetermine their decisions when ordering advanced imaging procedures, which could lead to ignoring ACR select prompts when certain orders are flagged. Other strategies to modify provider ordering behavior and increase provider adherence to clinical decision support tools may need to be considered.

EFFICACY OF OPICAPONE COMPARED TO ENTACAPONE IN PARKINSON'S PATIENTS WITH MOTOR FLUCTUATIONS AND ON HOEHN & YAHR ≤2.5: A POST HOC ANALYSIS OF BIPARK-1

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BACKGROUND: Opicapone is a catechol-O-methyltransferase (COMT) inhibitor approved in Europe and under US FDA review as an adjunct to carbidopa/levodopa for Parkinson's disease (PD) patients experiencing OFF episodes. In the Phase 3 BIPARK-1 (NCT01568073) study, opicapone met the predefined non-inferiority criteria versus entacapone and statistical significance versus placebo for change in absolute OFF-time (primary endpoint). The objective of this post hoc analysis was to compare the efficacy of opicapone versus entacapone in a subgroup of PD patients with motor fluctuations and a lower baseline Hoehn and Yahr (H&Y) stage (1-2.5) in the ON-state.

METHODS: This analysis included BIPARK-1 participants with a baseline H&Y of 1-2.5 in the ON-state who received opicapone 50mg or entacapone 200mg for 14-15 weeks. The population was categorized by OFF-time at baseline in 30-minute increments starting with >90 minutes. Outcomes included mean changes from baseline (±standard error) in absolute OFF-time and UPDRS III during ON based on a mixed model for repeated measures.

RESULTS: The analysis included 157 BIPARK-1 participants with H&Y of 1-2.5 (opicapone 50 mg [n=74], entacapone 200 mg [n=83]). At Week 14/15 in the subgroup with >90 minutes of baseline OFF-time, opicapone treatment resulted in a numerically greater reduction in OFF-time (opicapone, -121.9±17.0; entacapone, -105.7±16.3 minutes; P=0.46) and a significant reduction in UPDRS III score (opicapone, -4.6±0.8; entacapone, -2.4 ±0.8; P=0.04 versus entacapone). Improvements in OFF-time and UPDRS III score were more pronounced in participants with >450 minutes of OFF-time at baseline: OFF-time (opicapone, -168.3 ±37.9; entacapone, -118.7±32.1; P=0.27); UPDRS III score (opicapone, -7.0±2.0; entacapone, -1.6±1.7; P=0.03).

CONCLUSIONS: In BIPARK-1 participants with PD motor fluctuations and baseline H&Y stage 1-2.5, treatment with once-daily

opicapone 50mg resulted in numerically greater OFF-time reduction and significant UPDRS III score improvement compared to entacapone.

ELECTRONIC CONSULTS IN A LARGE SAFETY NET SYSTEM IMPROVE WAIT TIMES

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BACKGROUND: Lack of timely access to specialty care is a persistent challenge in safety-net systems. To address this challenge, New York City Health + Hospitals (H+H), the nation's largest public health system serving over 1 million New Yorkers, rolled out an electronic specialty referral system ("eConsult") to improve specialty access. In the eConsult model, primary care providers (PCPs) request all specialty input electronically. The eConsults are reviewed by a specialist within 72 hours, who can decide to address questions via electronic dialogue or a face-to-face visit with the patient. We examined the association between H+H eConsult adoption on specialty appointment wait times.

METHODS: Using data from July 2016 through July 2019, we performed an interrupted time series analysis of specialty referrals from 36 months prior to 6 months after eConsult implementation at 9 specialty departments in 3 hospitals. This was among the first wave of eConsult adoption. Our primary outcome was time until a scheduled appointment after specialty referral. Secondary outcomes were monthly volume of specialty referrals and what fraction of specialty referrals post eConsult implementation were resolved without a face-to-face visit. We used linear regression to estimate the average change in these outcomes after eConsult adjusting for specialty and facility fixed effects.

RESULTS: Across the 9 specialty departments, there were 20,981 referral requests (583 per month) in the 36 months prior to eConsult and 3,481 requests (580 per month) in the 6 months post-eConsult implementation (p=0.44 for change). After implementation, 24% of referral requests were resolved without a face-to-face appointment, ranging from 13% in urology to 40% in gastroenterology. The average wait time to appointment decreased from 53.6 days pre-implementation to 39.8 days post-eConsult implementation (p<0.001), a 26% relative decrease. All 9 specialty departments individually had statistically significant decreases in wait time. The proportion of appointments scheduled within 30 days increased from 37% of visits pre-implementation to 53% post-eConsult (p<0.001). The largest increases were observed in endocrinology (16% to 31%) and gastroenterology (51% to 82%).

CONCLUSIONS: Adoption of the eConsult system in the largest safety net system in the US was associated with a substantial decrease in average wait time after 6 months. Roughly 1 in 4 referral requests were addressed without a face-to-visit, though this varied by specialty. This likely opened up scheduling space for patients whose care required face-to-face specialist interaction without increasing specialty referral volume. To our knowledge, this is the first multi-specialty evaluation of changes access with eConsult following outcomes pre- and post-implementation. Additional research is needed to assess the effects of these changes on provider workflow, patient outcomes and satisfaction.

ELECTRONIC SCREENING AND CLINICAL DECISION SUPPORT FOR DRUG USE BRIEF INTERVENTION IN PRIMARY CARE: RESULTS FROM A PILOT STUDY OF THE SUBSTANCE USE SCREENING AND INTERVENTION TOOL (SUSIT)

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BACKGROUND: Primary care providers (PCPs) face multiple barriers to offering substance use interventions, including lack of time, knowledge, and information about their patients' drug use. We developed a tablet-based Substance Use Screening and Intervention Tool (SUSIT) to assist PCPs by delivering screening results and clinical decision support for conducting a brief intervention (BI) to address unhealthy drug use. The SUSIT screener is an electronic self-administered tool consisting of the Substance Use Brief Screen (SUBS), followed by a modified World Health Organization Alcohol, Smoking and Substance Involvement Screening Test (WHO-ASSIST) for those who screen positive. The objectives of this pilot study were to: 1) assess whether the SUSIT could increase delivery of BI during primary care visits (primary aim); and 2) evaluate the impact of the SUSIT on patients' drug use

METHODS: A pre-post design compared a control period to an intervention period during which PCPs received the SUSIT. Adult patients completed screening in the waiting room and identified their drug of most concern (DOMC); those with moderate-risk use of any drug (without high-risk alcohol or drug use) were eligible. Patients completed an after-visit survey documenting BI delivery by the PCP, and a 90-day timeline follow-back measuring drug and alcohol use at baseline and 3 months. Multilevel models with random intercepts and patients nested within PCPs examined the effect of the SUSIT intervention on PCP delivery of BI and on patient drug use.

RESULTS: 27 PCPs and 78 unique patients (42 control, 36 intervention) participated. Patients were 76% male, with mean age of 46 (SD=13). Marijuana was the most prevalent DOMC (n=53; 68%); cocaine was the second (n=7; 9.0%). Mean days of DOMC use at baseline was 38.8 (SD=37.7) days of use in the past 90 days. During the intervention period, PCPs used the SUSIT with 86% of patient participants. Patients in the intervention condition were more likely to report receiving any BI [91.7% vs. 40.5%, P<0.001], and receiving more elements of BI [mean 8.7 (SD=4.8) vs. mean 3.1 (SD=4.7); P<0.001]. Patients in the intervention had 6.4 fewer days of use of the DOMC at 3 months (95% CI: -36.1-23.3) in the adjusted model, in comparison to the control condition.

CONCLUSIONS: Using the SUSIT to provide drug use screening results and clinical decision support increased PCP delivery of BI during routine primary care visits. The SUSIT showed promise for facilitating the delivery of effective BI to reduce moderate-risk drug use among primary care patients, and warrants further study in a larger sample.

EMBEDDING COMMUNITY HEALTH WORKERS (CHWS) IN A SAFETY-NET PRIMARY CARE SETTING FOR COMPLEX CARE IN LOS ANGELES THROUGH THE CARE CONNECTIONS PROGRAM: PERSPECTIVES FROM CHWS AND PATIENTS

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BACKGROUND: Although primary care has been shown to improve outcomes for high risk, vulnerable patients, these patients disproportionately use acute services for routine medical care, contributing to disparities and higher healthcare costs. The Care Connections Program aimed to promote primary care utilization by embedding community health workers (CHWs) in eight clinics in the Los Angeles County Department of Health Services. Through clinic, home, and phone visits, CHWs helped clinically and socially complex patients navigate the healthcare system and linked them to community resources. We conducted patient and CHW focus groups to obtain perspectives on the impact of the newly implemented program.

METHODS: Five patient focus groups, two conducted in English (n=12) and three conducted in Spanish (n=12), solicited perspectives regarding barriers and facilitators to accessing care and the impact of CHWs on their engagement in care. Four focus groups with CHWs (n=16) solicited perspectives regarding program implementation and the effect on patient barriers in primary care. Thematic analysis was performed in ATLAS.ti.

RESULTS: Patients and CHWs described several communication barriers: patient literacy and language barriers, mistrust, and poor connection with providers. Unique themes identified by patients included obstacles in navigating the healthcare system (i.e., tracking and attending appointments, medication management, transportation). A patient explains, "*I used to leave the same way I entered the place because I didn't understand a word they said*." CHWs also identified social determinants, mental health, and system barriers (i.e., lack of physician time, dysfunctional physician-patient interactions, power imbalances, and perceived mistreatment by clinic staff). A CHW states, "*the greatest advantage that we have is the opportunity to go into their homes and see how they live, how they eat or what they're not eating, or don't have access to*."

In discussing how the CHWs influenced patient barriers to receipt of primary care, patients and CHWs described linkage to resources, health coaching, and empowerment of patients to advocate in care. Patients also identified CHW influences on care coordination and comprehension of care, while CHWs emphasized increasing provider understanding of patient priorities and social needs to improve treatment. Both patients and CHWs highlighted the importance of establishing trust in the patient-CHW relationship, as a patient explains, "*the doctor gives you medications, but she heals you inside by listening to you*."

CONCLUSIONS: Clinically and socially complex patients in the safety net face unique barriers in primary care. CHWs help to promote primary care engagement for high-risk patients by serving as a bridge between patients, providers, the healthcare system and the community. Further work is needed on strategies to optimize the CHW role and understand the long term impact on patients and health systems.

EMERGENCY CARE TRENDS AMONG UNDOCUMENTED IMMIGRANTS, 2014-2018

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BACKGROUND: Anti-immigrant rhetoric has increased since the 2016 presidential election. Increased immigration enforcement may discourage undocumented patients from receiving healthcare. Prior studies have demonstrated a decrease in primary care and inpatient hospitalizations since the June 2015 announcement of President Trump's campaign, but there is no data available regarding emergency care utilization trends during this period.

METHODS: The following study analyzes trends in emergency care utilization in a pool of low income, Medicaid-ineligible patients (composed of a predominantly (92%) undocumented population) and Medicaid controls receiving care at two hospitals in a mid-Atlantic health system between 2014-2018. Medicaid-ineligible patients were identified by membership in charity and sliding scale programs sponsored by the health system that provide primary, subspecialty and emergency/inpatient care. To be included in analysis, patients must have had a single primary care visit between January 1, 2014-October 31, 2015 covered by Medicaid or the charity/sliding scale program and not have died before the 2016 election. Visit records were extracted from the health system's electronic medical record system. Estimates were calculated using a mixed effect model, controlling for age and gender and baseline comorbidity.

RESULTS: There are 17,504 patients in the sample, 1,429 (8%) in the Medicaid-ineligible group and 16,075 (92%) in the Medicaid-insured group. Emergency care utilization data were just made available by the health system and analysis is underway.

CONCLUSIONS: Foregoing healthcare for whatever reason can result in poorer health outcomes. For the sake of positive population health outcomes, health systems and municipalities need to understand the healthcare utilization trends of vulnerable communities in order to respond in their best interests.

EMERGENCY CONTRACEPTION ACCESS IN A HISTORIC SOUTHERN CITY: MYSTERY CALLER STUDY IN BIRMINGHAM, ALABAMA

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BACKGROUND: Emergency contraception pills (ECPs) may be taken after unprotected intercourse or contraceptive failure. There are two widely available types in the USA: levonorgestrel and ulipristal acetate pills. Mystery shopper studies have shown that access has improved, but barriers remain. We explored ECP access in Birmingham, Alabama, which has been previously understudied. This is important because Alabama recently passed legislation that may severely restrict abortion access, so it is essential to understand if emergency contraception access is adequate in this geographic region.

METHODS: A list of independent, chain, and 24-hour retail pharmacies for the city of Birmingham proper was generated using referenceUSA, a pubic database, and then cross-referenced with Anthem and VIVA pharmacy directories. Exclusion criteria included specialty pharmacies, compounding pharmacies, permanently closed pharmacies, and pharmacies that are not open to the general public. A standardized telephone script was developed to call up to 85 pharmacies that met the initial inclusion criteria. Data from the calls will be uploaded into the REDCAP electronic data capture system for further statistical analysis regarding ECP availability and accessibility.

RESULTS: We have submitted the project to the institutional review board (IRB). In our preparation, we called five pharmacies in the surrounding areas to test our telephone script. We found that only two of the five had ECPs immediately in-stock. We anticipate IRB approval soon and can make all calls within a two- day period once IRB approval is gained. We do not anticipate difficulty getting this study approved, completed, and analyzed by the conference date based on our past experience with this type of research.

CONCLUSIONS: ECPs are important for women who face contraceptive failure or non-use. Recognizing how accessible ECPs are in Birmingham, Alabama can help policy makers understand the impact of legislation involving contraception and abortion. We hope this study will bring useful policy information to the city of Birmingham, Alabama where there is currently a need for an ECP access study.

EMPATHY CHANGE AND PARTICIPATION IN A PRIMARY CARE STUDENT-FACULTY COLLABORATIVE CLINIC

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BACKGROUND: Physician empathy is an important correlate of quality of care and patient satisfaction. It is important to understand how medical education influences empathy. Previous studies show that medical students' empathy scores decrease throughout their academic career. At the Crimson Care Collaborative (CCC), a student-faculty collaborative of seven clinics where students are engaged in all parts of clinic operations, patient care, and research, students gain experience in a primary care setting with longitudinal relationships and underserved populations around Boston. Our objective was to explore the relationship between CCC participation, career interest, and empathy.

METHODS: Harvard Medical School students accepted into CCC are asked to complete a pre-survey measuring career interests and empathy using the Jefferson Scale of Empathy (JSE) student version at CCC orientation prior to their first clinic. On Match day, CCC students are invited to complete a post-survey regarding CCC experience and the JSE. Composite empathy scores are calculated with the JSE from the pre- and post-surveys. Scores range from 20 to 140, with higher scores indicating greater empathy. We used linear regression models to measure association between semesters of CCC participation and change in empathy score adjusting for baseline score, time between surveys, demographics, and career interests.

RESULTS: From 2011-2019, we collected 149 Match day post-surveys. Of these, 52 students completed the JSE and provided identifiable information to allow matching with a pre-survey. Matched surveys did not differ from the unmatched surveys by demographics, participation, or career interests. In the matched sample, mean age was 26.3 years, 38.5% were male, 94.2% were single, 44.2% identified as white, 40.4% Asian/Pacific Islander, 7.7% black, and 9.6% Hispanic. Pre-CCC mean empathy score was 117.1 and post- CCC score was 119.3 ($p=0.24$). Mean time between surveys was 3.1 years. In models adjusting for pre-CCC score, years between surveys was positively associated with empathy ($\beta=2.82$, $p=0.03$), but semesters of CCC participation was not ($\beta=-1.35$, $p=0.17$). When demographics and career interests were added to the model, independent variables did not reach statistical significance, including female gender ($\beta=5.48$, $p=0.10$), Hispanic ethnicity ($\beta=-12.55$, $p=0.09$), interest in primary care ($\beta=-3.17$, $p=0.22$), importance of patient relationships ($\beta=7.70$, $p=0.05$), and semesters of CCC ($\beta=-1.35$, 0.22).

CONCLUSIONS: Among students participating in a student-faculty collaborative clinic, more time spent participating in the collaborative clinic was not associated with increased empathy, but in contrast to prior studies, empathy increased over time in this group. Further work is needed to understand what influenced the observed increase in empathy among CCC students. These results could have implications in implementing student-faculty collaboratives as part of the medical education curriculum.

EMPOWERING MEDICAL ASSISTANTS TO INCREASE INFLUENZA VACCINATION RATES IN AN URBAN ACADEMIC PRIMARY CARE CLINIC: AN INTERPROFESSIONAL QI PROJECT

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BACKGROUND: Influenza vaccination is recommended in all persons $\geq$ 6 months without contraindications but significant health disparities in immunization rates exist.1 In 2016-2017, the influenza vaccination rate in our resident clinic was 38% compared to the national average of roughly 50%.2 However, preliminary work revealed a significant data gap, as the influenza immunization status was not recorded for 42% of patients. Process analysis also revealed marked workflow variability among the medical assistants (MAs) administering the vaccines.3 The goal of this project was to increase influenza vaccination rates in a racially diverse, academic primary care practice in the latter half of the 2018-2019 influenza season through a medical assistant-led initiative, with a focus on standardization of processes and documentation.

METHODS: A MA-led influenza vaccination intervention was developed which included enhanced education and standardization of processes and documentation. Two Plan-Do-Study-Act (PDSA) cycles were performed in December 2018 and January 2019 which included peer-driven engagement among MAs, objective feedback on vaccination and documentation performance, and a competition among MA care teams. Influenza vaccination status was obtained through sequential chart review of adult patients seen in clinic, performed monthly from November 2018 to February 2019 with 459 unique patient visits reviewed. MAs were surveyed for feedback at the end of the intervention period in March 2019.

RESULTS: Influenza vaccination rates of patients seen in clinic increased nearly 20% over the intervention period (48% to 65% from November to January). The data capture rate of influenza vaccination status increased from 58% to 82% over the same period. The influenza vaccination rate was sustained in February at 67%. The post-intervention survey of MAs (n=7) found all were aware of the flu vaccination initiative, all changed their intake and documentation practices due to the intervention, and nearly all (6/7) strongly agreed that a midseason data update "motivated me to support the flu vaccination cause."

CONCLUSIONS: Medical assistants are on the front lines of vaccination processes in primary care. Targeted interventions to enhance MA training, standardize processes and documentation, and incentivize MA vaccination activities can significantly enhance vaccination rates and practices in at-risk communities.

Vaccination rates can be sustained throughout the season when MAs are motivated to the cause.

EMULATING A CAROTID TRIAL USING OBSERVATIONAL DATA: COMPARATIVE EFFECTIVENESS OF REVASCULARIZATION COMPARED TO MEDICAL THERAPY FOR PATIENTS WITH ASYMPTOMATIC CAROTID STENOSIS

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BACKGROUND: Carotid endarterectomy (CEA) is a primary prevention surgery that prevents stroke among patients with asymptomatic carotid stenosis. CEA involves a tradeoff between higher perioperative short-term risks in exchange for a lower long-term risk of stroke. However, the secular declines in stroke rates raise concerns that CEA may no longer be superior to medical therapy. Furthermore, outcomes in real world practice may differ from those observed in randomized controlled trials (RCT). We examined the effectiveness of CEA compared to medical therapy (MT) among asymptomatic patients in preventing fatal and non-fatal stroke within 5 years of follow-up in two populations: a sample that reflects real-world practice (pragmatic sample) and a sample that adheres to RCT inclusion criteria (RCT-like sample).

METHODS: We identified Veterans ≥65 years old with carotid stenosis between 2005 to 2009 without a history of stroke or transient ischemic attack and who were followed for 5 years. We used recently described "target trial" methods to mimic analyses from the Asymptomatic Carotid Stenosis Trial, the last published trial to compare CEA to MT. We accounted for "immortal time" bias by randomizing patients to CEA and MT groups and censoring patients if their actual treatment became inconsistent with the arm in which they were randomized (e.g., patient received CEA, but was randomized to MT). We accounted for the informative censoring by estimating time-dependent inverse probability of censoring weights using measured covariates (demographics and 52 time-varying comorbidities). We computed weighted Kaplan-Meier curves and estimated the risk of fatal and non-fatal stroke in each group over 5 years of follow-up.

RESULTS: 2712 patients received CEA and 2509 patients received MT. The observed rate of stroke or death (perioperative complications) within 30 days in the CEA arm was 2.5%. The 5-year risk of fatal and non-fatal stroke was lower among patients assigned to CEA (5.6%) compared to patients assigned to MT (7.8%) (risk difference, -2.3%, 95% CI -4.0% to -0.3%). In an analysis that incorporated the competing risk of death, the risk difference between the two arms was lower and non-significant ([risk difference -0.8% (95% CI, -2.1% to 0.5%)]. Among patients who met RCT inclusion criteria (N=2012, CEA and N=1890 MT), the 5-year risk of fatal and non-fatal stroke among patients assigned to CEA was 5.5% versus 7.6% in the MT arm (risk difference -2.1%, 95% CI -4.4% to -0.2%) and accounting for competing risks resulted in a non-significant risk difference of -0.9% (95% CI, -2.9% to 0.7%).

CONCLUSIONS: The absolute reduction in the risk of stroke due to early CEA was less than half that observed in trials initiated over two decades ago and was reduced even further when the competing risk of non-stroke deaths were accounted for in the analysis. Given the non-negligible peri-operative 30-day risks and the improvements in stroke prevention, medical therapy may be an acceptable therapeutic strategy.

ENGAGING FAMILY SUPPORTERS TO IMPROVE DIABETES OUTCOMES: A RANDOMIZED CONTROLLED TRIAL

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BACKGROUND: Evaluate the effectiveness of an intervention targeting patient-family dyads and aimed at improving diabetes self-management, patient activation, support satisfaction, and physiologic outcomes for adults with diabetes at risk for complications.

METHODS: 239 adults with diabetes (AWD) receiving primary care at two Veterans Health Administration (VHA) sites were randomized with an adult family supporter to an intervention group vs. usual primary care for 12 months. The intervention provided dyads with one health coaching session, biweekly automated phone calls to prompt action plans related to new diabetes health concerns, coaching calls to prepare for primary care visits, and summaries of primary care visit discussions. AWD eligibility criteria were baseline HbA1c>8% or systolic blood pressure (SBP)>150mmHg. Pre-specified primary outcomes were baseline to 12 month changes in 1) Patient Activation Measure (PAM, range 0-100); and 2) 5-year UKPDS Diabetes- Specific Cardiac Event Risk. Pre-specified secondary outcomes were 12 month changes in HbA1c, SBP, self- management behaviors, and patient satisfaction with diabetes social support. Intention-to-treat analyses of changes in outcomes were adjusted for baseline outcome levels, whether patients lived with supporters, and patients' baseline insulin use.

RESULTS: 21% of those initially contacted via letter were recruited. Enrolled patients were on average 60(SD±9) years old, and had HbA1c levels of 8.5(SD±1.6)% and SBP 140(IQR 128,150)mmHg. 70% lived with their supporter. 96% of dyads had complete 12-month outcome data. Over 12 months, 2.4 mean visit prep calls were completed per dyad, and 76% of automated calls were completed. PAM scores increased significantly more in the intervention group (intervention effect +2.6 points (95%CI 0.005, 5.149). There were no statistically significant differences by arm in cardiac risk score, HbA1c, or SBP change. Patient self- reported adherence to healthy eating increased significantly more in the intervention group (intervention effect +0.7 days/week (95% CI 0.2, 1.2) but not for other self-management behaviors. Family supporter involvement in helping patients remember to take medications, do home testing, and attend appointments increased significantly more in the intervention group (p's<0.05). 97% of patients and 94% of supporters in the intervention group agreed they would recommend the program to others.

CONCLUSIONS: Family supporter-patient dyads were successfully recruited, engaged, and retained in a hybrid coaching + automated call intervention, and participants were highly satisfied with the intervention.

While physiologic outcomes did not improve during this 12-month follow-up period, the intervention produced significant increases in patient activation, healthy eating, and family involvement in care, all of which have been associated with improved longer term clinical outcomes in diabetes studies.

ENHANCING CAREGIVER-PATIENT CONNECTIONS SO EMPATHY & TRUST CAN THRIVE: A CLUSTER-RANDOMIZED CONTROLLED TRIAL TO TEST A NOVEL INTERVENTION

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BACKGROUND: Finding ways to integrate empathy into healthcare without additional burden to clinicians is essential. The aim of the study was to determine if an intervention designed to empower inpatients to share who they are leads to greater physician empathy, shared decision-making and trust.

METHODS: A cluster randomized controlled trial was conducted with patients admitted to four medicine units (2 intervention/2 control) at the Cleveland Clinic. The intervention was called a "Care to Share" poster that patients created upon admission and was hung on the wall facing professional caregivers when they walked into the room. The control group did not create the poster. Patients completed a survey 48 hours later asking them about their experiences with the poster. Surveys also included the Jefferson Scale of Patient's Perceptions of Physician Empathy (JSPPPE), CollaboRATE to measure shared decision making, and the Interpersonal Physician Trust Scale (IPTS). Nurses and hospitalists were surveyed before and after the intervention; measures included the Jefferson Scale of Empathy (JSE) and the Maslach Burnout Inventory (MBI). We compared empathy, shared decision making and trust among patients and caregivers between the study groups using t-tests or ANOVA, as appropriate. Surveys included a free text field where participants could share their experiences with the intervention. Content analysis was used to identify themes in these survey comments.

RESULTS: The sample included 160/185 control patients and 160/267 intervention patients (86% and 60% response rates); of whom 53% were female, 52% were White, and their mean age was 59 years. Intervention and control patients did not differ significantly in demographic characteristics. The majority (96%) of intervention patients reported that they talked with hospital caregivers about poster content and it helped them connect with their caregivers in a personal way (82%). One patient said *"People really stopped and looked at me. I wasn't just a patient in a bed anymore, I was a person."* Both nurses (84%) and hospitalists (63%) agreed that the posters prompted them to talk with their patients about what's important to them. In bivariate analyses, nurse and hospitalist baseline and post-intervention empathy and burnout scores did not differ by study group, and patient-perceived empathy and shared decision-making did not differ. However, patient-reported trust scores were significantly higher in the intervention group (43.2.±6.9 vs 41.4±8.2, p=0.04).

CONCLUSIONS: Patients and caregivers felt that the "Care to Share" posters fostered more personal connections between them. While empathy and shared decision-making were not significantly different between the control and intervention groups, patient trust was significantly higher in the intervention arm. Future studies should evaluate patient trust.

ENROLLMENT STABILITY AND DRIVERS OF ACO MEMBER DEPARTURE IN A LARGE MEDICAID ACO IN MASSACHUSETTS

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BACKGROUND: A growing number of state Medicaid programs have implemented Accountable care organization (ACO) programs. ACOs aim to improve healthcare quality and cost through capitated payments and value-based purchasing. ACOs have incentives to maintain a stable patient population, as this allows the organization to effectively invest in health related social needs and to manage financial risk more confidently. Conversely, ACO models may disincentivize the provision of care for vulnerable patients due to global payments, in which high-cost enrollees can become a financial liability. No studies to date have characterized enrollment dynamics in Medicaid ACOs. The objectives of this study were to evaluate the stability of enrollment in Massachusetts' largest Medicaid ACO at Boston Medical Center and to assess the most frequent drivers of ACO departure.

METHODS: We used monthly, member-level data on members of Boston Medical Center's Medicaid ACO from April 2018 to September 2019, and included all non-elderly adults and children who entered the ACO at its inception in April 2018. We calculated average monthly enrollment change for the entire ACO population as well as 5 subgroups: non-elderly adults ages 19-64 years old; non-newborn children ages 3 months-18 years old; disabled adults; disabled, non-newborn children; and homeless adults. We then analyzed data from the state of Massachusetts Electronic Verification system to determine the most common causes of ACO departure.

RESULTS: Across the full sample (n=110,385), the average monthly change in enrollment was -2.1% percentage points (pp) per month (95% CI [1.3, 3.0]). By the end of the 18 month study period, total ACO member enrollment decreased by 30.7%. Enrollment decreased by an average of -2.3 pp per month (95% CI [1.4, 3.2]) among adults and -1.7 pp per month (95% CI [0.8, 2.6]) among non-newborn children. Disabled adults and children had an average monthly decline of -1.3 (95% CI [1.0, 1.7]) and -1.1 pp per month (95% CI [0.6, 1.7]) respectively. Among homeless adults, the population decreased by -4.0 pp per month (95% CI [1.5, 9.5]). The three most common reasons for ACO member departure were: loss of Medicaid eligibility; transition to a different Massachusetts Medicaid ACO; and failure to re-enroll in Medicaid despite continuing eligibility.

CONCLUSIONS: Among the population of non-elderly adult and child Medicaid enrollees that joined BMC's ACO at the outset of the program, over 30% had disenrolled after 18 months. Non-disabled adults were more likely to disenroll compared to disabled adults and children. Homeless adults had the highest rates of disenrollment. Loss of Medicaid coverage, either due to changes in eligibility status or challenges with re- certification, was the most common cause of ACO attrition. The insights provided by our findings can help inform state- and institution-level policy changes to strengthen stability of ACO enrollment and improve continuity of care for this vulnerable patient population.

EPIDEMIOLOGY OF INFLUENZA: 5 SEASON REVIEW WITH FOCUS ON SEASON START, PEAK AND END.

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BACKGROUND: Influenza is a highly contagious seasonal infection that is responsible for a half a million deaths annually. Identification of the start and the peak of the season helps healthcare facilities to better prepare and deliver vaccination. This is exceptionally important to avoid spread of Influenza infection within healthcare facilities. The aim of the our study was to review the epidemiology of Influenza cases in our institution in the last 5 seasons.

METHODS: This is a descriptive retrospective study performed at a 440-bed academic medical center. There were 4670 inpatients tested for respiratory viral panels (RVP) extracted from the electronic medical records between September 2014 and Augest 2019. The start, peak and end of the season were identified in these 5 seasons. Basic demographic data were also collected on these patients.

RESULTS: The median age of patients was 61 years and females were 60%. Influenza type A was diagnosed in 86% of the cases and 60% of them were H3 subtype. Influenza type B seems to appear later in the season. Fifteen percent of patients with Influenza were admitted to the intensive care unit. 2015-2016 season peaked at end of March 2016 and 2018-2019 peaked at mid-February 2019. The other 3 seasons peaked between last week of December to mid-January.

CONCLUSIONS: Peak of Influenza season occured at end of December or after with considerable variation. The information about Influenza peak affects the intensity of testing and reduces missed undiagnosed cases and mitigate the potential of hospital acquired cases.

ESTABLISHING COMPETENCIES FOR LEADERSHIP DEVELOPMENT FOR INTERNAL MEDICINE RESIDENTS

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BACKGROUND: Physicians lead complex, multidisciplinary teams, yet often lack formal leadership training. Given current challenges facing healthcare, the development of effective physicians is paramount. The ACGME has emphasized that leadership skills related to competencies of communication, systems-based practice, and professionalism should be included in GME training. However, it remains unclear which skills are most important for early-career physicians. This study aims to create a prioritized list of leadership skills to guide curricular development for internal medicine (IM) residents.

METHODS: We developed and implemented a 2-round Delphi study to establish consensus in this educational content area. Participants were IM physicians in leadership roles with experience in medical education and/or leadership programming within professional societies. Authors developed a preliminary list of leadership skills through review of published literature regarding competencies for healthcare professionals. Local clinician-educators with interest in leadership vetted this list to establish face and content validity. A priori rules for consensus were established. Participants ranked 31 leadership skills on importance (1=not important, 5=essential) for categorical IM residents, with the goal of competency by the second half of residency and mastery during the first 3-5 years of career. Respondents also commented on number of content hours and curricular format recommended to teach each skill.

RESULTS: Sixteen respondents completed the first round of ranking and 14 completed the second round (response rate 88%). Most were female (71%), in clinical practice for > 15 years (64%), full (57%) or associate (36%) professors and held a variety of high-level university and hospital leadership roles. Thirteen skills were ranked as essential and 9 as very important. Essential topics were primarily in domains of self- awareness, emotional intelligence, team management, professional development, communication, and professionalism/advocacy. Experts generally recommended between 2-5 content hours per topic. Most frequently recommended modes for content delivery included mentorship/coaching, work-based reflection, and interactive discussion.

CONCLUSIONS: Expert consensus identified 13 essential leadership skills for IM residents. Most recommended delivery methods were not didactics, but rather direct observation and debrief through coaching/reflection. These results suggest that curricular time and space, a commonly cited barrier in GME, may not exist in this content area. Initial steps in curricular development might best start by training faculty to dovetail leadership coaching with daily teaching workflow and existing feedback structure. Case studies with discussion of leadership skills may be an effective adjunct. These findings highlight the importance of developing targeted leadership skills development programs for IM residents, and lend insight into optimal curricular methods to provide this education.

EVALUATING A HEALTH-RELATED SOCIAL NEEDS SCREENING AND REFERRAL PROGRAM AMONG VETERANS

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BACKGROUND: Given the adverse impact of unmet social needs on health equity, professional societies have called for improved identification and management of health-related social needs (HRSN). The Veterans Administration (VA) currently screens Veterans for food and housing insecurity but lacks a process to screen for HRSN more broadly. We developed and piloted an HRSN screening and referral program—Assessing Circumstances & Offering Resources for Needs (ACORN). We assessed: 1) prevalence and sociodemographic characteristics associated with screening positive for HRSN; 2) Veteran acceptability of ACORN; and 3) effectiveness of tailored resource guides in helping Veterans connect with services.

METHODS: Mixed methods multi-site pilot. In the context of routine care, Veterans at 3 VA clinics in the Boston area are completing an electronic assessment encompassing 8 HRSN domains. Based on identified needs, Veterans are provided with tailored resource guides composed of VA and non-VA resources. Follow- up interviews are being conducted with a purposive sample of Veterans to understand acceptability of ACORN, effectiveness of the resource guides in connecting Veterans with services, and remaining barriers to addressing needs. Multivariable logistic and multinomial regression models will be used to identify sociodemographic characteristics associated with screening positive for HRSN. Interviews are being analyzed using directed content analysis.

RESULTS: To date, 311 Veterans have been screened. Of these, 72.4% reported ≥1 HRSN; 23.5% reported ≥3 needs. Rates of HRSN included housing (13.8%), utility (13.4%), food (11.9%), and transportation (9.1%) insecurities, as well as legal needs (11.5%) and concerns for personal safety (15.6%). Over 1/3 (36.5%) of Veterans needed employment assistance; 45.7% reported social isolation. Preliminary qualitative results show Veterans overall find screening for HRSN both acceptable and appropriate and feel the VA should continue such screening. While some Veterans found the resource guides helpful, others did not use the guides for reasons ranging from having already received needed assistance to feeling uncomfortable contacting non-VA organizations. Final analyses including sociodemographic correlates of identified HRSN will be presented.

CONCLUSIONS: Early findings show Veterans feel ACORN is both acceptable and important. Nearly 3/4 of Veterans reported at least 1 HRSN. Almost half reported social isolation, and 1 in 7 reported at least one form of material hardship. Screening for HRSN is a critical step towards connecting Veterans with needed services, identifying gaps in the current service delivery system, and informing future VA resource allocation. This pilot will provide information to better ensure equitable

and ethical delivery of health care to Veterans at risk for health-related social needs.

EVALUATING A PRIMARY CARE DELIVERY MODEL TO IMPROVE COMORBIDITY MANAGEMENT FOR CANCER PATIENTS

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BACKGROUND: There are 19 million cancer survivors in the United States, 70% of whom have co- occurring chronic conditions. Comorbidity management during active cancer treatment is often sidelined. However, comorbidities may negatively impact cancer outcomes through treatment delays and incomplete treatment completion. Care coordination between primary care physician (PCPs) and oncologists has been identified as a barrier to effective comorbidity management. To address this issue, a New York City medical center implemented a primary care model using "oncogeneralists", PCPs with cancer-specific training, embedded within oncology clinics, to manage comorbidities during active cancer treatment. The objective of our study is to describe cancer patients who utilize this primary care model and determine the model's ability to effectively manage comorbidities in cancer patients undergoing active cancer treatment.

METHODS: We used electronic medical records from a New York academic medical center that serves a diverse patient population. Cancer patients were diagnosed between 1/1/2015-12/31/2018 with follow-up through 12/31/2019. Using ICD-9 diagnosis codes, we identified adult patients with incident breast, prostate, colorectal, lung, and multiple myeloma cancers. All patients had pre-existing diabetes or hypertension at the time of cancer diagnosis. First, we characterized the model's patient population and used chi-square tests to compare characteristics between patients who received oncogeneralist care to those who did not. We then examined 1) diabetes and hypertension control and 2) emergency department (ED) visits and hospitalizations after cancer diagnosis.

RESULTS: We included 3,566 cancer patients with comorbid diabetes or hypertension. Of these, 472 (13%) received care from an oncogeneralist and 3,094 (87%) did not. Compared to patients who did not see an oncogeneralist, patients who saw an oncogeneralist were more likely to be younger (70 vs. 65 years, $p<00001$), female (51% vs. 74%, $p<0.0001$), Black (16% vs. 28%, $p<0.0001$), Spanish-speaking (5% vs. 16%, $p<0.0001$), have pre-existing diabetes (28% vs. 40%, $p<.0001$), and hypertension (74% vs. 80%, $p=0.0072$). On average, patients who saw an oncogeneralist had 12 hospital stays and 3.6 ED visits compared to 6.5 hospital stays and 2 ED visits in the non-oncogeneralist group.

CONCLUSIONS: Patients who received oncogeneralist care during active cancer treatment were more likely to be young, Black, Spanish speaking, and have diabetes. As minorities have greater comorbidity burden and are often face various barriers to managing both cancer and non-cancer conditions, improved comorbidity management may especially benefit these patients. Within the context of national efforts to reduce cancer disparities, the oncogeneralist model could be a promising care delivery innovation with potential to reduce disparities.

EVALUATING HYPERTENSION SCREENING, DIAGNOSIS, TREATMENT, AND CONTROL AT A LARGE PRIVATE HOSPITAL IN KAMPALA, UGANDA: A QUANTITATIVE ANALYSIS

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BACKGROUND: Essential hypertension (HTN) is common in Uganda, but rates of awareness, treatment, and control are poor. Prior studies report a nationwide prevalence rate of 27%, with only 8% aware of their diagnosis (Guwatudde et al, 2015). Although private sector clinics in Uganda often test and treat for hypertension, little is known about their efficacy in diagnosing and controlling this condition, even as they provide half of all chronic disease care nationwide. Recent qualitative data suggests that patients with hypertension struggle to reconcile conflicting advice on how to treat it (Lynch et al, 2019), while providers have limited time to counsel them (Green et al, 2020). But the efficacy of private clinics in achieving blood pressure control is largely unknown.

METHODS: We investigated rates of hypertension screening, diagnosis, treatment and control at Uganda's largest private hospital by analyzing electronic medical record and prescription data from July 2017 to August 2018. We calculated blood pressure screening rates among 17,777 adult patients in 39,235 outpatient primary care visits, and hypertension diagnosis, treatment, and control rates among a subset of 5,090 of these patients with at least two blood pressure checks who receive prescriptions at the hospital's pharmacy. We defined a patient as having hypertension based on either 1) two or more blood pressure readings averaging over 140 mm Hg systolic or 90 mm Hg diastolic; or 2) receiving any antihypertensive medications. We defined as controlled any patient with hypertension whose most recent blood pressure reading was under the systolic and diastolic values above.

RESULTS: 25,352 (64.7%) of visits involved a blood pressure check. Among the subset of 5,090 patients with at least two blood pressure checks and one hospital prescription as per above, 2,085 (41.0%) screened positive for hypertension: 1915 (37.6%) with elevated mean blood pressure, and 170 (3.3%) with normal blood pressure but on antihypertensive medication. 838 (40.2%) of patients with hypertension were treated with medication at least once. 223 of treated patients (26.6%) achieved blood pressure control at their most recent visit, as did 158 (12.7%) of untreated patients with hypertension. Overall, 381 of 2,085 persons with hypertension (18.3%) achieved blood pressure control at their last visit.

CONCLUSIONS: Hypertension is common and incompletely treated in this Ugandan primary care private- sector population. Although hypertension diagnosis, treatment, and control rates are greater than in the general population, this relatively high-resource cohort still lags behind blood pressure control rates in high- income countries. More research into providers' approach to patient counseling and pharmacotherapy - and patients' access to and engagement in hypertension care - may suggest initiatives to address this global disparity.

EVALUATING TELEHEALTH AS A MEDIATOR OF VETERANS HEALTH ADMINISTRATION EVIDENCE-BASED QUALITY IMPROVEMENT IMPACTS

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BACKGROUND: Although Veterans Health Administration (VHA) facilities implemented open access principles as part of the patient centered medical home (PCMH) transformation in 2010, patient ratings of access vary widely. To maximize access, VHA expanded availability of non-traditional care modalities, including telehealth. We introduced Evidence-Based Quality Improvement for PCMH transformation (EBQI- PCMH) to address PCMH implementation challenges, including access to care. Evidence shows positive EBQI-PCMH impacts on patient experiences; however, less is known about mechanisms of EBQI-PCMH effects. Telehealth may enhance the EBQI-PCMH patient experience by offering a convenient alternative to face-to-face care. This study aimed to 1) identify clinic-level correlates of telehealth use; 2) evaluate telehealth as a predictor of patient-reported access to care; and 3) evaluate telehealth as a mediator of the association between EBQI-PCMH and patient-reported access to care.

METHODS: EBQI-PCMH was rolled out in 3 phases at ten sites; seven sites were categorized as early or late adopters based on implementation start date (October 2010-May 2011 and April 2012). Three PCMH- only control sites were identified based on comparable geographical location, patient survey data availability, and monthly patient load. Patient-reported access to care was assessed using six questionnaire items from the Survey of Healthcare Experiences of Patients (SHEP); items assessed access to urgent care, routine care, and weekend, holiday, or evening (WHEN) care. We analyzed SHEP data collected from December 2012 – March 2015.

Clinic-specific ratios of quarterly telephone visits and outbound electronic messages (OMs) were utilized to assess telehealth use, with total quarterly clinic visits as the denominator. We used correlation analyses to test associations between telehealth visit ratios and clinic characteristics (community vs. medical center, nurse visits, same day visits, patient load). We used multilevel regression analyses to test telehealth as a predictor of patient-reported access to care, and to test telehealth as a mediator of EBQI-PCMH effects.

RESULTS: The sample included 19,076 patients seen in EBQI-PCMH or control-site primary care clinics (*M* age= 65.88, 66% White).

Telephone visits were negatively correlated same-day visits ($p<.05$) and patient loads ($p<.05$). OMs were positively correlated with same day visits ($p<.01$). Rates of telephone visits and OMs were higher for community centers than medical centers ($p<.01$). Telephone visits were positively associated with access to urgent, routine, and WHEN care ($p<.05$). OMs were negatively associated with access to urgent care ($p=.02$). Telephone visits partially mediated the association between EBQI-PCMH and WHEN access ($p=.02$).

CONCLUSIONS: This study provides preliminary evidence supporting telehealth as a component of VHA quality improvement efforts.

EVALUATING THE FEASIBILITY OF CAPTURING A CORE SET OF HARMONIZED DEPRESSION OUTCOME MEASURES IN PRIMARY CARE AND MENTAL HEALTH PATIENT REGISTRIES

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BACKGROUND: Major depressive disorder is a significant public health problem in the United States that reduces quality of life for millions of individuals. Many critical questions exist about depression treatment and outcomes, and new, efficient approaches are needed to address these questions and improve patient outcomes. Patient registries already collect large amounts of data on depression treatment and outcomes from diverse patient populations and could be useful for answering some of these questions. Yet, differences in the data collected in each registry makes it challenging to aggregate or compare data. Collection of a core set of harmonized outcome measures across depression patient registries would yield a robust data infrastructure to answer questions about depression treatment and outcomes in the real-world setting.

METHODS: The Agency for Healthcare Research and Quality (AHRQ) recently supported an effort to harmonize depression outcome measures across patient registries and clinical practice. The harmonized measures use the PHQ-9, along with other clinical data, to measure and monitor depression outcomes over time at the patient level. Implementation of these measures in patient registries and in the clinical practice setting would support both measurement-based care using the PHQ-9 and development of data infrastructure to address new depression-related research questions. The purpose of this project was to assess the technical and operational feasibility of implementing the harmonized measures in two registries: the PRIME Registry, sponsored by the American Board of Family Medicine, and PsychPRO, sponsored by the American Psychiatric Association.

RESULTS: The feasibility assessment identified technical barriers related to the availability of data, particularly for measures such as suicide ideation and behavior where data may be entered in notes as opposed to in structured fields. Cause of death is also challenging to capture in the registry setting. Operational issues include developing workflows for collection of the PHQ-9 at consistent intervals, review of the outcome measures, particularly when patients report worsening symptoms, and developing appropriate language and processes for patients who indicate suicide ideation on the PHQ-9 outside of an office visit. These issues will be addressed in the second phase of this project, which will focus on implementation of the measures at twenty pilot sites.

CONCLUSIONS: While many efforts have developed harmonized or core sets of outcome measures, few efforts have worked with registries and health systems to understand the impact and potential challenges of implementing the harmonized measures. This project assessed feasibility and identified potential barriers that may be useful for informing other harmonization initiatives and implementation efforts.

EVALUATING THE IMPACT OF HOUSING INSECURITY ON HOSPITALIZED PATIENTS: A QUALITATIVE STUDY

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BACKGROUND: Housing insecurity, which includes both frank homelessness and vulnerable housing, affects a substantial proportion of hospitalized patients. There are well-described disparities in patient care for patients experiencing homelessness compared to those who are not homeless, including discrepancies in length of stay, readmission, and mortality rates. Outcomes for patients who are vulnerably housed are less clear, though some data suggests that patients across the spectrum of housing insecurity experience poorer outcomes. Few studies have assessed how housing insecurity impacts hospitalized patients. This qualitative study

explores hospitalized patients' perspectives regarding how housing insecurity affects their health and health care experiences.

METHODS: We identified a random sample of inpatients on General Medicine services at two acute-care hospitals in Denver, Colorado. Following informed consent, participants were screened for housing insecurity. If participants screened positive for housing insecurity, an in-depth, semi-structured interview was completed. Audio-recordings of interviews were transcribed, inductively coded, and qualitatively analyzed via phenomenological approach.

RESULTS: To date, a total of 18 of 28 eligible patients have completed interviews. Of these, nine were vulnerably housed while the remainder of participants were frankly homeless. All participants surveyed believed their current housing situation affected their health. One participant reported: "Sleeping in the car, I am too tall to be comfortable. I'm only 5'8", but still, laying sideways is a no-no" … "I am moving all night, shifting, trying to get comfortable. I just had a right hip replacement, so that's very difficult to do." Homeless participants spoke to the inherent hardships of homelessness, and the difficulties recovering after hospitalization. A subset of patients expressed that they do not expect their housing situation to be assessed during hospitalization, and had low expectations for the provision of resources. For example, one participant noted: "I don't really think them (doctors) knowing about my housing situation's really going to fix my health." … " I don't really care for them to know about my housing."

CONCLUSIONS: Emerging themes from this qualitative study suggest that patients experiencing housing insecurity believe that their housing status strongly impacts their health and may affect healthcare utilization. Despite this, some participants believed it is not the responsibility of inpatient providers to screen patients for housing insecurity, and have low expectations for resources provided during hospitalization. Consideration of these perspectives is crucial to inform the development of effective interventions to address the significant known disparities among patients who are housing insecure.

EVALUATING THE REAL-WORLD CLINICAL APPROACH TO THE DIAGNOSIS AND CODING OF PATIENTS WITH HYPOACTIVE SEXUAL DESIRE DISORDER

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BACKGROUND: Hypoactive sexual desire disorder (HSDD) is defined as lack of sexual desire accompanied by distress. While HSDD affects 10% of US women, there is limited awareness of HSDD symptoms and appropriate application of relevant billing codes among physicians. The objective of this study is to understand how physicians diagnose and code patients with HSDD.

METHODS: An IRB-approved 30-minute web-based survey was administered to 154 physicians. Screening criteria required physicians to have practiced medicine >3 and <45 years, manage >150 female patients per month, manage ≥5 patients diagnosed with female sexual dysfunction (FSD) each month, and have a baseline HSDD awareness level >5 (on a 9-point awareness scale). Physicians were exposed to 6 blinded patient profiles: pre- and postmenopausal HSDD patients with and without comorbidities and 2 non-HSDD patient profiles (other FSDs). HSDD symptoms described in the profiles were consistent with the Decreased Sexual Desire Screener, a validated HSDD diagnostic instrument. Physicians were exposed to 1 patient profile at a time and were asked to diagnose and code it.

RESULTS: Of the 154 physicians included in the study, 32% were obstetricians/gynecologists (OB/GYNs), 32% were psychiatrists, and 35% were primary care physicians (PCPs, which included family medicine and internal physicians). They managed a mean number of 269 female patients per month, among which 36 had any type of FSD, of which 11 had HSDD. From the profiles with or without comorbidities, 54% and 40% were not diagnosed with HSDD as the primary condition; and 42% and 31% were miscoded, respectively. For profiles without comorbidities, the top reason for physicians diagnosing but not coding for HSDD was that they needed more information about HSDD symptoms (47%). The primary reason for diagnosing but not coding for HSDD for the profiles with comorbidities was the prioritization of treatment for comorbid conditions such as anxiety or depression (37%). Among the non-HSDD profiles, 16% were misdiagnosed and miscoded as HSDD, primarily due to a lack of understanding of different FSDs (51%).

CONCLUSIONS: Patients with HSDD and comorbidities are more likely to be misdiagnosed and miscoded due to confusion with comorbidities and other FSDs, uncertainty about diagnosis, and treatment prioritization of other comorbidities. More education is needed to help physicians better identify HSDD symptoms, and appropriately diagnose and code the condition.

EVALUATION OF A NATIONAL CARE COORDINATION PROGRAM TO REDUCE UTILIZATION AMONG HIGH-COST, HIGH-NEED MEDICAID BENEFICIARIES WITH DIABETES

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BACKGROUND: Medical, behavioral, and social determinants of health are each associated with high levels of emergency department (ED) visits and hospitalizations. There is no consensus on the optimal interventions to address medical, behavioral, and social determinants of health among high-cost, high-need patients. In this project, we planned to evaluate a care coordination program designed to provide combined "whole-person care," integrating medical, behavioral and social support for high-cost, high-need Medicaid beneficiaries by targeting access barriers and social determinants.

METHODS: We conducted an individual-level interrupted time series with a comparator group, using person-month as the analysis unit. Our patient population included 42,214 UnitedHealthcare Medicaid beneficiaries (194,834 person-months) age >21 with diabetes, with Temporary Assistance to Needy Families, Medicaid expansion, SSI without Medicare, or dual Medicaid/Medicare in 15 states. Beneficiaries were eligible for the care coordination program if they were 1) identified as high-cost, high-need (i.e., in the top 5% of Medicaid spend) based on utilization over a rolling 12-month window and predicted to be in the top 5% of spend in the following 12 months by a risk model developed by the health insurer, or 2) admitted to the hospital and flagged to be at high risk for 30-day readmission. Our outcome measures were any hospitalizations and any ED visits in a given month. Covariates of interest included an indicator for intervention versus comparator group, and the interactions of the time period dummy and linear time trend with the intervention indicator.

RESULTS: Overall, six of the eight comparisons were not statistically significant. Among SSI beneficiaries, we observed a larger projected decrease in ED visit risk among the intervention sample versus the comparator sample at 12 months post enrollment compared to pre-enrollment (difference-in-difference/DID: -6.6%; 95% CI: -11.2%, -2.1%). Among expansion beneficiaries, we observed a greater decrease in hospitalization risk among the intervention sample versus the

comparator sample at 12 months post enrollment (DID: -5.8%; 95% CI: -11.4%, -0.2%).

CONCLUSIONS: A care coordination program designed to reduce utilization among high-cost, high-need Medicaid beneficiaries was associated with fewer ED visits and hospitalizations for patients with diabetes in selected Medicaid programs but not others; however, there was no strong, consistent pattern of reduction in high-cost health events across all outcomes and populations. Our results suggest that identification and enrollment of high-cost, high-need Medicaid beneficiaries into a care coordination program may not always be sufficient to result in change in ED and hospital utilization.

EVALUATION OF A PEER COACH-LED INTERVENTION TO IMPROVE PAIN SYMPTOMS (ECLIPSE)

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BACKGROUND: Chronic pain requires consistent self-management. Patients have identified the importance of encouragement, accountability, and motivation to continue in daily self-management. Given that clinicians are not always available to provide such support, placing a peer coach in a similar role might lead to similar benefits. Using peer coaches is an innovative approach to increasing the reach and adoption of pain self-management, potentially benefitting more patients. While peer support has been shown to be effective in other chronic conditions, research has largely neglected peer support for chronic pain management. ECLIPSE was a randomized controlled trial to test the effects of peer supported pain self- management on pain and other outcomes.

METHODS: ECLIPSE compared a 6-month peer coaching self-management intervention to a control group (2h pain self-management class). Intervention patients were paired with a peer coach for 6 months; pairs were asked to talk 2x/month. Coaches had prior self-management training or were recommended by their providers, and all attended a training session. The primary outcome was total pain, measured by the Brief Pain Inventory. Secondary outcomes included anxiety, depression, pain catastrophizing, patient activation, self-efficacy, social support, health-related quality of life, and healthcare utilization, including opioid prescriptions. Primary analyses employed linear mixed models fit to all time points with appropriate random effects. Exploratory analyses included examining whether discontinuing opioids during the study was a moderator of intervention effects.

RESULTS: 215 patients enrolled: 120 intervention, 95 control group. 63% of patients met 5 or fewer times (out of the 12 prescribed) during the 6-month intervention. There was not a statistically significant difference between groups on pain or any secondary outcomes at 6 or 9 months. Opioid discontinuation appeared to moderate intervention effects: Intervention patients whose opioids were discontinued during the study experienced statistically significant improvements in pain, self-efficacy, physical function, and pain catastrophizing.

CONCLUSIONS: Peer coaching did not result in improvements in pain and related outcomes compared to the control group. Intervention adherence helps to explain this lack of effect, with 63% having less than half the recommended contacts. ECLIPSE was intentionally a volunteer coaching model. However, it is possible that using a more "professionalized" model of peer coaching, in which coaches are hired as members of the healthcare team, might lead to higher adherence and better outcomes. It is notable that intervention patients whose opioids were discontinued during the study benefited from the intervention. This suggests that peer coaching might be a useful strategy to include in opioid tapering programs.

EVALUATION OF A STUDENT-CREATED SOCIAL DETERMINANTS OF HEALTH CURRICULUM

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BACKGROUND: Social determinants of health (SDH) play a key role in health outcomes. Medical schools have increasingly incorporated SDH into their curriculums. However, these efforts often focus on teaching epidemiology rather than application, resulting in many students feeling underprepared to respond to SDH in clinical settings. We developed and evaluated a guide and training session for students to identify and address SDH on clerkships.

METHODS: A needs assessment was performed with upper-year medical students to inform the creation of an SDH guide. All students received this guide, which included screening questions and local resources for housing, food, utilities, transportation, and intimate partner violence. We conducted 2 optional 1.5-hour case- based sessions for pre-clerkship students to practice using the guide for screening and referral. Students were surveyed before, after, and 6 months later. Friedman tests were used to compare Likert scale scores, and Wilcoxon signed-rank tests with continuity correction were used for post-hoc analyses. Qualitative responses to case scenarios were analyzed to evaluate screening efficacy and identify themes.

RESULTS: More than one third of eligible students (41/120) attended the session. A total of 31 students (76%) completed both pre- and post-session surveys, and 12 students (29%) completed all three surveys. There was a significant difference in students' confidence in identifying patients with SDH needs (X^2_F (2) = 10.186, p = .006) and referring patients to appropriate resources (X^2_F (2) = 14.444, p = .001) before vs after the session. Confidence in identification of and referral for SDH increased both post-session and 6 months later, compared to pre-session. Qualitative analysis of the efficacy of student-generated screening questions was 67% (78/115) pre-session, 95% (60/63) post-session, and 79% (45/57) in the 6-month follow-up survey. Students valued case-based roleplays ("The scenarios … helped me figure out what I would say if I got pushback") and sharing screening strategies with others ("[I liked] debriefing scenarios to see how different people handled difficult discussions"). Students wanted more training on responding to SDH needs ("I feel somewhat prepared to ask about social determinants of health, but have very limited knowledge of resources to offer/when to refer to counselors/social work or what I personally can do").

CONCLUSIONS: Medical students who attended an optional SDH training session reported increased confidence in both identifying and referring for SDH needs. Students appreciated the role-play component of the session, and desired further information about how to respond to positive screens. Efficacy of screening questions increased post-session but decreased after 6 months, supporting need for spaced review. This case- based session is now required for all students prior to starting clinical clerkships with plans for further evaluation.

EVALUATION OF FIRST YEAR INTERNAL MEDICINE RESIDENTS' BASELINE HEALTH POLICY KNOWLEDGE

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BACKGROUND: Health policy in the United States is rapidly changing. Patients look to physicians for assistance in navigating the complex healthcare system, but not all physicians receive formal training in US health policy. Several professional groups, including ACGME, AMA, and ABIM have called for increasing physician education in this area. Some medical schools and residency programs have developed health policy curricula, yet the baseline knowledge of internal medicine residents in health policy is unknown. The aim of this study is to evaluate first-year internal medicine residents' baseline knowledge of health policy at the time of entry into residency.

METHODS: A 32-question multiple-choice examination was created and administered to residents during their internship orientation week. All 77 first-year internal medicine, transitional, and preliminary year interns at a single large academic center were considered eligible for participation. These interns come from a broad range of medical schools from the US and abroad. 74 interns (96%) completed the examination. The questions evaluated knowledge of specific content areas within health policy including Medicare, Medicaid, private insurance, social determinants of health, as well as health economics, cost, and quality. The social determinants of health questions were adapted from a previously validated survey tool used to evaluate resident's knowledge within that area. The test was administered on paper and data were then entered into RedCap software for analysis. Scores were compared using Tukey's method for multiple comparisons.

RESULTS: Interns scored an average of 65% on the exam. Interns scored statistically significantly higher on questions regarding health economics, cost, and quality (77%) and Medicaid (70%) compared to questions on Medicare (60%), private insurance (60%), and social determinants of health (58%). The 55% of interns who reported any prior health policy experience scored higher overall (69%) compared to interns without any past experience (59%), p=0.001. Interns who were born in the US scored significantly higher (68%) compared to those not born in the US (58%), p=0.002 for these US-centric questions. There was no difference in scores between categorical (66%) and preliminary- or transitional-year interns (64%), p=0.575.

CONCLUSIONS: Overall, we found that interns do not start their residency with high levels of health policy knowledge. Despite widespread recognition of the importance of education in this area, almost half (45%) of interns began their residency without any prior health policy experience or education. This highlights an area of opportunity for future educational focus. Special attention should be given to areas of struggle, including social determinants of health, the private insurance market, and Medicare.

EVALUATION OF GENERAL MEDICINE FACULTY FROM THE PERSPECTIVE OF THEIR PATIENTS AND RESIDENTS.

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BACKGROUND: Academic generalist faculty routinely have their interpersonal qualities and knowledge/skills evaluated by patients and students. These ubiquitous ratings rely on patient-physician or physician-learner interactions in the forms of social media and formalized evaluations. We sought to assess whether there was an association between these different physician rating systems in order to determine if underlying physician characteristics transcend the rating method or venue.

METHODS: We identified General Medicine clinical faculty (n=46) who received 5 or more evaluations on any of 3 selected high volume social media physician rating websites, were evaluated by patients on the Clinician & Group Consumer Assessment of Healthcare Providers and Systems (CG-CAHPS) rating, and were recently evaluated by our resident physicians. To test for correlation, we rescaled the data, and used Box and Whisker plots to compare rescaled medians, 25th, and 75th percentiles of each set of evaluations and then utilized the re-scaled distributions to assess for associations between evaluation methods. To further test for correlation, we segmented the number of scores of each set of evaluations into terciles and compared each set of evaluations with agreement in the bottom, middle and top 3rd of the different tools.

RESULTS: Faculty scored the highest on evaluations completed by residents (med = 4.77) and had the lowest range between the upper and lower quartiles among responses. In contrast, Faculty scored the lowest on social media evaluations and the largest range between the upper and lower quartiles. In addition, in terms of agreement of tercile placement, the tools disagreed 74% and 85% percent of the time when comparing 2 and 3 categories respectively. The results showed no association with the relative ranking of faculty between evaluation methods.

CONCLUSIONS: The 3 tools compared different perspectives of General Medicine Faculty. We conclude that the tools are not able to highlight a uniform signal in faculty ratings across the types of evaluations. It is important to continue to evaluate faculty domains that include knowledge, interpersonal and professional skills. We need to develop a better understanding of the important patient and learner domains that are captured by the various evaluative tools currently used in practice to provide effective feedback to our faculty.

EVALUATION OF SKIN CANCER DIAGNOSIS FREQUENCY IN VA TELEDERMATOLOGY ENCOUNTERS

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BACKGROUND: The Veterans Affairs (VA) Office of Rural Health (ORH) Enterprise Wide Initiative (EWI) was created in fiscal year (FY) 2017 to provide funding to increase rural veteran access to dermatology care through store- and-forward teledermatology (SFT). SFT allows primary care providers to digitally transmit patient clinical history and photographs to dermatologists at tertiary VA medical centers for evaluation, diagnosis and treatment recommendations. Little is known about the diagnostic outcomes of the national VA SFT program, and no previous studies have examined whether VA sites that receive EWI funding exhibit different diagnosis patterns compared to sites without EWI funding. The primary objectives of this study were to conduct the first national description of skin cancer diagnoses associated with teledermatology encounters in VA and compare SFT diagnosis patterns at EWI grantee sites to those at non-grantee sites.

METHODS: Diagnosis codes associated with SFT teledermatology encounters conducted between fiscal year (FY) 2016 and 2019 were obtained from the VA administrative records and a descriptive statistical analysis was conducted.

RESULTS: Nationwide, over FY16-19, a total of 388,045 unique veterans (91% male, mean age 65.9 years, 41.2% rural) had a VA teledermatology encounter, increasing from 90,450 in FY16 to 122,455 in FY19. Within this population, 445 (0.1%) had a teledermatology

diagnosis of melanoma and 11,822 (3.0%) had a diagnosis of keratinocyte carcinoma (KC). Neoplasm of uncertain behavior (NUB), a diagnosis commonly given to unbiopsied skin lesions suspicious for skin cancer, was the most common diagnosis in the study population, associated with 99,701 veterans (25.7%). Actinic keratosis (AK), a precancerous skin diagnosis, was the second most common diagnosis, given to 40,505 (10.4%) veterans. Grantee sites demonstrated patterns of teledermatology-associated skin cancer diagnoses that mirrored non-grantee sites and the national VA. Of the 132,735 veterans seen by teledermatology at grantee sites between FY16-19, 218 (0.2%) had an associated diagnosis of melanoma, 4,947 (3.7%) had a diagnosis of KC, 29,800 (22.4%) had a NUB diagnosis, and 14,465 (10.8%) had an AK diagnosis. The proportion of veterans with melanoma, KC, NUB and AK diagnoses remained stable each year from FY16 to FY19 nationally, at EWI grantee sites and non- grantee sites.

CONCLUSIONS: The national VA teledermatology program is being used to diagnose significant numbers of veterans with skin cancer, lesions suspicious for skin cancer and precancerous skin lesions. Future work will examine how often lesions diagnosed via teledermatology as NUB were subsequently biopsied and given a biopsy-proven skin cancer diagnosis. Diagnosis patterns at EWI grantee sites were similar to sites without EWI funding and the national VA over the entire study period, as well as year by year. Additional study is needed to better understand the impact of EWI grants on the diagnosis patterns seen at grantee sites.

EVALUATION OF SUSTAINED PRIMARY CARE PROVIDERS' ADOPTION OF AN ESTABLISHED ECONSULTS PROGRAM AT A TERTIARY PRIMARY CARE CENTER

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BACKGROUND: Electronic consultations (eConsults) were developed as a way to mitigate the increasing demand for specialists, which has negative cost consequences for patients and health systems. eConsults are an asynchronous documented form of communication that enable primary care providers (PCP) to seek advice from specialists. Most evaluations of eConsult programs focus on short-term program adoption after the initial implementation phase. As eConsult programs increase in popularity, it is essential to understand what facilitates program adoption. The focus of this study was to identify factors that promote the sustained use of long-established eConsult programs. This study examined PCP perceptions of a five-year eConsult program within a tertiary primary care center.

METHODS: This cross-sectional study surveyed PCP at a single U.S. based tertiary primary care center in July 2019. The survey collected information on providers' demographics and opinions regarding the aspects of the eConsults program. Bivariate analyses with the dependent variable as the frequency of use and the independent variables as demographics and opinions of the program were performed using the Chi-square or Fisher's Exact Test and Mann-Whitney U-Test for categorical and continuous variables, respectively.

RESULTS: 69 PCP responded to the survey. Attending physicians (67%) had the greatest representation among high frequency users. Most of the providers had positive sentiments regarding eConsults (70.4%). Key program facilitators that high frequency users strongly agreed with were the program's educational value ($p<0.001$), ability to reduce specialty visits ($p<0.005$), and capacity to improve their relationships with patients ($p<0.005$). The top barriers that low frequency users identified with were inadequate knowledge on how to use the templates ($p<0.001$) and disruption of workflow ($p<0.001$). Notably, the majority of PCP endorsed that requiring patient consent before performing an eConsult would be a barrier and this association did not vary significantly based on providers' frequency of using eConsults ($p=0.10$).

CONCLUSIONS: Our aim was to examine the factors that differentiate providers based on their usage patterns. We observed that program satisfaction among high utilizers may be attributed to their appreciation for the program's educational value and positive impact on patient care management. Future efforts to augment the adoption of eConsults would benefit from targeting technical support and workflow integration since low frequency users cited those as barriers. Reimbursement requirements to obtain patient consent prior to using eConsults may be a potential barrier. Overall, these findings highlight that eConsults are viewed favorably after long-term establishment. This research contributes to the field of telehealth by identifying common facilitators and barriers endorsed by providers that can help refine the implementation of eConsult programs within health systems.

EVALUATION OF THE ASSOCIATION BETWEEN 30-DAY READMISSIONS AND RECEIPT OF HOME HEALTH SERVICES IN GERIATRIC PATIENTS

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BACKGROUND: Due to focus on reducing readmissions, hospitals are incentivized to discharge high-risk patients to skilled nursing facilities (SNF) or offer skilled care such as home health services (HHS). HHS has favorable costs and patient satisfaction; however, outcomes are mixed. Existing studies compare HHS and SNF outcomes using national Medicare databases, but institution-level analses may better elucidate specific factors driving discharge practices and outcomes. Motivated by an observation that UCLA HHS expenditures in the Medicare Shared Savings Program are higher than a CMS-reported national average, we evaluate whether receipt of HHS is associated with lower likelihood of hospital readmission.

METHODS: This retrospective cohort study used electronic health records for older adults discharged from UCLA hospitals with HHS or "home with self-care" (HSC), from March 2017 to April 2018. We examined unadjusted sociodemographic and clinical correlates of discharge status (HHS vs HSC) and constructed a logistic regression model of readmissions adjusting for sex, age, surgical admitting service, race, and LACE+ score (readmission risk score assigned at discharge based on length of stay, admission acuity, comorbidities, 6-month ED visit count, and associated factors).

RESULTS: Of the 6,848 patients age >65 years discharged during the study period 45% (3,106) were HSC and 28% (1,923) were HHS. The remainder went to SNF (16%) or other (10%, including death, hospice). Compared to those discharged to HSC, patients with HHS were older (77.0 vs 74.4 years), more often female (29.4% vs 23.6%) and single (43.5% vs 37.4%), assigned higher average LACE+ scores (53 vs 51), and readmitted at a higher rate (13% vs 10%), $p<0.05$ for all. There was no difference between the groups in race/ethnicity. In adjusted analyses, patients discharged to HHS were more likely to be readmitted within 30 days compared to those discharged to HSC (OR=1.22, $p=0.034$). 54% of HHS discharges were not high-risk by LACE+.

CONCLUSIONS: Post-acute UCLA patients receiving home health services were more likely to be readmitted within 30 days compared to patients discharged home without HHS. Our analysis indicates that even within one institution or department, the population discharged to HHS is highly variable and the outcomes, as measured by 30-day readmissions, are worse compared to discharge home without HHS. Coupled with the observation that HHS at UCLA exceeds national averages, our findings

support the need for more specific guidelines to inform HHS referrals at discharge.

EVIDENCE REVIEW: IMPLEMENTATION OF CARE COORDINATION MODELS TO REDUCE HOSPITALIZATIONS AND EMERGENCY ROOM VISITS

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BACKGROUND: Complexity in healthcare delivery and care fragmentation lead to adverse outcomes, particularly for certain vulnerable groups. However, it remains unclear whether care coordination (CC) interventions can address these issues and help reduce acute care utilization. We conducted an evidence review to better understand which CC models were effective and where they were implemented. We sought to summarize key elements of CC models, describe healthcare settings, and identify tools or approaches used to guide implementation and evaluation.

METHODS: To summarize the evidence addressing this broad topic area, we identified recent systematic reviews (SR) that examined the effect of CC interventions on hospitalizations and/or emergency room (ER) visits. We searched MEDLINE, CINAHL, Embase, Cochrane database, VA Evidence Synthesis Program, and AHRQ Evidence-based Practice Center reports from 2015-2019. Two individuals screened and conducted full-text review to identify eligible SR. All eligible SR underwent quality ratings using modified AMSTAR 2.

Data abstracted included: number and characteristic of included studies; target population(s); description of CC models; summary effects on hospitalizations, ER visits, and/or patient experience; and models or components reported as important for effectiveness. We undertook qualitative synthesis of SR results. Among primary studies included by eligible SR, we also abstracted data from relevant randomized controlled trials (RCT) and quasi-experimental observational studies conducted in the US.

RESULTS: Of 1589 unique citations, 16 eligible SRs were identified; fourteen examined care or case management, and two addressed models of intensive primary care. Twelve SR were high or medium quality, and all included US studies. SR included a wide variety of CC models, and those SR which classified interventions used broad definitions for categories or elements. No SR on case management found consistent reductions in hospitalizations or ER visits, although most described some studies that showed positive effects. SR on intensive models of primary care found that home based primary care reduced hospitalizations and ER visits, although the evidence was mostly from observational studies.

Eligible SR included 272 unique primary studies; we identified 18 RCT and 9 observational studies that were relevant. Among these, 4 RCT and 7 observational studies reported reductions in hospitalizations and/or ER visits. Studies were mostly conducted at large academic health systems (in urban settings) or public hospitals often serving poor and uninsured populations. Few studies reported on specific tools and approaches used to assess implementation.

CONCLUSIONS: CC models have inconsistent effects on reducing hospitalizations and ER visits. It remains unclear how CC models should be adapted to different healthcare settings and which tools or approaches are most helpful for implementation.

EXAMINATION OF PATIENT CHARACTERISTICS ASSOCIATED WITH READMISSION PRIOR TO POST-DISCHARGE FOLLOW-UP VISIT

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BACKGROUND: Post-discharge follow-up visits are designed to aid the transition to home or rehab facility after hospitalization and have been associated with decreased readmission. Despite scheduling post-discharge follow-up visits, we have identified patients who were readmitted prior to their follow-up visits. To better understand these early readmissions, we examined these patients' demographic characteristics, primary discharge diagnosis, LACE (Length of stay, Acuity of admission, Charleston comorbidity index, and Emergency department use in the prior 6 months) index, and reasons for readmission.

METHODS: We conducted a retrospective chart review on patients at a large metropolitan health system who were readmitted prior to their scheduled discharge follow-up appointment in 2018. First, we described patients' demographic characteristics (race, gender, age, and primary language), categorized the readmission risk based on the LACE index (0-4 = low, 5-9 = moderate, and >9 = high risk), and calculated the average number of days between index visit discharge and readmission. Next, we compared the primary diagnoses between the index hospitalization and readmission and assessed whether patients were readmitted for the same diagnosis and/or because their primary complaints were not adequately addressed during the index hospitalization using a chi-squared test.

RESULTS: This study included 162 patients who identified as 64% non-Hispanic White (n=104), 16% Black (n=26), 7% Asian (n=12), and 12% Other (n=20). Patients on average were readmitted within 7.3 days; 67% within 1 week and 86% within 2 weeks. The average LACE index was 11.2 with 4% low, 23% moderate, and 73% high risk. One-third (n=50, 31%) were readmitted with the same diagnosis as the index hospitalization and 22% (n=35) were readmitted due to inadequate management of the patients' primary complaint during the index hospitalization. A higher percentage of patients readmitted with the same diagnosis (48%, 24/50) were due to inadequate management of the primary complaint compared to those readmitted with a different diagnosis (10%, 11/112) ($p<0.001$). We also identified that having a non-English primary language (44% vs 19%; $p=0.02$) and being a racial minority (29.3% vs 17.3%; $p<0.001$) were associated with being readmitted due to inadequate management of primary complaint.

CONCLUSIONS: The majority of our study population had a high risk of readmission. While most post-discharge follow-up visits were scheduled within 2 weeks of discharge, the average time to readmission was only 7 days. We also found that patients were frequently readmitted for the same diagnosis as the index visit and identified associated factors (failure to address the patient's primary concern, limited English proficiency, and being racial minorities). Our study suggests that earlier post-discharge follow-up, addressing patients' complaint, and use of interpreters should be incorporated in discharge planning to reduce high readmission risks.

EXAMINATION OF POST-DISCHARGE FOLLOW-UP APPOINTMENT STATUS AND 30-DAY READMISSION

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BACKGROUND: Outpatient and ambulatory follow-up appointments are intended to evaluate and monitor patients' recovery following a hospitalization and adjust treatments that were commenced during hospitalization. Many studies examining post-discharge follow up visits and 30-day readmission, mainly using billing data, are only able to ascertain whether a patient arrived at a follow-up appointment or not. As patients who have a scheduled appointment may differ substantially from those with no appointment scheduled, this is an important element to consider in readmission risk assessments. The objective of this study is to examine the impact of having post-discharge follow-up appointment status, specifically, 1) having a scheduled appointment and 2) arriving to said appointment on 30-day readmission.

METHODS: This is a cross-sectional analysis of patients hospitalized at 13 hospitals in an Integrated Delivery Network in 2018 and their ambulatory appointments in that same network within 30 days of discharge. We included 50,772 patients who had both an inpatient admission and an outpatient appointment with the health system within 18 months prior to their admission. Primary outcome was readmission within 30-days post-discharge. We used the chi-squared test for categorical variables and Kruskal-Wallis for continuous variables across all groups to test for differences by appointment scheduled status and appointment arrival status. For comparing readmission risk of a patient's follow-up status, we used a Cox proportional hazard model to calculate the effect of appointment status on the time to 30-day readmission.

RESULTS: There were 32,108 (63.2%) patients with scheduled post-discharge follow-up appointments and 18,664 (36.8%) patients with no follow-up; 28,313 (88.2%) patients arrived, 3,149 (9.8%) missed, and 646 (2.0%) were readmitted prior to their scheduled appointments. Overall 30-day readmission rate was 7.3%; 6.0% [5.75-6.31] for those who arrived, 8.8% [8.44-9.25] for those without follow-up, and 10.3% [9.28-11.40] for those who missed a scheduled appointment ($p < 0.001$). After adjusting for covariates, patients who arrived at their appointment in the first week following hospital discharge were significantly less likely to be readmitted (HR 0.60 [0. 45 – 0.76], $p < 0.001$) compared with those not having any follow- up. However, this reduced risk was no longer significant at 14 days (1.11 [0.98 – 1.24], $p = 0.10$) and there was increased risk at 21 (HR 1.26 [1.12 – 1.40], $p < 0.001$) and 28 days (HR 1.37 [1.23 – 1.51], $p< 0.001$).

CONCLUSIONS: Patients who arrived at post-discharge appointments had a reduced risk of 30-day hospital readmission compared with patients who missed their follow-up visits or patients with no follow-up scheduled. This is only significant during first week post-discharge, suggesting that coordination of early care, preferably within one week of discharge, is critical in reducing 30-day readmissions.

EXAMINATION OF RESIDENTS' PERCEPTIONS OF CROSS-CULTURAL CARE AND THEIR CAREER INTEREST IN PRIMARY CARE OR COMMUNITY HEALTH

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BACKGROUND: The shortage of primary care physicians in the United States continues to grow with projections estimating a lack of 20,000-50,000 in the next decade. Resident physicians cite inability to address patients' social needs as one reason for not pursuing primary care. We investigated residents' career interest in primary care or community health and associations with their perceived preparedness to provide cross-cultural care and barriers they identify to cross-cultural care.

METHODS: We conducted a cross-sectional, retrospective analysis of a survey of internal medicine, pediatrics, and family medicine residents in the 2018-2019 academic year. Our primary outcome was resident career interest in primary care (PC) or community health (CH). We examined 8 domains of cross-cultural preparedness and 8 domains of perceived barriers to the provision of cross-cultural care. We described residents' sociodemographic and cultural characteristics by high career interest in PC or CH, defined as 80% or more on a continuous scale. Then, we examined correlations among high career interest in PC and CH and 1) preparedness and 2) barriers. Finally, we examined differences in perceived preparedness and barriers based on residents' characteristics and backgrounds.

RESULTS: The study population was diverse: 36.8% non-Hispanic White, 6.5% non-Hispanic Black, 7.7% Hispanic, 37.4% non-Hispanic Asian, and 11.6% Other. Of the 155 residents, 17 residents expressed high career interest in PC and 16 residents in CH. A quarter (27.7%) identified as coming from disadvantaged backgrounds, which was also associated with high career interest in CH ($p<0.01$). Racial/ethnic minorities, specifically non-Hispanic Blacks, were associated with high career interest in PC ($p<0.01$) and CH ($p<0.01$). Almost half (44.4%) of family medicine residents had high career interest in PC versus only 2.4% of internal medicine and 17.7% of pediatric residents (p-value<0.01). Preparedness to provide one domain of cross- cultural care correlated with preparedness to provide another (p-values<0.05). A higher percentage of residents coming from disadvantaged backgrounds identified training, lack of role models, and attitudes of attendings as barriers compared to those who were not (all p-values<0.05).

CONCLUSIONS: Resident characteristics, such as identifying as non-Hispanic Black or being a family medicine resident, were associated with high career interest in PC or CH. Perceived preparedness to provide one domain of cross-cultural care was correlated with being prepared in others, and this finding persisted for barriers to cross-cultural care. A higher proportion of residents from culturally diverse backgrounds identified barriers compared to their colleagues. With the majority of all health outcomes linked to social factors, preparing residents to provide cross-cultural care will be an important step towards addressing social determinants of health and reducing health disparities in the future.

EXAMINING MISSED APPOINTMENTS IN A STUDENT-RUN FREE CLINIC

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BACKGROUND: Missed appointments hinder effective patient care. Nationally, missed appointment rates vary from 5-30%, and data from student-run free clinics is limited. The Weill Cornell Community Clinic (WCCC) is a student-run free clinic that provides comprehensive multidisciplinary care to uninsured patients. WCCC does not double-book

patients and volunteers provide reminder calls to all scheduled patients. Therefore, missed appointments limit the number of patients served and wastes resources. Here we explore factors associated with missed appointments.

METHODS: All patients with a scheduled appointment in 2019 were included. Missed appointments were defined as a no-show without advanced notice. Demographic information was collected for all patients with missed appointments (gender, age, distance from the clinic, language). Descriptive statistics were used to characterize patients with missed appointments during the study period.

RESULTS: The total number of scheduled appointments was 527. There were 134 missed appointments by 84 patients during the study period. Among patients with missed appointments, 46% (n=39) missed 1 appointment, 23% (n=19) missed 2 appointments and 31% (n=26) missed ≥3 appointments. Of the 26 patients who missed ≥3 appointments and were later unable to be reached by the clinic, 31% (n=8) received a notification letter from the WCCC (see Table 1.) All 8 patients were contacted over the phone (with translators if applicable). Of these, 3 patients contacted WCCC after receiving the notification letter, and 1 patient reestablished care at WCCC.

CONCLUSIONS: Our missed visit rates are similar to other primary care clinics at 25% vs. 5% to 30%, in spite of implementation of reminder calls and outreach after a missed visit. Despite multiple failed attempts at contacting patients via telephone, 3 patients were able to be contacted after sending a notification letter. Our study suggests that language barriers may be a driver of missed visits as 50% of the patients who received a notification letter do not speak English as their primary language vs. 26% of all WCCC patients. Further study is needed, but our limited sample size suggests patients with multiple comorbidities and comorbid mental illness are at risk of being lost to follow up.

EXAMINING NO-SHOW RATES IN AN URBAN PRIMARY CARE RESIDENCY CLINIC

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BACKGROUND: No-show rates among resident primary care practices vary from 12.9% to 45%. No-shows have been associated with increased acute care utilization, reduced access for patients, worse health outcomes, decreased provider productivity, and missed educational opportunities for residents. Many reasons have been cited for missed appointments, but few studies investigate the barriers to attendance. This study examines the association between no-show rates at an urban internal medicine (IM) and family medicine (FM) residency continuity clinic based upon provider characteristics and appointment types as well as the barriers to attendance faced by patients.

METHODS: The project consisted of 1) a retrospective chart review including all scheduled adult appointments from July 1, 2016 and December 4, 2017 at our residency continuity clinic and 2) a prospective nine-item closed-ended telephone survey of sequential patients who no-showed from May 29, 2018 to June 29, 2018. Data extracted from the electronic medical record included demographic, geographic, and appointment details. Survey questions focused on transportation, financial, and scheduling concerns. Chi- square test was used to analyze no-show differences between IM and FM providers as well as to compare characteristics of survey responders vs. non-responders.

RESULTS: During the retrospective chart review, 47,753 discrete visits occurred. The overall no-show rate was 23.3% with IM residents having the highest no-show rate (29.0%) and IM attendings having the lowest (17.7%) ($p<0.01$). Regardless of specialty, hospital discharge appointments had the highest no-show rate (34.7% and 38.5%, respectively) while pre-operative appointments had the lowest (9.1% and 17.6%, respectively). During the survey study period, there were 422 no-show appointments for 391 patients. Of the 391 patients, 260 were contacted and 72 (27.7%) completed the survey. Responders were more likely to be female (80% vs. 51.6%), black (79.2% vs. 64.9%), have Medicare (30.6% vs. 23.4%), and be a patient of an attending (30.6% vs. 17.0%). The most common (54.1%) reason cited for no-show was forgetting. Over 60% of respondents did not cite any barriers to attendance. For those who experienced barriers, transportation ranked as the top three reasons for no-show. Furthermore, 60% preferred a cell phone call reminder and 55.6% wanted a text message while only 31.9% wanted a home phone call reminder, which during this study was the default.

CONCLUSIONS: This study identified significant differences in no-show rates between resident and attending practices as well as IM and FM residents. Hospital discharge appointments had the highest no-show rate, but follow-up appointments comprised the largest absolute number of no-shows. The survey revealed a surprisingly large percentage of patients denying any barrier to attendance. Those facing barriers cited difficulties with transportation and ineffective reminders as reasons for missed appointments.

EXAMINING THE ASSOCIATION OF INDIVIDUALS' BELIEFS ABOUT HYPERTENSION WITH BLOOD PRESSURE CONTROL AMONG AFRICAN AMERICANS WITH UNCONTROLLED HYPERTENSION LIVING IN THE RURAL SOUTH.

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BACKGROUND: Hypertension (HTN) is major risk factor for cardiovascular disease, and African Americans are known to have worse outcomes. Yet there is a relative paucity of literature studying HTN in southeastern, rural, African American communities. Patient beliefs surrounding HTN are varied and impact outcomes such that gaining a deeper understanding of the prevalence of beliefs is beneficial. This study examines the relationship between beliefs about HTN, lifestyle modification, and blood pressure (BP) control among African American adults living in rural AL and NC.

METHODS: This is a cross-sectional study of baseline survey data collected in a large cluster randomized trial of interventions to improve BP control for African Americans. HTN belief questions included: "How serious of a personal health concern has high blood pressure been?" and "Can changing your lifestyle help to lower your blood pressure?", responses were dichotomized into very/somewhat serious vs not. Our primary outcome was BP measured as a continuous variable. Secondary outcomes included medication adherence assessed by asking, "Do you sometimes stop taking your medicines for reasons other than forgetting?" and "Do you sometimes stop taking your medicine when your symptoms are under control?" - both answered yes/no. Covariates were age, sex, education, marital status, and depressive symptoms. Linear regression and robust Poisson regression were used to evaluate associations between HTN beliefs and outcomes.

RESULTS: Participants were African Americans with uncontrolled HTN who lived in rural AL or NC. Of the 1320 enrolled, 1238 had complete data. Characteristics included a mean age of 58 (± 12), 62% female, and a mean BP of 156 (±17)/90 (± 14) mmHg. Almost 95% (n = 1173) believed that BP was a very or somewhat serious concern and a similar percentage (96%; n = 1188) recognized lifestyle changes could help lower BP.

However, beliefs were not significantly associated with systolic or diastolic BP levels after controlling for covariates. Additionally, 1230 (99.4%) thought it was important to take medications. Despite this finding, only 37% (n = 457) reported not missing their medicines with no significant association between beliefs and taking medications consistently. Those that did not consider HTN as a serious concern and did not think lifestyle changes helped were more likely to be female, lack a high school degree, and be single.

CONCLUSIONS: The overwhelming majority of African Americans living in rural AL and NC believed HTN was a serious health concern and recognized the importance of lifestyle choices in HTN control. Despite these findings, there was no association between these beliefs and medication adherence or actual BP measurements. Importantly, these findings suggest that HTN outcomes are not due to lack of awareness. Rather other barriers to HTN control likely exist, and identifying and addressing these barriers will be essential to improving outcomes in this population.

EXAMINING THE ASSOCIATION OF SOCIAL RISK WITH THE RISK OF HEART FAILURE READMISSION IN THE VETERANS HEALTH ADMINISTRATION

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BACKGROUND: Previous research has found that social risk factors are associated with an increased risk of 30-day readmission. The impact of social risk factors on hospital readmissions following an episode of heart failure (HF) within the Veterans Health Affairs (VA) system has not been examined. Our objective was to assess the association of five social risk factors (living alone, lack of social support, marginal housing, substance abuse, and low income) with 30-day HF hospital readmissions within the VA.

METHODS: Using data from a national sample of Veterans from the VA Corporate Data Warehouse, we first identified 10,761 Veterans, aged 65 and older, who were hospitalized for HF in 2012. Patients were identified by a primary discharge diagnosis from VA administrative data using ICD-9 codes. We randomly selected 1,500 Veterans from this cohort for subsequent chart abstraction of social risk factors. We identified patient age and the 32 clinical variables that are utilized in the CMS HF readmission model for all-cause HF readmissions. All variables were identified in administrative data one year prior to the index admission.

Because administrative data lacks information on several common social risk variables, we utilized two methods to extract patients' social risk: (1) manual chart abstraction, and (2) administrative coding (e.g., ICD-9). Using chart review, we extracted data on three variables (social support, housing, and living situation [i.e., living alone]) with limited or no data in administrative datasets. We used ICD-9-CM diagnosis codes to assess for substance abuse (e.g., drug and alcohol abuse). To assess for low income status, we classified someone as low income if their VA co-payment was waived on the basis of their means test evaluation.

RESULTS: Prevalence of the five risk factors in readmitted and non-readmitted patients, respectively; low income (47% vs. 47%), lives alone (18% vs. 19%), substance abuse (14% vs. 16%), lacks social support (2% vs. <1%), and marginal housing (<1% vs. 3%). Controlling for clinical factors contained in the Centers for Medicare & Medicaid Services readmission models, a lack of social support was found to be associated with an increased risk of 30-day readmission (OR 4.8, 95%CI 1.35-17.88), while marginal housing was noted to decrease readmission risk (OR 0.21, 95%CI 0.03-0.87). Living alone (OR: 0.9, 95%CI 0.64-1.26), substance abuse (OR 0.91, 95%CI 0.67-1.22), and having low income (OR 1.01, 95%CI 1.01-1.31) had no association with HF readmissions.

CONCLUSIONS: While a lack of social support was associated with 30-day readmission in the VA, its prevalence was low. In an integrated healthcare system like the VA, social risk factors may have a limited effect on 30-day readmission outcomes.

EXAMINING USE OF URINE DRUG TESTING AMONG OPIOID-NAïVE AND LONG-TERM OPIOID MEDICAID BENEFICIARIES: A RETROSPECTIVE CROSS-SECTIONAL STUDY

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BACKGROUND: Given the rising number of deaths associated from prescription opioid use, the Centers for Disease Control and Prevention (CDC) and other guidelines recommend that clinicians use routine urine drug testing (UDT) to identify patients at risk for opioid misuse/abuse. Our objective was to identify whether Medicaid beneficiaries in Nevada at increased risk for opioid misuse/abuse received guideline-concordant UDT.

METHODS: We used Nevada Medicaid claims data from January 2017-April 2018 to describe patterns of UDT for adults with opioid prescriptions. We examined three cohorts of patients on opioids: opioid-naïve (N=11,326), opioid-naïve with a 2nd consecutive prescription (N= 8,605), and long-term opioid use (defined as 120 opioid days' supply within 6 months) (N=17,456). Our outcome was defined as UDT before an opioid prescription among the naïve cohorts, and UDT between 60 and 183 days following the initial prescription for the long term cohort, consistent with guidelines. We used two categories of predictors: diagnoses identified in the literature as putting patients at higher risk for opioid misuse/abuse (alcohol disorder, other substance disorders, nicotine dependence, mental health diagnoses, male gender, and age >35) and behaviors associated with opioid misuse/abuse (multiple providers, early refills). Diagnoses prior to testing were counted. For the naïve cohorts, we used logistic regression to estimate models calculating predicted probability of diagnosis predictors, controlling for gender, age, and timing of marijuana legalization. For the long-term cohort, we used Cox Proportional Hazard regression to examine hazard ratios (HRs) for risk of opioid misuse/abuse and behaviors associated with misuse/abuse.

RESULTS: Only a small percentage of patients received UDT within the expected timeframe: 2.5% for the naïve opioid cohort, 3.5% for the naïve with 2nd prescription cohort, and 9.9% for the long-term opioid cohort.

Those with alcohol disorders and other substance disorders had the highest predicted probabilities (PPs) of UDT, among both the naïve cohort (PPs: alcohol disorder; 3.9%; other substance disorder: 8.4%) and the naïve cohort with a 2nd prescription (PPs: alcohol disorder: 6.2%; other substance disorder: 6.4%). Other predictors with significantly higher odds of UDT compared to the reference groups included nicotine dependence, mental health disorders, and male gender in the naïve cohort, and nicotine dependence and age >35 in the naïve with a 2nd prescription cohort.

In the long term cohort, alcohol disorders (HR: 3.3) and other substance disorders HR: (7.4) were also most strongly associated with UDT; all predictors except for early refill, multiple providers, and male had HRs significantly higher than 1.

CONCLUSIONS: While only a small percentage of Nevada Medicaid adults with an opioid prescription received UDT, there was a strong association between having a risk factor for opioid misuse/abuse and receiving UDT, but not behaviors associated with misuse/abuse.

EXPERIENCE DOES NOT EQUAL EXPERTISE: NEW GRADUATES OUTPERFORM EXPERIENCED PROVIDERS ON AN EXPERIENTIAL FACULTY ONBOARDING EXPERIENCE

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BACKGROUND: Newly-recruited providers have heterogeneous backgrounds and need an introduction to their new institution's patient communication, safety culture, and performance expectations. We designed an experiential onboarding simulation to set institutional standards for new providers who join our Division of General Medicine. To continue improving the program, we examined if providers with different levels of patient experience require different onboarding support.

METHODS: During the 2-hour onboarding, participants completed 3, 10-minute OSCE cases designed to assess how they addressed a medical error, managed the patient's discharge goals of care, and responded to a struggling learner. During each encounter, participants interacted with highly trained Standardized Patients (SPs) or Standardized Learners (SLs), who used behaviorally-anchored checklists to evaluate provider performance on communication and case-specific skills. Following each encounter, participants completed a self-assessment while SPs/SLs completed the checklist, then the 2 discussed the encounter and the SL/SP provided confidential and actionable feedback. At the end, participants completed a program evaluation, debriefed with experienced facilitators, and received their checklists and an institutional resource guide.

RESULTS: Over 3 years, 90 faculty members (70 MDs, 20 Advanced Practice Providers) from 11 clinical sites participated in the onboarding program. 55 were new graduates (no on-the-job patient experience) and 35 were experienced providers (>1 year in practice). Results are presented as the mean % of items well done (WD) on a scale of "not done," "partially done," or "well done." All participants scored >65% WD for communication across all cases; they all performed lower in the education and counseling subdomain (39-51%). T-tests, comparing outcomes between new graduates vs experienced providers, revealed that new grads significantly outperformed experienced providers in several domains: communication across cases (71 vs 59%, $p<0.01$), patient activation across the 2 patient cases (39 vs 23%, $p=0.01$), and case-specific skills (72 vs 46%, $p<0.01$ for med error case). SP/SL text comments about the experienced providers were more negative (eg 'said the right words, but I didn't feel heard/cared for'), describing them as 'confrontational,' having 'own agenda,' 'not listening,' and the encounters as 'rushed' and 'disconnected.' All 88 participants who completed the evaluation agreed/strongly agreed that the event was engaging (99%), gave a sense of institutional culture (97%), effectively reinforced good communication skills (98%), and 94% would recommend the program.

CONCLUSIONS: Our results show that an experiential onboarding program to set local standards is valuable to newly-hired providers of all experience levels. Our finding that new graduates outperformed experienced providers warrants further investigation and suggests a need for recalibration of experienced providers' core patient-centered care skills.

EXPERIENCE WITH PREP: SURVEY AMONG IM AND OB/GYN FACULTY AND RESIDENTS

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BACKGROUND: Human immunodeficiency (HIV) disease prevention with pre-exposure prophylaxis (PrEP) is marred by lack of provider knowledge and health inequities. PrEP awareness, knowledge and adoption by primary care physicians (PCPs) including obstetrics and gynecology (Ob/Gyn) providers, is crucial to improve the health disparities that exist in HIV prevention with PrEP.

METHODS: We modified a previously validated PrEP provider survey and administered it to faculty and categorical residents in the Departments of Ob/Gyn and Internal Medicine (IM) of a large urban hospital. T-tests and chi-square tests were performed with an alpha significance value of 0.05.

RESULTS: Sixty-one surveys were completed (24 Ob/Gyn, 37 IM). No statistically significant differences were observed by age or race, however there were a higher proportion of female-identified providers in Ob/Gyn (87.5%) compared to IM (54.1%) (p=.01). There was a greater proportion of residents in the IM group (65% vs 35%) in the Ob/Gyn group (p=.023). Regarding the willingness to prescribe PrEP between the specialties based for certain risk factors, 76% of IM physicians were extremely willing to prescribe PrEP for a patient having sex with partners of unknown HIV status vs 24% of Ob/Gyn providers (p=.003). Faculty, regardless of specialty, were more likely to have had a patient conversation about PrEP (74% vs 30% of residents [p=.001]), prescribed PrEP to a patient (50% vs 10% of residents [p=.001]), and referred a patient for PrEP to another provider (54% vs 17% of residents [p=.003]).

CONCLUSIONS: Faculty discussed and prescribed PrEP at greater rates than residents. Curriculum development to improve resident awareness and knowledge of PrEP and other HIV prevention strategies could improve the health disparities that exist within HIV prevention and PrEP.

EXPLORING DECISIONAL NEEDS IN LUNG CANCER SCREENING ELIGIBLE INDIVIDUALS WITH COPD

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BACKGROUND: Smokers who are at high risk of lung cancer also have high rates of other tobacco-related comorbidities. Among the most common is chronic obstructive pulmonary disease (COPD), a occurring in ~ 35% of screening-eligible individuals. COPD increases the risk of complications related to work-up of positive LDCT, impacts lung cancer treatment selection and associated complications, leads to decreased quality of life, and a limited life expectancy, substantially altering the harm-benefit ratio of lung cancer screening. Lung cancer screening is currently the only cancer screening test in which shared decision making is a condition of reimbursement by Medicare. As such, it is imperative to examine the decisional needs of

patients with comorbidities, particularly in low-income, racially diverse populations poorly represented in clinical trials.

METHODS: We conducted semi-structured interviews with 9 lung cancer screening-eligible patients with COPD (mean age 66, 55% female, mean smoking pack-years=70). The goal of the interviews was to learn more about patients' reactions to the idea that they may have different harms and benefits from lung cancer screening because of their disease and that they possibly should not receive lung cancer screening in the context of severe COPD. Additionally, we were interested in learning more about how patients would prefer to be informed about the pros and cons of lung cancer screening in the context of COPD.

RESULTS: Regarding reactions to the notion of COPD may increase the harms from lung screening, we discovered 3 major themes: 1) "No idea the two were connected" – Here, participants reported surprise that COPD impacts lung cancer screening. 2) "Cancer beats all" – Here, patients discussed willingness to tolerate increased potential harms of screening because knowing whether they have cancer was considered more important. 3) "Knowledge for its own sake" – Here patients discussed how knowledge of having cancer in one's body was more important than whether that knowledge led to reduced mortality or longer life. Regarding communication preferences, we found 3 major themes including: 1) "Show and tell" – Here patients discussed a desire to learn specific harms and benefits using visual displays and printed materials in addition to discussions. 2) "Give it to me straight" – Here patients expressed a preference for non-"sugar- coated" wording regarding harms. 3) "Follow the doctor's orders" – Here patients discussed that ultimately they would have high trust in their doctor's advice if screening is discouraged.

CONCLUSIONS: These themes will be important for the design of effective communication tools, and elucidates some of the issues related to lung cancer screening informational needs. Future work will explore decisional needs of patients with other comorbidities (as we suspect that non-lung comorbidities that are possibly less symptomatic will be associated with different beliefs and expectations), and explore provider needs.

EXPLORING HIGH-NEED AMERICANS' SATISFACTION AND EXPERIENCES WITH PRIVATE HEALTH INSURANCE COVERAGE: A SCOPING REVIEW OF THE LITERATURE

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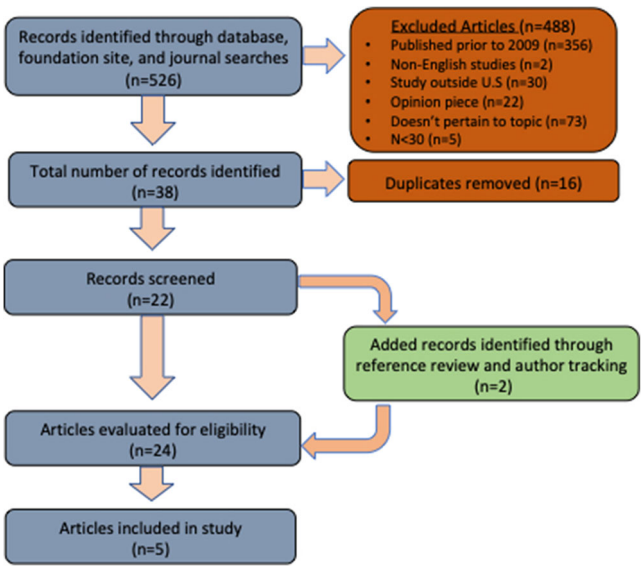
BACKGROUND: The potential overhaul of the American health care system is a leading issue in the 2020 elections. It is often reported in the media that Americans are satisfied with their private health insurance, yet little is known about patients with high health care needs (>2 comorbidities). We conducted a systematic review of the medical and grey literature to understand the current evidence base on American's satisfaction and experience with private insurance, with a specific focus on those with high-needs.

METHODS: Using mesh terms: 'private insurance', 'patient satisfaction', 'opinion', and 'coverage' we identified studies of Americans' satisfaction with private health insurance using MEDLINE/PubMed, Kaiser Family Foundation (KFF), Robert Wood Johnson, Commonwealth Fund, and California Healthcare websites between November 2009 and November 2019. Two members of the team independently conducted the search and identified abstracts. Each abstract was independently reviewed by the team and evaluated for inclusion. All study designs were considered, including quantitative and qualitative methods, surveys, focus groups, literature reviews, and original research. We excluded consumer polls that lacked methodological details.

RESULTS: Of the 526 articles identified, 5 met search criteria to be included for manual review. Among these, several studies (Collins, Commonwealth; Pollitz, KFF, and Hamel, KFF) found that most people with private insurance were generally satisfied with their health plans - with experiences and attitudes differing based on cost and access to care. Only two studies commented on high-needs patients (>2 comorbidities). Ryan et al (Commonwealth) found that only 9% of high-needs patients had private insurance, while Hamel et al (KFF) found that patients with chronic medical conditions and private insurance reported more problems paying medical bills or affording out of pocket costs. Among the few high-needs patients surveyed, predominant themes were social isolation, unmet social needs, decreased access to care, and delays in care.

CONCLUSIONS: Among high-needs patients, limited data exists on satisfaction and experiences with private health insurance coverage. As the US debates health care reform, more information on high-needs patients' experiences with their health coverage will be needed to better inform policy makers and the voting public.



EXPLORING PATIENT INTEREST IN SOCIAL RISK ASSISTANCE FROM THEIR HEALTH CARE TEAMS

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BACKGROUND: Health systems are increasingly incorporating social risk screening into patient care. Multiple recent studies have found that patients who screen positive for social risk factors (SRF) do not consistently report interest in receiving assistance with those risks. The objective

of this study was to evaluate the frequency of and factors associated with interest in social risk assistance by social risk screening results.

METHODS: Cross-sectional survey of a convenience sample of adult patients and caregivers of pediatric patients in 7 primary care and 4 emergency department (ED) settings in 9 US states. Surveys included multi- domain social risk screening questions on housing, food, transportation, utilities, and interpersonal violence. Additional questions assessed interest in assistance with social risks and perspectives on social risk screening. Respondents were randomized to two groups: one survey began with social risk screening questions and the other began with a question on interest in assistance. Multivariable logistic regressions evaluated co-variate associations with interest in assistance, stratified by social risk screening results.

RESULTS: Of 1,021 respondents, 353 screened positive for ≥1 SRF and were interested in assistance (34.6%); 309 screened positive and were not interested in assistance (30.3%); 328 screened negative for all SRF and were not interested in assistance (32.1%); and 31 screened negative for all SRF and were interested in assistance (3.0%). Among those who screened positive for ≥1 SRF, answering the survey question about interest in assistance before being screened for SRF (adjusted OR: 1.48 [95% CI: 1.05, 2.07]) was independently associated with higher odds of interest in assistance, as was screening positive for multiple SRF (2.40 [1.68, 3.42]), self-identifying as non-Hispanic Black race/ethnicity (2.22 [1.37-3.60]) and reporting lower income (7.78 [2.96, 20.4]). Among those who screened negative for all SRF, prior exposure to health care-based social risk screening (2.35 [1.47, 3.74]), higher perceived appropriateness of screening (3.69 [1.08, 12.5]), lower income (12.4 [2.94, 52.2]), poorer health (4.22 [1.09, 16.3]), and recruitment from an ED (4.27 [1.59, 11.4]) were independently associated with higher odds of interest in assistance.

CONCLUSIONS: Multiple factors were associated with patient interest in assistance with social risks. Regardless of social risk screening results, lower income patients had higher odds of interest in assistance. As the health care system's role in addressing social risk factors evolves, understanding patients' perspectives on social risk screening and desire for assistance will be critical to implementing patient-centered social care. To maximize uptake of social care interventions, clinical delivery systems should consider offering assistance prior to screening for specific risks. As social risk screening and intervention programs expand, interest in assistance is likely to increase.

EXPLORING SOCIAL DETERMINANTS AND AQP4 GENE EXPRESSION IN UVEAL MELANOMA: CORRELATION WITH SURVIVAL

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BACKGROUND: Uveal melanoma (UVM) is the most common primary intraocular malignancy in adults. This aggressive cancer accounts for about 5–10% of all the melanomas, yet little is known about its genetic associations and risk factors for metastasis. Past reports found that median time to death after metastatic UVM diagnosis is six months. Aquaporin-4 (AQP4) is an integral membrane protein for maintaining water homeostasis within the central nervous system. Several studies have found AQP involvement in tumor cell metastasis. Additionally, loss of heterozygosity at the retinoblastoma (RB) locus has been found in UVM. We explored social determinants such as age, sex, etc, and their correlations with outcome. We also studied the relationships of gene expression levels of AQP4 and RB to UVM patient survival.

METHODS: We analyzed a publicly-available transcriptomic dataset from TCGA (The Cancer Genome Atlas). Using expression data from 80 patients with UVM, we explored the comparisons such as t statistics among variables of age, sex, and expression level of AQP4 and RB. Overall survival after UVM diagnosis was evaluated with Kaplan-Meier survival analysis methods including log-rank tests and Wilcoxon-Gehan tests.

RESULTS: Among the social determinants of health variables such as race, gender, and age, we did not find any correlations of patient survival. More specifically, no significant differences were observed in UVM survival related to sex (p=0.78) or RB2 level (p=0.29). We found, however, strong correlation between AQP4 expression level (p=0.03) with patient survival. There are no additive effects observed when both AQP4 and RB expressions were taken into consideration. These results suggest that higher levels of AQP4 expression can be protective to UVM patients. AQP4 expression level can also be used as an indicator of patient outcome for longer survival.

In addition, a trend was observed in UVM, which is related to old patients versus younger patients (p=0.06). **CONCLUSIONS:** There are no obvious correlations of social determinants with UVM patient outcome such as survival. AQP4 gene expression, however, was highly correlated to survival of UVM patients. This finding suggests a potential application of the gene as a positive predictor of survival after UVM diagnosis.

EXPLORING THE HEALTH INFORMATION-SEEKING EXPERIENCES OF A MULTILINGUAL, URBAN COHORT

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BACKGROUND: Negative health information-seeking experiences can worsen inequities in seeking health information and adversely impact health behaviors and outcomes. Prior studies have demonstrated disparities in health information-seeking experiences based on age, race/ethnicity, language, education, and income. Few studies have explored the impact of health literacy on health information-seeking, particularly among multilingual, diverse populations. This study examines the impact of language preference and limited health literacy (LHL) on self-reported health information-seeking experiences.

METHODS: We created a local survey by adding validated questions about health care access and health literacy to questions from the Health Information National Trends Survey. We administered this survey in English, Spanish, and Chinese to San Francisco residents, with oversampling for African Americans, from May to September 2017. We used weighted multivariable logistic regression analyses to assess the impact of language and LHL on health information-seeking experiences, adjusting for age, gender, race/ethnicity, education, usual place of care, and self-reported health status. We explored these four health information-seeking experiences: 1) confidence in getting health information, 2) frustration during information search 3) concern about quality of the information, and 4) finding information hard to understand.

RESULTS: The 1,027 survey participants included 50% of responses in English (n=514), 25% in Spanish (n=256), and 25% in Chinese (n=257). 82% of respondents reported at least one negative health information- seeking experience. In multivariate analysis, compared with English-language respondents, Chinese-language respondents had higher odds of low confidence (OR=3.25, 95% CI 1.62-6.55), feeling frustrated (OR=3.11, 95% CI 1.51-6.40), and found the information hard to understand (OR=2.50, 95% CI 1.25-5.00); Spanish- language respondents had higher odds of finding information was hard to understand (OR=2.22, 95% CI 1.28-3.84). Those who reported LHL had higher odds in all four negative information-seeking experience measures: lower confidence (OR=1.75, 95% CI 1.30-2.38), frustration (OR=2.16, 95% CI 1.61-2.92), concern about quality (OR=2.06, 95% CI 1.52-2.78), and difficulty understanding information (OR=2.60, 95% CI 1.92=3.51).

CONCLUSIONS: A majority of respondents reported at least one negative health information-seeking experience. Low health literacy and non-English language preference were associated with higher odds of negative health information-seeking experiences. This supports the American Medical Association's recommendations for health materials to be written at or below the 6th grade reading level. With a growing immigrant population, health systems need to consider linguistic diversity when creating health materials in order to mitigate inequities in seeking health information.

EXPLORING THE PIPELINE FOR DEAF AND HARD OF HEARING HEALTHCARE PROFESSIONALS: HOW THEY TRAIN AND WHO THEY SERVE.

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BACKGROUND: Deaf and hard of hearing (DHH) people (15% of U.S. population, an underserved health minority with documented disparities) are underrepresented among healthcare professionals. DHH physicians can provide communication-concordant primary care (PC) to DHH patients to improve healthcare access. No literature describes the DHH healthcare workforce or their accommodations or patients.

METHODS: We disseminated an online survey. Inclusion criteria were being DHH, having applied to a U.S. health professional school. Questions explored demographics, accommodations utilized and satisfaction, depression screening, patients served.

RESULTS: 150 respondents represented many professions, including medicine (36), nursing (25), audiology (17), dentistry (4). Training stages included students (47), residents/fellows (13), completed training (51).

Accommodation use varied widely by type, and overall decreased from education to employment. Respondents reported spending on average 2.1 hours weekly navigating school accommodations. Among those who transitioned directly from school to employment, accommodation satisfaction correlated with success in obtaining employment. This correlation was not present among those who entered residency.

Over 10% of respondents screened positive on the PHQ-2. Positive screens had a small and statistically significant association with less accommodation satisfaction in healthcare school. PHQ-2 score did not correlate with profession.

Of 105 people who reported current/planned medical specialty, 54 (51%) were categorized as PC, including 36 in medicine and 25 in nursing fields. Those in practice reported on average 33% of their patients were DHH. Those in school/training reported expecting on average 32% of future patients would be DHH.

CONCLUSIONS: Our study describes an under-recognized healthcare workforce segment: people with hearing loss. Our findings suggest that significant numbers of DHH students and professionals work in PC, or plan to, serving more DHH patients than non-DHH professionals. DHH healthcare professionals learn and serve across many specialties and utilize a wide range of accommodations. They commit significant personal resources to managing accommodations, which may be burdensome and lead to poorer wellbeing. Respondents seem more likely than the average health professional to serve DHH people, an underserved health minority. If school accommodation satisfaction predicts DHH students' wellness and employment likelihood, then effective accommodation provision during the educational pipeline is critical to maintaining the DHH workforce. This impacts the PC workforce's ability to reduce communication-discordant disparities, and serve an underserved minority population. Health professional schools, including medical schools, have opportunities to enhance the educational pipeline to a diverse workforce as well as reduce healthcare disparities by supporting effective accommodations for students and trainees with disabilities.

EXPLORING THE RELATIONSHIP BETWEEN CHURCH ENVIRONMENT AND CHANGE IN DIETARY HABITS AFTER A FAITH-BASED CARDIOVASCULAR DISEASE PREVENTION PROGRAM

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BACKGROUND: Obesity prevalence and cardiovascular disease (CVD) risk factors disproportionately affect African Americans (AA). Multiple studies have shown that faith-based interventions can improve certain risk factors, including low fruit and vegetable (F&V) intake. In our previous study we developed and tested a novel quantitative measure of a healthy church environment termed the "Supportive Church Environment Score " (SCES). We found a strong correlation between baseline SCES and daily fruit intake, a moderate correlation between SCES and vegetable, and a weak correlation between SCES and ideal physical activity. Here, we compare churches' SCES to their members' fruit and vegetable intake before and 3- months after a faith-based CVD prevention program, to determine if there is a relationship between SCES and change in fruit and vegetable intake post-intervention. We hypothesized that a higher SCES would be associated with a greater increase in F&V intake at 3-months.

METHODS: Nine predominantly African-American churches were enrolled in a 10-week faith-based cardiovascular risk reduction program led by lay health-educators trained at each church. Program participants completed a written survey to assess cardiovascular risk behaviors and the church's health environment at baseline and 3-months. The SCES score was comprised of eleven activities that promote CVD health (i.e. healthy food options are provided at church events). Higher scores suggest greater CVD health promotion activities in the church. We calculated the R-coefficient of correlation to evaluate the relationship between participant's perception of their church environment (SCES) to change in fruit and vegetable intake between baseline and 3-months.

RESULTS: We calculated R- coefficients of -0.52 and -0.25 between median SCES and change in fruit and vegetable intake at 3-months, respectively.

CONCLUSIONS: A lower SCES at baseline was correlated with an increase in fruit and vegetable intake at 3-months. These findings suggest that, contrary to our hypothesis, our faith-based CVD prevention program is most effective in settings with low social support.

EXPLORING UNCERTAINTY AND THE GROWTH MINDSET AMONG SENIOR INTERNAL MEDICINE RESIDENTS

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BACKGROUND: Errors in medical decision making have been linked to adverse events and patient harm, particularly when diagnostic or therapeutic uncertainty exists. Prior research has attempted to categorize

uncertainty and to associate physicians' tolerance of uncertainty with various factors such as patient-provider communication and pursuit of diagnostic testing. The "growth mindset," or the perceived ability to change one's own intelligence level, has been well studied in other settings, but whether this mindset is associated with tolerance of uncertainty is unknown. In this study, we sought to explore senior internal medicine (IM) residents' reactions to uncertainty and to evaluate for associations between reactions to uncertainty and a measure of the growth mindset.

METHODS: Senior Internal Medicine residents at the University of Pittsburgh Medical Center rotating on inpatient night float from February through September 2019 were invited to participate in the study.

Participants completed a demographic survey, the Physicians' Reactions to Uncertainty (PRU) scale, and the Revised Implicit Theories of Intelligence or "growth mindset" scale. Spearman's Rho was calculated as a measure of association between scores on the two scales and the Wilcoxon rank-sum test was used to compare associations between demographic characteristics and scores on the PRU and "growth mindset" scales.

RESULTS: Between February and September 2019, 41 out of 45 (91%) eligible residents participated in the study. Residents scored an average of 18.4 out of 30 on the "anxiety due to uncertainty" PRU sub-scale, 9.3 out of 18 on "concern about bad outcomes," 19.1 out of 30 on "reluctance to disclose uncertainty to patients" and 4.7 out of 12 on "reluctance to disclose mistakes to physicians," with higher scores on these sub-scales suggesting greater affective responses to uncertainty (i.e. more anxiety or reluctance). Residents scored an average of 2.6 out of 6.0 on the "growth mindset" scale, with scores less than 3.3 on this scale suggesting the presence of a growth mindset. Resident demographic characteristics were not associated with PRU or growth mindset scores, with the exception of greater "concern about bad outcomes" among females than males. PRU scores and growth mindset scores were also not associated.

CONCLUSIONS: Our residents were moderately comfortable with uncertainty overall, and on average expressed a growth mindset. Relatively higher scores on the "reluctance to disclose uncertainty to patients" subscale (i.e. greater reluctance) suggest a need for enhanced training in skills for communicating uncertainty, which has the potential to impact both the quality of care delivered and patient satisfaction with that care. Finally, because most of our residents possessed a growth mindset, our ability to assess for an association between the growth mindset and tolerance of uncertainty was limited. Further exploration in different settings and populations is warranted.

EXTENDED HOURS PRIMARY CARE AND WAIT-TIMES IN VHA

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BACKGROUND: The Veterans Health Administration (VHA) has required clinics offer appointments outside regular business hours. Impact of increasing after-hours availability upon wait-times remains unclear.

METHODS: We performed a longitudinal analysis of 609 primary care clinics within VHA with at least one full-time medical provider, and 2000 or more assigned primary care patients from July 2017 to October 2018. Using administrative data from the VHA Corporate Data Warehouse, we identified all primary care face-to- face visits completed during regular (8:00AM-4:30PM), morning (12:00AM-8:00AM), evening (4:30PM-12:00AM), and weekend hours by month. Outcomes included three wait-time measures: established patient wait-time, new patient wait-time, and third next available appointment extracted from Veterans Support Services Center (VSSC) by month. We controlled for clinic factors including clinic size and panel fullness based upon 1200 patients per full-time provider, and clinic-level aggregated patient factors including age, race/ethnicity, patient risk for higher healthcare costs (Nosos score), and rurality. We used negative binomial multilevel regression and applied between-within approach to determine the association of extended hours (morning, evening, weekends) primary care appointments with wait-times between and within VHA clinics.

RESULTS: Over the time period, 487 (80%) clinics that met inclusion criteria offered extended hour (EH) appointments with an average of 2.3% of all primary care encounters occurring in EH (IQR 0% to 3.2%) and standard deviation within clinics of 0.9% and between clinics of 2.9% over the 15 months of observation. Clinics delivering a greater percentage of EH appointments were more likely to be larger (Clinics in top quartile vs. bottom half of EH appointments: mean 6605 vs. 10,043 patients per clinic) and serve in urban population (76% vs. 62%) and minority population (Non-White, 25% vs. 21%). Over this timeframe, established patient wait-time (mean, 39.6 vs. 56.3 days; Adjusted, IRR 1.39, 95% CI 1.34-1.44, $p<0.001$) and time to third next available appointments increased (mean, 7.7 vs. 10.5 days; IRR 1.36, 95% CI 1.29-1.45, $p<0.001$), respectively, while new patient wait-time remained unchanged (mean, 21.0 vs. 20.2 days; IRR 1.06, 95% 0.93-1.22, $p=0.37$). The percentage of appointments in EH was not associated with new (Between clinics: IRR 1.00, 95% CI 0.99-1.01; Within clinics: IRR 1.01, 95% CI 0.99-1.02) or established patient wait- times (Between: IRR 1.00, 95% CI 0.98-1.01; Within: IRR 1.00, 95% CI 0.99-1.01) or time to TNA appointment (Between: IRR 1.00, 95% CI 0.98-1.02; Within: IRR 1.01, 95% CI 0.99-1.02).

CONCLUSIONS: Extending hours of primary care delivery within the VHA is not associated with change in wait-times to clinical appointments. Shifting primary care appointments after regular hours to accommodate patient or physician preferences may not compromise wait-times.

EXTENT OF EDUCATION IN NUTRITION AND TRAINING IN LIFESTYLE COUNSELLING IN INTERNAL MEDICINE RESIDENCY PROGRAMS IN U.S: A NATIONAL SURVEY OF RESIDENCY PROGRAM DIRECTORS.

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BACKGROUND: The primary intervention to prevent and treat the most common chronic diseases is making healthy lifestyle changes such as improving diet and exercise; yet, many patients fail to receive counselling on lifestyle. The extent of education and counselling training about nutrition and exercise in internal medicine (IM) residency programs is not known.

METHODS: We conducted an email-based survey of 477 U.S. program directors of internal medicine residency programs (RPD) between December 2019 and January 2020 to assess the quantity of curricular content on nutrition and training in counselling to improve diet and exercise as well as barriers to and attitudes about implementing these educational

activities in the residency programs they direct. We obtained a list of programs and their RPD's email from the website of the American College of Graduate Medical Education (ACGME). We developed and emailed a 14-item survey to RPDs with a request to complete the survey. No incentive was offered. We used descriptive statistics to analyze responses.

RESULTS: 48 RPDs returned the survey (to date); program types included categorical only programs (76.1%), categorical with a primary care track (17.3%) and primary care only programs (6.5%). The majority of RPDs (79.1%) believed that a nutrition curriculum should be an essential part of an IM residency program. Yet, the majority (77.0%) reported that their program lacked a nutrition curriculum. Among programs that did offer a nutrition curriculum, the mean number of hours of curricular time was 22.3 hours. Nearly all (93.6%) RPDs believed that the number of nutrition curricular hours in their program is inadequate for trainees who will enter primary care practice and most (74.4%) also believed it was inadequate for residents entering a sub-specialty practice. Most RPDs also reported that their program did not provide training in how to identify or address food insecurity (66.0%) nor instruction on how to counsel patients (using motivational interviewing techniques) about healthy dietary behavior changes (57.4%) However, 65.3% reported providing training in counseling to increase physical activity. Barriers to providing a nutrition curriculum included a lack of expert faculty (68.7%), competing curricular demands (68.2%), a lack of ACGME requirements for a nutrition curriculum (28%), a lack of resident interest in nutrition (20%), a lack of administrative support (19.1%), and a lack of faculty interest (19.1%).

CONCLUSIONS: The majority of IM residency programs in the US do not provide education in nutrition or instruction in counseling for diet change. Expanding the prevalence and intensity of such teaching in residency programs could better match residency training activities with clinical imperatives of internists to improve prevention and treatment of chronic diseases.

FACTORS AFFECTING DIABETES SELF MANAGEMENT AND CONTROL: COMPARING CHARACTERISTICS OF A POPULATION WITH BREAST CANCER + DIABETES WITH A POPULATION WITH DIABETES ALONE

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BACKGROUND: Understanding factors that affect diabetes self-management behaviors among older women treated for breast cancer is important for reducing the cardiovascular mortality in this population; however, it is unclear whether this population faces unique challenges compared to the general diabetes population.

METHODS: We compared factors known to affect diabetes self-management behaviors and/or control between two populations: women with diabetes who had been previously treated for breast cancer and diabetic individuals with no known cancer history. Factors that were assessed included cognitive function, mental health, disease beliefs, and locus of control. The prevalence of these factors among women with breast cancer and diabetes was ascertained through in-person interviews at three sites as part of a larger study; the prevalence of factors among the general diabetes population was determined through a literature search to identify diabetes studies populations that most closely matched our sample's primary demographic characteristics. We measured cognitive functioning using the WMS Logical Memory I and II (WMS), the Digit Symbol Substitution Test (DSST), Trails A and B, Digit Span, and the Boston Naming Test (BNT); mental health using the Hospital Anxiety and Depression Scale (HADS);.disease beliefs using the Beliefs about Medicines Questionnaire (BMQ); and locus of control using the Treatment Self-Regulation Questionnaire (TSRQ). We performed t-tests for continuous values and chi-square tests for categorical values, with $p < 0.05$ considered as significant.

RESULTS: The sample population with breast cancer and diabetes included 101 multiethnic female subjects with a mean age of 65.6 years ± 7.16. We found that compared to the general diabetes population, those with diabetes and breast cancer had areas of cognitive function that were better as well as worse: those with breast cancer and diabetes exhibited poorer immediate and delayed recall on the WMS ($p<0.05$); similar associative learning on the DSST; better or poorer recall on the Digit Span test depending on the comparison population; and poorer confrontation naming on the BNT ($p<0.05$). There were no significant differences in performance on Trails A and B. Those with breast cancer and DM were less likely to experience anxiety or depression ($p<0.05$); were more likely to perceive their diabetes medications as a necessity ($p<0.05$); were likely to experience concerns about their diabetes medications ($p<0.05$); and less likely to experience controlled or autonomous motivation for treatment and medication adherence ($p<0.05$).

CONCLUSIONS: Interventions for women with Type II diabetes and breast cancer should take into consideration that this population may express greater concern about their diabetes medication usage, as well as a comparatively low sense of both external and internal loci of control. This population may also experience diminished cognitive functioning specific to immediate and delayed recall and confrontation naming.

FACTORS ASSOCIATED WITH HEPATITIS B AND C SCREENING IN A DIVERSE, MULTILINGUAL, URBAN COHORT

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BACKGROUND: Immigrants and racial/ethnic minorities bear a disproportionate burden of hepatitis B virus (HBV) and hepatitis C virus (HCV)-related disease. Few studies have evaluated barriers to HBV and HCV screening in a diverse, multilingual population. We examined the impact of race/ethnicity, language, and healthcare access on rates of HBV and HCV screening in a multilingual, urban cohort.

METHODS: We used questions from the Health Information National Trends Survey and added validated questions about healthcare access and health literacy. From May to September 2017, we administered this survey to English, Spanish, and Chinese-speaking participants, with oversampling for African Americans, in San Francisco County, CA. We used weighted multivariable regression analyses to examine factors associated with self-report of screening for HBV and HCV.

RESULTS: The mean age of the 1,027 participants was 47 years (SD ±16.7), 52% were women, 24% African American, 31% Hispanic, and 36% Asian. Half completed the survey in English, 25% in Spanish, and 25% in Chinese (Cantonese or Mandarin). Half (50%) of all participants reported having been screened for HBV, 32% had never been screened, and 18% didn't know or refused to answer. The proportions for HCV screening were 52%, 30%, and 18%, respectively.

In multivariate analysis, African Americans (odds ratio (OR)=0.19, 95% CI 0.07-0.53) and Asians (OR=0.35, 95% CI 0.12-0.99) had lower odds of HBV screening compared to non-Hispanic whites. Spanish-language respondents had higher odds of HBV screening (OR=1.83, 95% CI 1.01-3.33). Education, being born outside of the U.S., and limited health literacy were not associated with HBV screening, but having at least one usual place of care was (OR=1.72, 95% CI 1.06, 2.80).

Women (OR=0.52, 95% CI 0.37-0.74) had lower odds of HCV screening compared to men. Lower educational attainment was associated with lower rates of HCV screening. Compared to English-language respondents, Spanish- and Chinese-language respondents were less likely to have had HCV screening (OR=0.53, 95% CI 0.28-0.99 for Spanish-speakers; and OR=0.28, 95% CI 0.12-0.6 for Chinese-speakers).

CONCLUSIONS: Self-reported screening rates for HBV and HCV were low in this diverse, multilingual, urban cohort. Factors associated with screening for HBV and HCV differed; interventions targeting barriers to screening must address each separately. Efforts to address HBV screening should focus on African Americans and Asians, while efforts to address HCV screening should focus on women and Spanish and Chinese speakers.

FACTORS ASSOCIATED WITH INCARCERATION IN OLDER HOMELESS ADULTS: RESULTS FROM THE HOPE HOME STUDY

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BACKGROUND: Little is known about the risk factors for incarceration among older homeless adults. In a cohort of older adults homeless at study entry, we examined factors associated with incarceration. We hypothesized that being unsheltered, substance use, mental health problems, and cognitive impairment would be associated with incarceration over the study period.

METHODS: The Health Outcomes in People Experiencing Homelessness in Older Middle Age (HOPE HOME) study is a longitudinal study of adults aged ≥50 who were homeless at study entry. Staff interviewed participants at baseline and every 6 months. We excluded participants who died or were lost to follow-up before the first 6 month visit. We assessed jail or prison over the follow-up period based on interview and administrative data, defining incarceration as any stay in jail or prison over the follow-up period. We defined unsheltered homelessness as reporting, in a residential calendar, spending any nights either unsheltered or in an emergency shelter in the prior 6 months. Participants reported the total length of time they had experienced homelessness as an adult. We defined binge drinking as ≥6 or more drinks at least monthly, and moderate-to-severe risk illicit drug use (opioids, amphetamines, or cocaine) as a score ≥4 on the Alcohol, Smoking, and Substance Involvement Screening Test. We assessed cognitive function with the Modified Mini-Mental State (3MS). Using logistic regression, we analyzed associations between baseline variables and incarceration; we used backward stepwise elimination, retaining all independent variables with p-value ≤0.20.

RESULTS: Of 450 HOPE HOME participants, we included n=397 in this analysis. Participants had a median age of 58 years, were predominantly men (75%) and African American (82%). They spent an average 83 nights unsheltered in the 6 months prior to study enrollment. Overall, 17% had cognitive impairment, 12% reported binge drinking and 41% moderate-to-severe risk illicit drug use. The majority had a lifetime history of jail (84%) or prison stays (37%); 15% were on probation or parole at baseline. During a median follow-up of 52 months (range 6-72 months), 25% spent time in jail or prison. In multivariable models, men had increased odds of incarceration (AOR 2.27, 95% CI 1.06-4.84). Individuals with moderate-to-severe risk drug use had increased odds (AOR 3.57, 95% CI 1.97-6.46), as did those on parole or probation (AOR 3.36, 95% CI 1.67-6.78). Individuals who spent any nights unsheltered had increased odds of incarceration (AOR 4.50, 95% CI 1.63-12.44). Cognitive impairment was not associated.

CONCLUSIONS: Older homeless adults have a high risk of incarceration. Expanding access to housing, substance use treatment and reforming parole and probation programs may reduce incarceration among older homeless adults.

FACTORS INFLUENCING PRIMARY CARE PROVIDERS' WILLINGNESS TO DISCONTINUE UNNECESSARY MEDICATIONS

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BACKGROUND: Polypharmacy (often defined as ≥5 medications) is common and associated with increased adverse drug events, mortality, and healthcare costs. Despite known concerns with polypharmacy, there are multiple barriers to discontinuing medications that have potential for harm or that fail to provide benefits outweighing their risks ("deprescribing"). Therefore, we examined the factors that influenced providers' recommendation to discontinue potentially unnecessary medications.

METHODS: We randomly sampled 2,475 providers with prescribing privileges in Veterans Affairs primary care clinics nationally to complete a survey assessing providers' beliefs, attitudes, and experiences regarding medication discontinuation. Our primary outcome was response to an item asking providers to indicate the proportion of patients for whom they recommended discontinuing a medication among those they identified as taking a potentially unnecessary medication. Predictors of interest included patient characteristics; workplace characteristics; and providers' demographics, attitudes, beliefs, and prior experiences with discontinuing medications. We used multivariable logistic regression to assess the factors associated with highest likelihood (≥80%) of recommending discontinuation.

RESULTS: We received 411 responses (response rate: 17%; 304 physicians, 68 nurse practitioners and physician assistants, and 39 clinical pharmacy specialists). More than half were female (52%), age ≥50 (62%), and had been practicing in their current roles for ≥10 years (54%). After excluding respondents with missing data for key variables, our total sample for modeling analysis was 273. Most respondents (78%) indicated that ≥20% of their patients were candidates for discontinuing medications. However, only 30% reported recommending discontinuation to ≥80% of candidate patients. Factors associated with increased likelihood to recommend discontinuation included providers' self-rated comfort with discontinuing medications (odds ratio [OR] 1.50; 95% confidence interval [CI] 1.23-1.84); having support to monitor the patient after discontinuation (OR 1.59; 95% CI 1.04-2.43); and having more patients who asked for information about medications (OR, 1.35; 95% CI, 1.04-1.76). Although not statistically significant, results suggest that when the indication for a medication was unclear, providers were less likely to recommend discontinuation (OR 0.65; 95% CI 0.39-1.06).

CONCLUSIONS: Although most providers indicate they have patients taking potentially unnecessary medications, they do not consistently recommend discontinuation to these candidate patients. Having additional support in place to monitor patients who discontinue medications and strengthening providers' comfort with deprescribing may promote

discontinuation. Educating patients about their medications may also help reduce barriers to deprescribing. Taken together, these strategies may reduce use of potentially low- value or harmful medications.

FACULTY OPINION ON FACULTY DEVELOPMENT: HOW AND HOW MUCH?

Jennifer jeremiah, Kelly McGarry, dominick tammaro. Internal Medicine, Brown Alpert Medical School, Providence, RI. (Control ID #3389737)

BACKGROUND: GME programs rely on faculty to teach, supervise, evaluate and guide trainees in their progression from student to independent practitioners. Regular feedback aligned with educational goals is essential. Nevertheless, learners often report receiving inadequate evaluation and feedback. Faculty report inadequate training and desire faculty development but cite multiple challenges including lack of time, lack of skill, inadequate learner insight, and discomfort with providing constructive criticism to residents. Given reported barriers to faculty development despite recognizing the need, targeted methods to meet needs, overcome barriers and respond to faculty's sources of motivation are necessary. The purpose of this study is to assess preferences for faculty development on evaluation and feedback at an academic institution.

METHODS: 251 teaching faculty who completed evaluations during the 2018 academic year were surveyed. The multiple choice survey assessed demographics, interest in and barriers to participating in faculty development sessions in evaluation and feedback, perceived satisfaction with their evaluation and feedback abilities, willingness to be observed and what types of faculty development activities they desired. Faculty were also asked their preferred methods for faculty development from a list which included teaching tweets, half day workshops outside of work week, half day workshops during work week, webinars, ongoing longitudinal series, online self-directed modules, and short electronic audio slide shows. Analyses were performed using SAS[1] software. Chi-square and Fisher exact tests were performed.

RESULTS: The response rate was 58%. 98% felt that evaluating and providing feedback was an important part of their job, yet 30% of faculty were not satisfied with their evaluation abilities and 41% were not satisfied with their feedback abilities. Gender, time from training, or whether subspecialty or non-specialty physician did not affect satisfaction with evaluation skills. Significantly more male (42%) than female (15%) faculty were not interested in faculty development (p-value=0.0008). Subspecialty faculty reported less interest (61%) when compared with non-specialty (79%), p-value=0.02. Significantly fewer subspecialty faculty (41%) compared with non-specialty faculty (50%) were interested in being observed (p- value=0.01). Short electronic audio slideshows were the most preferred faculty devleopment method. **CONCLUSIONS:** For faculty development to be successful, faculty must want to participate, have the time to participate, and receive effective training. Creating faculty development that is effective and acceptable to most faculty should be the aim of GME programs. Although this study was limited to a single institution and a single specialty, dissatisfaction with feedback is a pervasive issue in medical education. Assessing the needs of diverse faculty may allow for the development of programs that will appeal to the mix of faculty found at most institutions.

FALLING THROUGH THE CRACKS – TRACKING PATIENTS CARE TASKS IN RESIDENT CLINICS

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BACKGROUND: A lot of important patient care happens between office visits. We call this intervisit care. Although we have access to a patient's entire history via the EMR, current systems are not ideal for providing proactive care and managing follow up tasks. In resident clinics it can be especially challenging given the limited time residents are in clinic and the frequent hand offs between providers as residents rotate between inpatient and outpatient in a block system. A literature review demonstrated that attending physicians have similar concerns, and many have not developed a streamlined way to organize these intervisit tasks.

METHODS: We developed a survey to assess different resident practices to track tasks of mid level urgency requiring follow up, their confidence in their personal tracking systems, the time intensity of the tracking system, and their level of worry about tasks getting lost to follow up. From February to May 2019 we surveyed 16 primary care residents in an academic primary care track.

RESULTS: Our survey found that residents worried that care would get lost to follow up after the visit (median = 4, 1 = strongly disagree and 5 = strongly agree). While most residents had a system to track and sign out intervisit tasks, there were at least 4 different systems used. Some residents used multiple systems. This suggested that there was not a standardized nor consistent process between providers. Further, residents agreed that their systems were time consuming (median score = 4). They were neutral that their systems were effective (median score = 3). This suggests that we need better systems to support intervisit care management.

CONCLUSIONS: Our data suggests that we need better systems to support intervisit care management. This includes tasks like a repeat BMP after medication initiation and repeat imaging for abnormal findings. To address these concerns we worked with the Penn Center for Innovation to create a live dot phrase that automatically inputs patient information, tasks and orders directly into a task management dashboard from the patient note the dot phrase was used in. The dashboard is shareable between clinicians, allows for updates to tasks, and pulls data from the EMR into the dashboard based on orders placed during an encounter. This *Tickler Agent Dashboard* is a compiled patient list of tasks including labs, follow up, consults, patient updates and imaging. Of 23 clinicians, 9 residents piloted the *Tickler*. We categorized the tasks that residents demarcated as needing intervisit follow up. Labs and return visits were equal for the most documented tasks (63), followed by imaging (59), consults (45) and updates (28), respectively. The goal is that as the dashboard and process gets fine-tuned, this intervisit care model will create a standardized workflow, consequently limiting tasks lost to follow up, helping facilitate sign out and reducing stress between outpatient providers.

FAMILY MEMBER INCARCERATION AND WELLBEING: A NATIONAL CROSS-SECTIONAL STUDY

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BACKGROUND: The mass incarceration of over 2 million Americans has potentially far-reaching effects on the families of incarcerated individuals. However, the impact of family member incarceration on overall wellbeing has not been studied. The aim of this study is to estimate associations between family member incarceration and wellbeing.

METHODS: We used data from the 2018 FamHIS, a cross-sectional survey of family incarceration (FI) (N=2,815) that is nationally representative of US household adults. Immediate FI included the incarceration of a parent, sibling, romantic partner, or child, and extended FI encompassed that of other familial relations. We measured wellbeing using the validated 100 Million Healthier Lives Adult Wellbeing Assessment, which includes self-reported life evaluation as a measure of overall wellbeing. Life evaluation is categorized as thriving, surviving, or suffering, which we also use to estimate life expectancy. Using logistic regression, we compare wellbeing across levels of immediate and extended FI exposure, controlling for sociodemographics and predictors of family incarceration.

RESULTS: We estimate that 45% of Americans have had any immediate FI, and 35% have had any extended FI. Compared with White respondents, Black respondents were 1.5 and 1.6 times more likely to have any immediate or extended FI, respectively. Any FI (immediate or extended, N=1,956) was associated with lower rates of thriving (70% vs 58%) and higher rates of surviving or suffering (30% vs 42%) (p<0.001, Table), which is estimated to be associated with 3.2 years shorter life expectancy compared with those without FI (N=643). With greater numbers of family members ever incarcerated, proportions thriving declined (Table). These trends persisted in adjusted models, with lower odds of a thriving life evaluation among those with any immediate (Adjusted Odds Ratio (AOR) 0.71, 95% CI 0.56 – 0.89) or any extended FI (AOR 0.77, 95% CI 0.60 – 0.99), compared with those without FI experience.

CONCLUSIONS: Having had a greater number of family members incarcerated is associated with a dose- dependent decrease in wellbeing. This suggests that clinical jail diversion and other decarceration efforts could have broader population health implications by minimizing detrimental effects of incarceration on non- incarcerated family members.

Table: Unadjusted trends in wellbeing by family member incarceration (FI)

	Life Evaluation				
FI Experience	Thriving (%)	Surviving (%)	Suffering (%)	N	P-for-trend
Overall	63.3	34.1	2.7	2755	
No FI	69.5	27.9	2.6	643	<0.001
Any FI	58.4	38.9	2.7	1956	
Any Immediate FI	56.9	40.7	2.5	1007	
1 immediate	60.2	37.8	2.0	844	
2-3 immediate	57.3	40.0	2.7	614	<0.001
>3 immediate	47.7	49.2	3.1	319	
Any Extended FI	57.7	39.0	3.3	955	
1 extended	67.9	29.6	2.4	198	
2-3 extended	61.3	33.1	5.5	325	<0.001
>3 extended	49.3	48.7	2.0	432	
Both Extended and Immediate FI	53.8	43.1	3.2	776	

FAMILY VERSUS HOME HEALTH AGENCY CAREGIVERS: A CROSS SECTIONAL ANALYSIS OF MANAGED CARE PARTICIPANTS AND COST OUTCOMES

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BACKGROUND: As Americans age and chronic disease management evolves, more care is being provided within the home as opposed to institutions. Long-term services and supports (LTSS) address health and social needs to promote optimal functioning of individuals with disabilities and accounted for $112 billion in US spending in 2015. LTSS includes caregivers who may be hired from community agencies or may be "self- appointed" by the participant and can include family or friends who receive payment for services. As the practice of self-appointing expands in the US, we sought to elucidate the demographic characteristics and total cost of care between participants choosing agency or self-appointed caregivers.

METHODS: Study participants were UPMC Community HealthChoices (CHC) members enrolled in Southwestern Pennsylvania with physical health coverage through UPMC Medicaid and Medicare using personal caregiver services in 2018. We excluded participants living in nursing facilities or receiving physical health coverage from an outside insurer. We compared baseline characteristics using one-way Analysis of Variance (ANOVA) for continuous, normally distributed variables, Kruskal-Wallis tests for non-normally distributed variables, and Chi-square tests for proportions. We separated the primary outcome, total cost of care, by LTSS, physical health, pharmacy, dental, and vision costs and analyzed outcomes according to caregiver status.

RESULTS: 9,013 participants were identified for consideration in the sample and 3,232 met inclusion criteria. Of the 3,232 participants using home caregivers, 69% (N=2,217) had an agency caregiver, 23% (N=752) had a self-appointed caregiver, and 8% (N=263) had a combination of both. Agency-only groups were older (mean 62.0 vs 55.0 years), more likely to be female (69.0% vs 62.8%), and had higher baseline health needs (UPMC Need Index 3.24 vs 2.96). Total cost was higher in agency-only participants (median $55,837 vs $45,324/year). When separated, LTSS (median $37,953 vs $31,136/year) and physical health (median $6,858 vs $5,385/year) costs were higher in agency-only groups, whereas pharmacy, dental, and vision costs were similar.

CONCLUSIONS: Among dually-eligible Medicare and Medicaid beneficiaries receiving caregiver services in their home, participants receiving care from agencies were older, more likely to be female, and had higher total cost of care. Older participants may be less likely to have reliable family or friends to appoint for care provision. Gender roles may inform the female predominance, as the majority of existing unpaid caregivers are women and provide disproportionately more services than men. Higher costs, driven by LTSS and physical health, may be due to higher baseline comorbidity and increased service needs. These findings have important implications for policymakers and insurers in helping to govern community LTSS while supporting member autonomy. Future work aims to identify the adjusted association among caregiver status, utilization, and cost.

FEASIBILITY OF A SUBSIDIZED FARM SHARE PROGRAM IN PRIMARY CARE PRACTICES

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BACKGROUND: Food insecurity is associated with adverse health outcomes in adults and children. Produce incentives may alleviate food insecurity and improve diet quality. A farm share subsidy program may provide families with an affordable option for healthy food choices. Our objective was to assess the feasibility of a subsidized farm share program in urban primary care clinics.

METHODS: We recruited participants from internal medicine or pediatric primary care clinics. The health system team partnered with a community fresh produce distributor, a local food pantry, and a national nonprofit. We block randomized participants to two groups. The immediate intervention group received 6 months of bi-weekly subsidized farm shares starting at enrollment, and the comparison group received the same

intervention but starting 6 months later (delayed intervention group). All participants received information about local emergency food resources at enrollment. Inclusion criteria included: 1) food insecurity (as measured by the 2-item Hager screen) and/or receipt of SNAP and/or WIC and 2) age 5-11 years with obesity or age >/= 18 years with uncontrolled diabetes. Farm share pickup occurred in the hospital lobby. We measured frequency of farm share pickup and participant feedback (using closed- and open-ended questions). Descriptive statistics and mixed methods were used.

RESULTS: We enrolled 95 participants, 50 adults and 45 children with their parents or guardians. The group was 57% Hispanic and 36% Black; 52% were female. 72% had annual income < $30,000. Adult participants picked up an average of 4.7 farm shares (range 0-12, SD 3.7) and pediatric participants picked up an average of 4.1 farm shares (range 0-12, SD 3.8). 95.5% of participants were likely or very likely to recommend the program to a friend. Participants stated the program helped with: 1) exposure to new foods and a variety of fruits and vegetables, 2) increased access and affordability, 3) improved knowledge of how to eat and cook healthy foods, and 4) improved diet and enhanced ability to maintain a healthy diet. Reasons participants gave for not picking up farm shares included: was away (12.5%), not enough money (12.5%), didn't like what I was getting (12.5%) and forgot (9.7%). When asked what they would change, participants stated: 1) more choice/variety of items, 2) more pickup times, more locations, and home delivery, 3) lower price, greater quantity of items (especially fruits), 4) greater ease in payment method, and 5) more cooking instructions and recipes.

CONCLUSIONS: Our findings of moderate pickup rate and strong positive feedback support the feasibility of a subsidized farm share program embedded within urban primary care clinics. Future research is needed on how changes to pricing, logistics, and additional supportive programming can optimize participation and bring such programs to scale.

FEASIBILITY OF ONLINE SELF-MANAGEMENT SUPPORT WITH MINDFULNESS FOR TREATING BLOOD PRESSURE

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BACKGROUND: Although numerous efficacious hypertension therapies exist, 40% of treated patients do not meet blood pressure (BP) goals. This likely reflects low levels of adherence to lifestyle recommendations and medication regimens. Furthermore, stress-reduction has been identified as potentially useful for reducing blood pressure but is not typically utilized in treatment regimens.

METHODS: We developed a 17-week online behavioral support intervention for BP that includes interactive lessons to support healthier diet, physical activity choices and medication adherence, self-monitoring tools and e-coaching. The intervention can be delivered with or without a mindfulness curriculum for stress reduction [Minding GOALS-BP (MGBP) and GOALS-BP (GBP)]. Adult volunteers with uncontrolled hypertension from UPMC primary care were randomized to MGBP versus GBP to assess the feasibility of recruitment, intervention adherence and intervention delivery. Feasibility outcomes (Timely Enrollment, Intervention Delivery and Completion of Assessments), BP and other measures were obtained at baseline, 4-months and 6- to 12-months after program enrollment. Descriptive statistics were reported for feasibility outcomes and predicted means at baseline (T1), 4-months (T2, program completion) and 12 months (T3) were calculated using linear mixed models for clinical outcomes.

RESULTS: Eligibility was assessed for 644 people and 76 were randomized over 54 weeks. At baseline, MGBP (n=37) and GBP (n=39) participants, on average, had hypertension (149.1/88.4 and 147.2/90.3 mm Hg), obesity (33.5 and 33.8 kg/m^2), took 2.0 medications daily for hypertension and had few comorbidities (Charlson Comorbidity Index < 1.0). Outcomes were assessed for 86% (n=65) at T2 and 82% (n=62) at T3. MGBP and GBP groups completed a similar number of lessons [mdn= 7 (IQR 5-10) vs 8 (IQR 4-11)] and logins [20 (IQR 16-39) vs 23 (IQR 12.0-40.0) respectively] over 6 months, though completion of 80% of lessons was slightly higher for the MGBP group (89 vs 77%). MGBP participants generally showed slightly higher rates of self-monitoring than did GBP. Based on a linear mixed model, systolic BP declined from T1 to T3, though the trend was similar between MGBP [T1 estimate (95% confidence interval): 145.8 (141.3-150.3), T2: 139.8 (136.2-143.5); T3: 127.9 (121.9-133.9)] or GBP [T1: 145.2 (140.8-149.6), T2: 140.1 (136.5-143.8), T3: 130.0 (123.7-136.3)]. Similarly, diastolic BP declined in both groups [MGBP T1: 85.8 (82.2-89.3), T2: 83.5 (80.4-86.6), T3: 79.0 (74.6-83.3) versus GBP T1: 88.4 (84.9-91.8), T2: 85.6 (82.5-88.7), T3: 80.1 (75.5-84.7)].

CONCLUSIONS: An online tool to support self-management of blood pressure can be implemented and evaluated in coordination with primary care. Interactive mindfulness resources may enhance program engagement but did not show improved blood pressure in this pilot evaluation.

FEATURES OF NEW DRUG INDICATIONS NOT APPROVED BY THE FOOD AND DRUG ADMINISTRATION, 2008-2017

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BACKGROUND: The US Food and Drug Administration (FDA) is responsible for approving new indications for drugs through the Supplemental New Drug Application (sNDA) process. Such approvals require sponsors to submit new supportive data for their products, typically clinical trials. FDA reviews of this data become publicly available on approval, but data supporting unapproved uses remains confidential. The FDA thus holds data about the efficacy and safety of numerous off-label indications that nonetheless may be clinically relevant. Using publicly-available advisory committee records, this study examined features of new indications reviewed and not approved by the FDA over 10 years.

METHODS: We performed a systematic review of all FDA advisory committee meetings voting on a proposed new indication for an approved drug from January 2008 through December 2017. Using the public Drugs@FDA database, we characterized the indications and determined their approval status, including those indications not approved by the FDA for our study. We performed document content analysis on the advisory committee transcripts, using the constant comparative method to generate and illustrate a single set of themes that represented committee members' rationales for approval or non-approval of the new indications.

RESULTS: 54 advisory committee meetings discussing sNDAs were held from 2008-2017, which discussed approvals for 69 separate indications. Of these, 30 (38.4%) proposed indications remained unapproved, representing 23 unique drugs submitted for 29 unique new indications. The most common type of unapproved new indication was a new efficacy claim (n=20, 66.7%), followed by an expanded population (n=6, 20.0%) and modified efficacy claim (n=4, 13.3%).

Efficacy and safety concerns were cited by committee members as a basis for every non-approval. These ranged in degree from failures to meet standards for substantial evidence of efficacy (n=9, 30.0%) and/or safety (n=5, 16.7%), to having insufficient or inconsistent data for risk-benefit determination (n=21, 70.0%).

Contextual concerns, such as unmet need (n=5, 16.7%), existing market experience (n=6, 20.0%), future prescribing patterns (n=10, 33.3%), and long-term impacts on drug development (n=3, 10.0%), were also common and modulated the effects of efficacy and safety concerns.

CONCLUSIONS: Efficacy and safety concerns are major contributors to the non-approval of new indications of drugs by the FDA, with contextual concerns playing an effect-modifying role. Transparency of information held by the FDA about the efficacy and safety of new uses of drugs has the potential to inform and improve clinical practice.

FIB-4 SCORES IN PRIMARY CARE PATIENTS WITH ABNORMAL LIVER TESTS

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BACKGROUND: Liver fibrosis severity is an important predictor of outcome in patients with a variety of liver diseases. The Fibrosis-4 (FIB-4) Index, a non-invasive test of liver fibrosis combining commonly available lab results and age, may play a role in improving the diagnosis and management of non-alcoholic fatty liver disease (NAFLD) in primary care patients at risk. We examined FIB-4 score and its relationship with clinical components of metabolic syndrome (MetS) in a primary care population with abnormal liver tests and no other identified liver disease diagnoses.

METHODS: A retrospective study of electronic record data from a primary care clinic from 2007 - 2018 identified adult patients with abnormal liver tests and evaluated patient-level FIB-4 scores, the proportion of patients with values concerning for liver fibrosis (FIB-4>1.3) and cirrhosis (FIB-4>2.67), and the demographic and clinical factors associated with an elevated FIB-4 score. We developed multivariable logistic regression models for the dependent variables of mean FIB-4>1.3 and mean FIB-4>2.67. Objective measures of MetS components served as independent variables: BMI (continuous), A1c>6.5%, triglycerides>150 mg/dL, HDL<50 mg/dL for women (<40 mg/dL for men), and blood pressure (BP)>130/85 mm Hg.

RESULTS: 9,657 patients with 116,237 FIB-4 scores were included, with mean of 12 (SD: 17.4) and a median of 7 (IQR: 3-14) values per patient, respectively. Of these patients, 97% had at least one component of MetS, 8% had all five components, and only 1% carried an ICD-9/10 diagnosis code for NAFLD. Using patient-level mean FIB-4 scores, 3,547 (37%) patients had values > 1.3, and 564 (6%) > 2.67 (Table 1). The logistic regression model identified elevated BP (OR 1.73, 95% CI 1.49-2.01), hyperglycemia (OR 1.26, 95% CI 1.13-1.40), hypertriglyceridemia (OR 1.16, 95% CI 1.06-1.28), Black race (OR 1.28, 95% CI 1.17-1.40), and male gender (OR 1.71, 95% CI 1.57-1.86), as positively associated with a mean FIB-4 score consistent with advanced fibrosis.

CONCLUSIONS: A large proportion of primary care patients with risk factors and clinical signals of NAFLD have FIB-4 scores concerning for advanced fibrosis. Future work is needed to validate the performance of FIB-4 in this setting.

FINANCIAL HARDSHIPS AMONG UGANDANS SEEKING HEALTH CARE: FINDINGS FROM A 2019 NATIONAL SURVEY

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BACKGROUND: Globally, countries are aiming for universal health coverage—access to quality care without financial hardship. This has been elusive for Uganda where individual out-of-pocket (OOP) costs comprise over 40% of total annual health expenditures, contributing to financial challenges. We assessed the national prevalence and correlates of financial hardship and OOP costs in accessing health care.

METHODS: We analyzed a household survey conducted in Uganda in 2019 by the Performance Monitoring and Accountability 2020 (PMA2020) program, which collected data from a nationally representative sample of women and men ages 15+ in Uganda in 2019. We defined financial hardship as having had to borrow money or sell a possession in order to afford a visit to a health care facility. We used descriptive statistics with survey weights to estimate the national prevalence of financial hardship and distribution of OOP costs; multivariable logistic and linear regression models to identify significant predictors of financial hardship and higher OOP costs; and multivariable logistic regression models to assess the association between financial hardship and excellent or very good ratings of patient experience.

RESULTS: In 2019, less than 1% of the population reported having any form of health insurance while 44.3% of Ugandan people seeking care reported experiencing financial hardship. Among those experiencing financial hardship, the mean OOP cost was 88,404 Ugandan shillings, about USD$24, compared to 49,351 shillings for those who did not report financial hardship. In a multivariable model, characteristics associated with higher odds of financial hardship were being in the poorest wealth quintile compared to the richest (adjusted odds ratio, aOR, 6.54, 95% CI 3.93-10.9); poor self-reported overall health vs excellent (aOR 5.09, 95% CI 2.08-12.5); rural-dwelling vs urban (aOR 1.68, 95% CI 1.17-2.43); going to a public facility vs private (aOR 1.52, 95% CI 1.03-2.24); and seeking care for acute reasons vs chronic/preventive reasons (aOR 1.86, 95% CI 1.06-3.27). For OOP costs, being in the highest wealth quintile, living in a rural area, and bypassing the closest facility to seek care elsewhere were associated with higher expenses. People reporting financial hardship had worse ratings of patient experience, though this relationship was not significant when adjusted for covariates such as wealth.

CONCLUSIONS: There is a large burden of financial hardship in Uganda that disproportionately affects the poor, sick, acute care-seeking, and rural-dwelling population and is associated with higher out-of-pocket costs. Given the high proportion of financial hardship and its impact on subpopulations that may be at higher risk of catastrophic expenditures, there is a significant need for health insurance coverage, particularly with a severe lack of available financial protection. These findings are highly relevant to the current ongoing legislative process in Uganda to pass a national health insurance bill.

FINANCIAL IMPLICATIONS TO PRIMARY CARE PRACTICES OF ALTERNATIVE BUPRENORPHINE-BASED OPIOID ADDICTION TREATMENT STRATEGIES: A MICROSIMULATION MODEL

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BACKGROUND: Buprenorphine therapy has been limited in supply in high need areas, in part due to uncertainty about how instituting a buprenorphine treatment program may impact practice finances. While buprenorphine treatment is cost-effective in terms of improving quality-adjusted life-years in the population relative to the cost of the drug, whether it is financially beneficial to practices to invest in the training, infrastructure, workforce, and time to deliver buprenorphine remains uncertain.

METHODS: We interviewed twenty practice managers and identified four approaches to delivering buprenorphine-based treatment through primary care practices, which differed in physician and nurse responsibilities. We then used a microsimulation model to estimate how practice variations in patient types, payers, revenues, and costs across primary care practices nationwide would affect cost and revenue implications of each approach, for four types of practices: federally-qualified health centers (FHQCs), non- FQHCs in urban high-poverty areas, non-FQHCs in rural high-poverty areas, and practices outside of high- poverty areas.

RESULTS: Four approaches to buprenorphine-based treatment included: physician-led visits with nurse-led logistical support; nurse-led visits with physician oversight; shared visits; and solo prescribing by physicians alone. Net practice revenues would be expected to increase after introduction of any of the four approaches, by between $18,000 and $70,000 per full-time physician in the first year across practice types. Yet physician- led visits and shared medical appointments–both of which relied upon nurse care managers–consistently produced the greatest net revenues ($29,000 to $70,000 per physician in the first year). To ensure positive net revenues in any approach, providers would need to maintain at least nine patients in treatment and no-show rates <34%.

CONCLUSIONS: Many types of primary care practices could financially sustain buprenorphine-based treatment if demand and no-show rate requirements were met, but a nurse care manager-based approach may be most sustainable.

FINANCIAL STRAIN AMONG LOW, MIDDLE, AND HIGH-INCOME ADULTS WITH EMPLOYER-SPONSORED INSURANCE IN THE UNITED STATES

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BACKGROUND: Some proposed health care reforms would take the controversial step of eliminating employer-sponsored insurance (ESI). Little information is available on the extent to which ESI protects families, particularly those with low incomes, from high health care costs.

METHODS: We analyzed 4 years of data (2014-2017) from the Medical Expenditure Panel Survey on non- elderly adults (age 18–64) covered by ESI. We examined 4 indicators of financial strain: 1. Difficulty paying medical bills; 2. Currently paying medical bills over time; 3. High-burden medical spending (family out of pocket medical (OOP) spending >10% of family income); and 4. Catastrophic medical spending (family OOP spending and premium contributions >40% of income). We examined outcomes among 3 groups based on family income: Low (0–250% of the federal poverty level [FPL]), middle (251-400% FPL) and high (>400% FPL) income. We used logistic regression and predictive margins to estimate percentage point differences between Low and High, and between Middle and High income groups, controlling for age, gender, race/ethnicity, marital status, educational attainment, employment status, self-reported health status, number of chronic health conditions, and measures of health care utilization. Analyses were replicated for a subgroup of enrollees with 1 or more chronic conditions and for those with each chronic condition individually.

RESULTS: The study sample included 34,655 non-elderly adults with ESI. Low income enrollees were more likely than high income enrollees to report difficulty paying medical bills (14.9% vs 4.6%; adjusted percentage point difference [AD], [95% CI], 9.1 [7.4-10.8]) and to report paying medical bills over time (27.3% vs 15.7%; AD, 10.4 [8.2-12.6]). Low income enrollees were also more likely than high income enrollees to experience high burden spending (9.1% vs 1.0%; AD, 8.9 [7.5-10.2]) and catastrophic spending (6.7% vs 0.0%; AD, 6.7 [5.4-8.3]). Among individuals with 1 or more chronic medical conditions, low income enrollees were also more likely than high income enrollees to report difficulty paying medical bills (19.2% vs 6.0%; AD, 11.0 [8.0-14.0]), paying medical bills over time (31.6% vs 19.0%; AD, 10.2 [6.7-13.8]), and experience high burden spending (14.0% vs 1.4%; AD, 12.2 [9.6-14.7]) and catastrophic spending (8.2 vs. 0.0%; AD, 7.8 [5.8-9.8]). Spending disparities were particularly large among persons with cancer: more low- than high-income enrollees experienced high burden (23.1% vs 1.4%; AD, 21.8 [14.2-29.2]) and catastrophic spending (12.2% vs 0%; AD, 12.1 [9.3-15.3]). Middle- vs high-income comparisons yielded somewhat smaller differences.

CONCLUSIONS: Many persons with ESI, particularly those with low incomes, experience serious financial strain due to medical costs.

FLUID RESUSCITATION AND CLINICAL OUTCOMES IS SEPSIS PATIENTS WITH AND WITHOUT CONGESTIVE HEART FAILURE (CHF)

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BACKGROUND: The Surviving Sepsis guidelines suggest that patients meeting severe sepsis criteria should be administered fluids for initial management; however, data is lacking for patients with congestive heart failure (CHF) where pulmonary edema is a concern. We aim to identify the association between initial volume of fluid administered and clinical outcomes among septic patients with and without CHF.

METHODS: In this retrospective cohort study, we extracted Electronic Health Record (EHR) data on adults presenting to an academic emergency department (ED) from 2012-2018 who met validated Sepsis-III EHR criteria and had a lactate ≥2 mmol/L. CHF patients were identified by ICD-10 codes. Fluids given in the first 24 hours following ED presentation were summed. Multivariable logistic regression was used to estimate adjusted associations with mortality and mechanical ventilation (MV) across quintiles of volume received, stratified by CHF diagnosis. There

was an interaction between CHF status and fluid quintile on mortality (P=0.02), but not MV (P>0.20).

RESULTS: Patients with CHF received less fluid overall (CHF mean 1.8 ± 1.9L vs. no CHF 2.9L ± 1.9L, P<0.001). In multivariable analysis, there was a stepwise decrease in odds of morality with increasing fluid quintiles (P=<0.001-0.04, Table). Among CHF patients, the association was more attenuated, but there was a trend towards decreased mortality with increasing fluid quintile (quintile 4, P=0.02, Table). There was no association between fluid quintile and need for MV in either CHF or non-CHF patients.

CONCLUSIONS: Clinicians administer less fluid to septic patients with CHF. Increased fluid administration was associated with a mortality benefit in patients without CHF; an association not clearly observed in CHF. Fluids were not associated with MV for either group. While CHF patients may not benefit from increased fluids as much as patients without CHF, they were not at higher risk of MV after adjustment for potential confounders. More investigation is needed to determine the optimal fluid resuscitation strategy in patients with CHF.

Associations between fluid volume in the first 24 hours and death or mechanical ventilation in multivariable models stratified by CHF status

	CHF (n=1060)			No CHF (n=4385)		
Mortality						
Fluid (L)	**n**	**OR 95% CI**	***P* value**	**n**	**OR 95% CI**	***P* value**
0 - 1.0	440	*reference*		666	*reference*	
1.0 - 2.0	228	0.82 (0.51 - 1.31)	0.40	864	0.72 (0.52 - 0.98)	0.04
2.0 - 3.2	158	0.62 (0.35 - 1.07)	0.09	912	0.67 (0.49 - 0.92)	0.01
3.2 - 4.9	146	0.51 (0.29 - 0.9)	0.02	943	0.56 (0.41 - 0.77)	< 0.001
4.9 +	88	0.77 (0.42 - 1.44)	0.42	1001	0.33 (0.24 - 0.46)	< 0.001
Mechanical Ventilation						
0 - 1.0	440	*reference*		666	*reference*	
1.0 - 2.0	228	0.82 (0.46 - 1.47)	0.51	864	0.92 (0.62 - 1.36)	0.66
2.0 - 3.2	158	1.57 (0.83 - 2.95)	0.16	912	0.83 (0.56 - 1.23)	0.35
3.2 - 4.9	146	1.31 (0.7 - 2.47)	0.40	943	0.80 (0.55 - 1.18)	0.26
4.9 +	88	1.42 (0.7 - 2.85)	0.33	1001	1.06 (0.73 - 1.52)	0.77

Multivariable logistic regressions adjusted for the following variables: illness severity (Sequential Organ Failure Assessment score), demographic characteristics (age, gender, race/ethnicity, limited english proficiency), comorbidities (hypertension, diabetes, renal disease, liver disease, cancer, substance use, mental health conditions), triage vitals (Glasgow Coma Scale, temperature, heart rate, mean arterial pressure, respiratory rate, SpO2:FiO2 ratio), initial labs (lactate, leukocytes, platelets, creatinine).

FOR OLDER HOMELESS ADULTS, HOUSING INSTABILITY AND MENTAL HEALTH HOSPITALIZATIONS ARE ASSOCIATED WITH UNMET CAREGIVING NEED: FINDINGS FROM THE HOPE HOME STUDY

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BACKGROUND: Adults ≥50 comprise approximately 50% of the individual adult homeless population. They experience high rates of chronic illness and early onset of disabilities that can increase acute care utilization and need for costly long-term care placement. "Aging in place" with the support of caregivers and community-based programs can yield significant savings. Yet, the current state of caregiving and caregiving need among older homeless-experienced adults is not well understood. In this study, we aim to (1) describe the characteristics of older homeless-experienced adults with caregiving need and (2) determine factors associated with unmet need.

METHODS: The sample is drawn from the Health Outcomes in People Experiencing Homelessness in Older Middle Age (HOPE HOME) study, an ongoing longitudinal study of health, life course events, and functional status among older adults homeless at study entry. Between July 2013 and June 2014, we recruited adults over age 50 in Oakland, CA and re-interviewed them every 6 months regardless of housing status. In this study, we included a cross-sectional sample of participants who completed a caregiving questionnaire at their most recent interview. We defined caregiving need as having difficulty with any Activities of Daily Living (ADLs), Independent Activities of Daily Living (IADLs), falls, Short physical Performance Battery (SPPB) score <10, or Modified Mini-Mental State (3MS) exam impairment. We defined unmet need as having caregiving need but not having caregiving assistance in the last 6 months. Using logistic regression, we analyzed associations between respondent characteristics (i.e. housing type, social support, health status, substance use, and mental health hospitalization) and having unmet caregiving need.

RESULTS: Among 345 participants, over 80% met the definition for caregiving need. Among those with need, the median age was 62 years (IQR 58-66) with over 80% African American. Nearly 85% of participants were single and 44% remained homeless. About half reported having 2 or more chronic conditions;78% rated their health as fair or poor. Twelve percent reported being hospitalized for a mental health problem. Of those with caregiving need, nearly 80% had unmet need. Mental health hospitalization (AOR 3.75, CI [1.46-9.67], p<0.01) was associated with higher odds of having unmet need; residing in an institutional setting (i.e. hospital, prison, skilled nursing facility, or other rehab institution) (AOR 0.26, CI [0.07-0.92], p<0.05) and permanent supportive housing (AOR 0.26, CI [0.07-0.97], p<0.05) were associated with lower odds versus being unsheltered or in emergency shelter.

CONCLUSIONS: Older homeless adults have high prevalence of unmet caregiving need. Targeted interventions to support stable housing and address severe mental health problems may improve the ability to meet caregiving needs, avoiding costly consequences of disability and supporting this population to age in place.

FRAILTY IS STRONGLY ASSOCIATED WITH SELF-REPORTED SYMPTOM BURDEN IN PATIENTS WITH CIRRHOSIS

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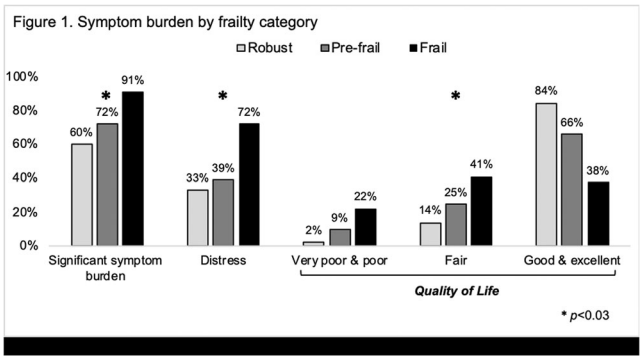
BACKGROUND: Among patients with cirrhosis, frailty has most commonly been measured using instruments that focus on malnutrition, muscle wasting, and functional impairment. Little is known about how these frailty domains correlate with patient-reported symptoms.

METHODS: Adult patients with cirrhosis undergoing outpatient evaluation for liver transplantation from 7/1/19-9/30/19 were eligible for inclusion. Frailty was assessed using the Liver Frailty Index (LFI; grip strength, chair stands, and balance) and categorized as robust (< 3.2), pre-frail (3.2-4.4), and frail (≥ 4.5). Symptom burden was assessed using the Palliative Care Quality Network Symptom and Well-being Survey, a composite of validated measures including the Edmonton Symptom Assessment Scale (ESAS), National Comprehensive Cancer Network Distress Thermometer, and a single-item quality of life measure. We defined a significant symptom burden as a score on the ESAS of ≥ 4 (moderate or severe) in at least one of nine symptoms.

RESULTS: Of 233 patients (median age 61 years, 43% female, 82% white), median LFI was 3.8 (IQR 3.3-4.2); 22% were robust, 64% pre-

frail, and 14% frail. Overall, 72% of patients had a significant symptom burden. Higher frailty categories were associated with increased prevalence of pain, dyspnea, fatigue, nausea, drowsiness, depression, and poor wellbeing (test for trend, all $p<0.03$). Frail patients were also more likely to report distress and poor quality of life (Figure 1). In univariate analysis, each 0.5 increase in LFI was associated with 35% increased odds of experiencing significant symptom burden (95% CI: 1.1-1.6, $p=0.001$), which persisted (OR 1.3, 95% CI: 1.0-1.5, $p=0.04$) even after adjusting for MELD, ascites, hepatic encephalopathy, and dialysis.

CONCLUSIONS: In patients with cirrhosis, frailty is strongly associated with physical/psychologic symptoms including pain and depression, in addition to poor quality of life; 91% of patients who were frail reported significant symptom burden and 72% reported significant distress. Frail patients with cirrhosis may benefit from palliative care referral to address symptoms and improve quality of life.



FREQUENCY AND CONTENT OF HYPOGLYCEMIA DISCUSSIONS IN PRIMARY CARE VISITS FOR PATIENTS WITH DIABETES

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BACKGROUND: Hypoglycemia is the most common serious adverse effect of diabetes treatment, and occurs more often among racial/ethnic minorities. Most hypoglycemia is caused by sulfonylureas or insulin. Diabetes guidelines recommend that patients using these medications be asked about hypoglycemic events at each clinical encounter and be provided anticipatory guidance for hypoglycemia prevention. No prior studies have examined whether and how these hypoglycemia discussions occur in clinical practice.

METHODS: We performed a mixed methods study to determine the frequency and content of hypoglycemia discussions during primary care visits. We included patients with diabetes using sulfonylureas or insulin who participated in the Achieving Blood Pressure Control Together (ACT) study, a randomized controlled trial to study the effectiveness of hypertension behavioral self-management interventions among African Americans with uncontrolled hypertension receiving primary care in Baltimore, MD. During the 12-month study period, all participant's routine primary care visits were audio-recorded; we transcribed verbatim the first three visits for each participant. Three investigators abstracted discussions of hypoglycemia or blood glucose to develop a coding framework to classify the type and content of communicative acts related to hypoglycemia. We defined assessment for hypoglycemia as any discussion of hypoglycemic events, symptoms, or review of glucose readings during the clinical encounter.

RESULTS: We examined 84 visits occurring from 2013-2015 representing 33 unique patients and 8 providers. Participants at baseline were mean age 61 years, 67% female, 97% had type 2 diabetes and 61% used insulin. Diabetes was listed as a problem in the visit plan for 99% of visits. Assessment for hypoglycemia occurred in 33% of visits which was similar for insulin users and non-users (33% vs. 34%, p=0.53). Clinicians mostly assessed hypoglycemia by asking about home glucose readings or reviewing glucose logs (21% of visits) rather than asking about hypoglycemic events directly (13%) or symptoms (7%). In 12% of visits, patients reported hypoglycemic events without clinician prompting. Clinicians asked for additional detail around hypoglycemic events in 15% of visits, which was mostly related to the context of the event rather than event frequency or severity. Anticipatory guidance for hypoglycemia was discussed in 12% of visits, which consisted mainly of behavioral modification for hypoglycemia prevention; hypoglycemia treatment was discussed in 1% of visits.

CONCLUSIONS: In this high hypoglycemia risk population from one primary care clinic, assessment for hypoglycemia occurred in a minority of visits. Hypoglycemia discussions focused on glucose values, lacked key details of hypoglycemia frequency and severity, and rarely included anticipatory guidance. Research is needed to identify efficient ways to assess for hypoglycemia and counsel for hypoglycemia prevention in primary care.

FURTHER VALIDATION OF THE INFLUENCE AND MOTIVATION FOR PATIENT ACTIVATION IN DIABETES CARE (IMPACT-D) AMONG DIVERSE PRIMARY CARE SETTINGS

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BACKGROUND: Although there has been increasing interest in patient activation, the most widely used measure, the Patient Activation measure (PAM), is a generic assessment and not unique to a specific condition, such as type 2 diabetes (T2DM). As a result, there have been inconsistent associations reported with the PAM and T2DM-related outcomes. The Influence and Motivation for Patient ACTivation in Diabetes Care (IMPACT-D) is a valid and easily administered tool that can be used to assess patient activation among a diverse population of adults with T2DM. The objective of this study was to further validate the newly available IMPACT-D in a more diverse setting.

METHODS: We used data from an ongoing randomized controlled trial of community dwelling adults with T2DM. 490 patients who had been prescribed 5+ medications were recruited in outpatient primary care practices in New York City, NY and Chicago, IL. Outcomes included regimen adherence (ASK-12), depression (PROMIS), self-reported overall health (SROH), and preliminary clinical values (blood pressure (N=490), HbA1c (n=139), cholesterol (n=83). Health literacy was assessed via the Newest Vital Sign (NVS). Item performance was analyzed (cronbach's alpha, principal components analysis, construct validation with Consumer Health Activation Index (CHAI)). To confirm IMPACT-D associations with health outcomes, we ran correlations between the IMPACT-D and regimen adherence, depression, overall health, and clinical values (blood pressure, HbA1C, and cholesterol).

RESULTS: The mean age of participants was 61 years; two thirds were women; 63% had received a high school education or less; 43% reported

an annual household income of less than $20,000; over half (54%) were African-American. A third (36%) of participants had limited health literacy. The IMACT-D showed good internal consistency (alpha =0.69); the six items included in the IMPACT-D loaded onto a single factor (Eigenvalue: 1.70, factor loadings ranged 0.33-0.68). In terms of construct validity, a higher IMPACT-D score was associated with higher CHAI scores (r=0.49, p<0.0001), greater medication adherence (r=-0.43, p<0.001), fewer depressive symptoms (r=-0.-34, p<0.0001), and better overall health status (r=0.26, p<0.0001). No significant differences were noted by blood pressure (r=0.02, p=0.62), HbA1c (r=-0.08, p=0.32), or cholesterol (r=-0.20, p<0.06).

CONCLUSIONS: The IMPACT-D tool is a reliable, valid measure of patient activation in diabetes care that demonstrated good psychometric performance. IMPACT-D scores were associated with patient-reported outcomes and greater medication adherence, while not being associated with intermediary clinical outcomes due to limited data. These results suggest the IMPACT-D should still be considered as a diabetes-specific alternative to existing patient activation measures.

GASTRIC ANTRAL VASCULAR ECTASIA (GAVE): A FREQUENTLY MISSED DIAGNOSIS

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BACKGROUND: Gastric antral vascular ectasia (GAVE) accounts for 4% of non-variceal upper gastrointestinal bleeds and is associated with significant morbidity. A diagnosis of GAVE is made primarily at endoscopy supplemented by histology where available. The endoscopic pattern of GAVE is characterized as "watermelon," "honeycombing" and "nodular" and is not exclusive to the antrum. Treatment of GAVE is dependent on an accurate diagnosis. The aim of this study was to evaluate the accuracy with which an endoscopic diagnosis of GAVE was made in a large tertiary referral center.

METHODS: A retrospective analysis of esophagogastroduodenoscopies (EGD) was performed for patients diagnosed with GAVE in a tertiary care center over a 16 year period. Charts were reviewed for an endoscopic diagnosis of GAVE including location and subtype, treatment delivered, number of EGD's performed, training of the endoscopist and pathology results. The level of concordance between different endoscopists and histology was examined.

RESULTS: In total, 110 patients received a diagnosis of GAVE at some point during the study period and 184 EGDs were performed overall. Eighty-five patients (77%) had GAVE isolated to antrum while the rest had GAVE in the antrum as well as the body (2.7%), cardia (2.7%), duodenum (9.1%), pylorus (1.8%), and multiple locations (5.5%). Sixty-four (58%) patients had unclassified GAVE, while the rest were defined as nodular (19%), watermelon (15.5%), honeycomb (3%) and mixed (3.6%). Band ligation (BL) was performed only among those with nodular GAVE and those that were unclassified. Even among patients with nodular GAVE only 42.9% underwent BL. One hundred and twenty five (68%) of the endoscopies were performed by hepatologists.

CONCLUSIONS: GAVE was mislabeled as erythema, ulceration, polyps and gastritis in 74 (40%) patients. Among the 110 patients, 26.4% of them required more than one procedure to reach GAVE diagnosis. The misdiagnosis rates for gastroenterologists and hepatologists were similar (46.6% vs 36.8%, p=0.22). For the 60 patients who also received a biopsy, there was a discordance rate of 30% (K=0.35) in comparison to an endoscopy. In addition the subtype of GAVE was documented in less than half of cases. This study highlights GAVE as a disease which can be frequently misdiagnosed at endoscopy and should be made a focus for trainees and current practitioners.

GENDER DIFFERENCES IN BURNOUT: HOW PREVALENCE OF CONTRIBUTING FACTORS MAY CREATE DISCREPANCIES BETWEEN MEN AND WOMEN.

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BACKGROUND: Physician burnout threatens professional satisfaction, mental health outcomes and likelihood to continue practice. Though many studies report gender-based differences in burnout prevalence, few have examined how and why certain factors may differentially contribute to these differences. We conducted an institution-wide survey at an academic medical center to explore how some professional and personal characteristics vary by gender and may in turn influence gender-based differences in well-being.

METHODS: We administered a web-based anonymous cross-sectional survey to all clinical and non-clinical faculty at the Mount Sinai Health System (MSHS) from 11/2018 to 2/2019. The survey was comprised of validated instruments to measure burnout (Maslach Burnout Inventory-MBI-2, Well-being Index-WBI), depression (PHQ-2) and items to assess professional roles, workplace culture, and demographics. Data analysis involved dichotomization of Likert scale variables and t-test and chi-square bivariate analyses. We excluded non-binary and other gender responses due to small sample size.

RESULTS: Of 4156 faculty, 1781 (43%) participated in the survey. We included 1497 who identified as male (753) or female (744). Women were significantly more likely to be younger, work fewer hours per week, be junior in academic rank and disagree that work leaves enough time for family. Women were more likely to experience gender discrimination (25.2% vs. 2.2%; p<0.001), sexual harassment (13.1% vs. 2.3%; p<0.001) at work and feel unsatisfied with their current job (18.8% vs. 13.0%; p=0.006). Women were significantly more likely than men to be burned out (WBI - 39.2% vs. 27.4%; p<0.001; MBI - 30.9% vs 23.3%; p=0.002), to screen positively for depression (25.9% vs. 18.2%; p=0.002) and believe they would benefit from mental healthcare in the prior year (40.8% vs. 23.5%; p<0.001). We found no gender-based difference in likelihood to have a professional mentor (28.3% vs 27.1%; p=0.62), and satisfaction with their leaders (64.5% vs 69.7%; p=0.12). Experience of gender discrimination, younger age, and dissatisfaction with supervisor were significantly associated with burnout in both genders. However, lack of a mentor (OR 1.96; p=0.003) was associated with MBI burnout in men, not women. Higher numbers of hours worked per week was associated with increased MBI burnout in women; peaking at 51% burnout in women working 71-80 hours per week (p= 0.002), an association not seen in men (p=0.34).

CONCLUSIONS: Many factors contribute to burnout in both genders, such as gender discrimination, younger age and lower faculty level; however, some factors affect women (i.e. gender discrimination) more and thus may be a greater contributor to gender differences in burnout prevalence. This study is limited by its cross-sectional design at one institution and its assessment of only some factors contribuiting to burnout. Nonetheless, gender differences in factors contributing to physician burnout should inform novel intervention strategies.

GENDER DIFFERENCES IN EXPERIENCED BULLYING AMONG INTERNAL MEDICINE RESIDENTS

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BACKGROUND: Bullying is a significant problem in medical education and it results in a wide-range of negative consequences for those who are bullied. Preliminary analyses from this national study characterized the precise prevalence of bullying among internal medicine (IM) trainees at 1 in 7 residents, 14%. In further exploring the data, we wanted to discern whether there were gender differences across types of bullying endorsed (including verbal, physical, and sexual) and the personal consequences of this bullying. Based on research from other fields, we hypothesized that female residents would experience more detrimental consequences from being bullied.

METHODS: This cross-sectional survey exploring bullying included all IM residents in the US who were eligible to take the IM In-Training Exam (ITE) in 2016. Bullying was defined as: "harassment that occurs repeatedly by an individual in a position of greater power." Among the 2,875 trainee respondents who endorsed having been bullied (14%), the survey inquired about the types of bullying experienced during residency training, and the perceived resulting personal consequences. Descriptive and inferential statistics were computed and gender differences were tested using Pearson's chi-squared tests.

RESULTS: Among those who endorsed being bullied, 47% were female and 53% were male. Most respondents (n=2506, 87%) experienced one type of bullying during residency, and 13% (n=369) declared to have endured two or more types of bullying. Female respondents were more likely to have endorsed experiencing verbal (OR=1.5, p<.05) and sexual harassment (OR=2.7, p<.05), while male respondents were more likely to endorse experiencing physical (OR=1.4, p<.05), and "other" (OR=1.3, p<.05) forms of harassment.The two most commonly reported personal consequences of bullying were feeling burned out (57%), and a decline in performance (39%). A quarter of trainees reported no personal consequences attributable to bullying, and 6% endorsed a resultant improvement in their performance. Female respondents were significantly more likely to endorse experiencing burnout, depression, and weight change, while male respondents were more likely to endorse improved performance or no personal consequences resulting from bullying (all p<.05). Among those whose bullying involved sexual harassment, men were more likely to use illicit drugs, and women more likely to report burnout (both p<.05). Among those that endorsed more than one type of bullying, all detrimental personal effects were endorsed at equal rates across genders.

CONCLUSIONS: Bullying has significant negative sequelae on both male and female IM residents, but overall the impact is disproportionately larger on women. The reason for this differential impact is unclear and may relate to a vulnerability or to more intense bullying of female trainees. Bullying in medical education must be eliminated.

GENDER DIFFERENCES IN MEDICARE BENEFICIARIES' PERCEPTIONS OF INTEGRATED CARE

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BACKGROUND: Prior research has identified numerous disparities between male and female patients. However, gender differences in patient perceptions of integrated care (PPIC) have not been characterized. Understanding variation in PPIC is critical, as these differences may further exacerbate disparities in patient experiences and outcomes. This study sought to investigate differences in PPIC across providers, settings, and over time between male and female Medicare beneficiaries.

METHODS: We explored gender differences in PPIC using the 2015 Medicare Current Beneficiary Survey (MCBS) for 8 PPIC domains: provider (PRK), specialist (SPK), and staff (STK) knowledge of the patient, provider support for self-directed care (SDC), medication/home-health management (MHH), and following hospitalization (HOS), test result communication (TRC), and outside-of-visit organization (OVO). To evaluate PPIC responses, we constructed linear regression models for each of the eight PPIC domains, treating PPIC score as a continuous outcome and respondent gender (male/female) as the independent variable of interest. Each model controlled for patient demographics, activation, and optimism. Sensitivity analyses controlled for level of health need and self-reported health status. We used Chi-squared tests to evaluate question-level differences between men and women. Our sample included 11,978 respondents (5,494 male, 6,484 female) who completed a community interview for the 2015 MCBS.

RESULTS: Men perceived significantly higher levels of integrated care compared to women for 6 of the 8 PPIC domains: STK, SDC ($p<0.05$); and PRK, SPK, TRC, OVO ($p<0.01$). Results persisted after adjusting for level of health need or self-reported health status.

CONCLUSIONS: Compared to men, women consistently reported lower levels of PPIC even after controlling for patient demographics, activation, optimism, level of health need, and self-reported health status, suggesting disparities in PPIC between men and women. These observed disparities may be due to actual differences in care experienced by men and women or to differences in values or expectations about care. Additional research is needed to further understand the sources of these discrepancies. For example, female patients may value detailed discussions with providers about their medical conditions and treatments more than men do. If so, then given the same level of detail, a female patient could perceive the discussion as inadequately integrating information about her medical conditions, while a male patient could be satisfied. Interventions targeting different aspects of PPIC offer a unique starting point for providers or policymakers seeking to improve patient experiences and outcomes.

GENDER DYSPHORIA: DIAGNOSIS AND ETHICAL TRADEOFFS

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BACKGROUND: Diagnosis is contingent on a patient's clinical presentation, the relationship with the provider, and the historical, societal, economic, and political context of the encounter. Assigning a diagnosis can present an ethical dilemma for clinicians, particularly when caring for transgender patients. For example, a 21-year-old presents for gender-affirming treatment. To authorize treatment, their insurance company demands a diagnosis of "gender dysphoria." What are the ethical tradeoffs in such a diagnosis? What can the clinician do? What should they do?

METHODS: We perform an ethical analysis of the use of this diagnosis considering medical indications, patient factors, quality of life, and contextual factors. These dimensions reflect the bioethical principles of benevolence, non-maleficence, autonomy, and justice. We also consider the ways in which patient autonomy influences diagnosis through acceptance of, collaboration with, and opposition to dictates of the health care system.

RESULTS: A straightforward application of the diagnosis occurs when patients endorse dysphoria with their sex assigned at birth (exercising autonomy), and diagnosis makes treatment financially possible. A potentially more complex situation arises when patients do not experience dysphoria, yet are making an informed decision to live as their authentic self, in alignment with their gender identity, and in the context of their own assessment of their quality of life. Labeling their decision as dysphoric might stigmatize gender identification and trans identity more generally, leading to QOL consequences for individual patients and systemic harms to the trans population. Even for those patients who do endorse gender dysphoria, making use of this diagnosis furthers stigmatization and the continued medicalization of transgender identity. We note that the ICD-11 removes gender dysphoria as a diagnosis (in favor of gender incongruence), moving the new diagnosis to sexual health. Finally, social contexts (e.g. the unequitable US health care system) require that practitioners and patients consider inequalities in how gender dysphoria might be screened for and received, especially for non-white and other disadvantaged populations whose negative emotions are often subject to epistemic injustice. A practitioner's approach to the use of gender dysphoria thus depends on the patient's willingness to accept the diagnosis, with all its potential deleterious effects, and the clinician's willingness to accede to the status quo rather than supporting positive formulations of trans identity (acknowledging negative implications for the patient needing treatment in the moment).

CONCLUSIONS: Gender dysphoria, like other diagnoses, demands consideration of the individual patient, their decisions and self-assessment, as well as the clinician's role within the system, in political and social context. Alternatives to such diagnoses, and to larger medicalizing frameworks, should be considered in the care of transgender patients.

GENDER VARIATIONS IN GUIDELINE-CONCORDANT CERVICAL CANCER SCREENING IN RESIDENT-PRECEPTOR DYADS

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BACKGROUND: Prior research has shown that male healthcare providers complete guideline-based cervical cancer screening at lower rates than female providers after completing post-graduate training. This study compared the rates of guideline-concordant cervical cancer screening performed by male and female internal medicine residents among eligible patients in an outpatient general medicine clinic. We then examined whether attending preceptor gender moderated cervical cancer screening completion in these encounters.

METHODS: This study was a retrospective chart review conducted on patients seen during an 18-month period at an academic, internal medicine primary care clinic at a safety-net hospital in Boston, Massachusetts. The participants were cisgender female patients between the ages of 24 and 65 who had completed a primary care clinic encounter with an internal medicine resident physician between July 1, 2017 and December 31, 2018. We excluded patients who did not have a cervix. The exposure of interest was male resident gender and the comparator was female resident gender. The outcome of interest was odds of receiving guideline- concordant cervical cancer screening. Data were analyzed using multivariable logistic regression, where we adjusted for patient smoking status, insurance status, and race/ethnicity. In order to understand whether screening varied across preceptor gender, the analyses were stratified by preceptor gender.

RESULTS: A total of 3,022 patients were included for analysis; 996 were seen by a male resident (33%), of which 357 (36%) were precepted by a male physician. There were no statistically significant differences in the odds of receiving guideline-concordant cervical cancer screening by resident gender. Patients seen by male residents who were precepted by male physicians had 1.54 times the odds of having past-due cervical cancer screening (95% CI 0.83-2.85). When precepted by female physicians, patients of male residents had 0.75 times the odds of past-due cervical cancer screening (95% CI 0.46-1.23). These findings were not statistically significant.

CONCLUSIONS: We identified lower odds for cervical cancer screening among cisgender female patients who were seen by male residents with male preceptors compared to male residents with female preceptors. However, the difference was not statistically significant. Our study was limited by statistical power. The identified trend may have implications for the health of female patients cared for by male residents and preceptors. Future directions include increasing the sample size to improve the study's power and conducting qualitative studies to understand potential reasons for this discrepancy.

GENERALIZED RISK PREDICTION FOR CARDIOVASCULAR EVENTS WITHIN VA HEALTHCARE

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BACKGROUND: Traditionally, prediction of cardiovascular disease (CVD) events, has been separated into primary prevention and secondary prevention. Many patients fit poorly in either of these groups, such as patients with a history of cardiovascular procedures (such as bypass surgery or stents) or heart failure. We hypothesized that the division between primary and secondary prevention conceals patient variation in risk both within and between these risk groups.

METHODS: Participants: Everyone aged 45-80 who used VA outpatient services in 2009.

Outcomes: Acute myocardial infarction, stroke, or cardiovascular death between 2010 and 2014 in VA electronic health records, Medicare billing data, or National Death Index.

Variables: Up to 100 variables that are based on existing cardiovascular disease risk factors, procedures, events, labs, and medicines with some two-way interactions. Patients were classified in three prevention groups: Primary, secondary (history of heart attack or stroke), and other, which was defined as no history of heart attack or stroke, but having other very high risk features, including a history of stent placement or bypass, or a diagnosis or heart failure or atrial fibrillation.

Models: Logistic regression with elastic net regularization was used to fit the model utilizing an 80%/20% split for training and test data. Reported results are all based off of the test data.

RESULTS: 67% of patients were primary prevention, 16% were secondary prevention, 17% were "other", primarily due to heart failure or having a history of cardiovascular procedures. The combined CVD prediction model had an ROC of 0.78, with a Brier score of 0.10 and generally good calibration. Primary prevention had an average 5-year event rate of 7.2%,

secondary prevention 30.4%. The other group had a rate of 22.8%. However, there was tremendous range within each group. The 10th percentile of risk for primary prevention had a 2% 5-year event rate and the 90th percentile had a 14% event rate. This was higher than the 10th percentile event rate for secondary prevention, of 13%. The 90th percentile of secondary prevention had a 53% estimated event rate. The risk for the other group was nearly always almost as high as the secondary prevention group.

CONCLUSIONS: While dividing patients into primary and secondary prevention has many clinical benefits, it obscures overlap in CVD risk between and among those groups and leaves a large number of patients who are both very high risk, but not clearly in either group.

GETTING AHEAD OF BIAS: QUALITATIVE PRE-WORK FOR DEVELOPING AI CAPTURE OF PALLIATIVE AND END-OF-LIFE QUALITY MEASURES

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BACKGROUND: Artificial intelligence (AI) may enable the widespread adoption of palliative care quality measures enhancing feasibility of patient population management. How do we choose what measures to use to train algorithms? The VA IMPACS Study elicited national expert stakeholder input on prioritizing patient- caregiver input in cancer palliative and end-of-life care quality measurement, with the goal of identifying measures to implement using computational methods.

METHODS: Using a purposive sampling approach we recruited 15 palliative care key-stakeholders with backgrounds and national leadership positions in primary care, palliative care, pain management, oncology, social work, nursing, and medical ethics. A semi-structured interview guide elucidated provider perspectives of measure selection and prioritization as well as introduction of potential bias. We analyzed audio recordings from phone interviews (20-65 minutes) and produced mutually agreed upon themes.

RESULTS: Theme 1: In terms of measuring palliative care quality, AI algorithms are limited, and only going to be as relevant as the measures they are trained to capture. Theme 2: The field of palliative quality measurement, though it has over 226 individual process quality measures, is perceived as nascent in terms of provider, patient, and caregiver measure and concept prioritization. Theme 3: providers question if the quality measures developed for the middle 80% are relevant for the 20% tail populations? Populations that may need to be considered when determining if existing quality measures represent all patients may include gender, race, age, sexual orientation, cis/trans gender, significant social disadvantages (e.g. homelessness), serious mental illness, cognitive impairment, or *"patients who can't verbalize or speak for themselves or who have delirium, we don't have measure for any of those groups*." Theme 4: Existing quality measures may not comprehensively capture the constructs that are important to palliative patients/caregivers. *"The things they [Patients] think are really important and frankly the things we spent a lot of time on is like trust and rapport, and listening, coordination of care, and addressing caregiver needs, and we just have this zero caregiver needs assessment in quality measures."*

CONCLUSIONS: Computational approaches may improve feasibility of population assessment, but are limited by missing concepts, and their potential to improve population reach may be undermined by inherent biases. Our results advocate for soliciting field expert input prior to implementing measures with AI approaches. To ensure measures implemented are relevant in "tail" populations and capture the constructs most relevant to patients we will repeat this process with patient stakeholders. We will also conduct Delphi consensus panels with providers and patients.

HARNESSING ELECTRONIC HEALTH RECORD INTEROPERABILITY TO IMPROVE INTER- HOSPITAL TRANSFER COMMUNICATION: A RANDOMIZED STEPPED WEDGE INTERVENTION

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BACKGROUND: Patients transferred between hospitals undergo a high-risk transition of care, where communication is asynchronous, information is commonly lost, and mortality is disproportionately high. The lack of interoperability of electronic health records (EHR) is a barrier to high quality hand-off in this high- risk transition of car. Improving the flow of information such as regional participation of health information exchanges (HIE) has the potential to improve the cost and outcomes of this vulnerable population, but this remains to be tested in practice. The impact of interoperability has yet to be tested in prospective interventional trials.

METHODS: We conducted a prospective randomized stepped wedge interventional trial to leverage the high regional prevalence of epic care everywhere of non-emergent transfers to a representative tertiary care center. All inpatient services i randomized into one of 4 blocks which determined order of implementation. A multi- disciplinary intervention including (1) Epic Care-everywhere informed consent was signed (2) images were requested to be electronically "pushed" (3) an encounter was generated, and (4) time was allowed to review records prior to verbal hand off and structured with a note. The intervention was staggered in 3 month periods to each of the four blocks. The primary outcomes was inpatient mortality after transfer, secondary measures included length of stay, return transfer, escalation of care after transfer, and provider satisfaction. Differences- in-differences (DiD) analysis was used comparing outcomes against a 1 year prospectively collected baseline using differences in differences analysis.

RESULTS: Following intervention we compared the outcomes of 1110 patients following intervention against 2221 controls. 92% of transfers had information made available prior to hand off. We observed no significant improvement in inpatient mortality ($p = 0.53$), nor length of stay ($p = 0.58$). We observed a significant reduction in rate of escalation of care within 24 hours (1.8% to 1.2%, DiD coef, p=0.012). Before and after the intervention providers remained positive regarding the potential for HIE to improve inter- hospital transfers; however, there was a decline in the belief that access was practical during routine care particularly among services that lacked 24-hour in-house call.

CONCLUSIONS: In this single center interventional study, we find that integrating EHR interoperability into the hand off process did not improve mortality or length of stay, but did reduce early escalation of care. Many providers found a more involved transfer process disruptive to normal workflow and patient care. We conclude that interoperability efforts are a necessary step toward improved communication, however not sufficient in the absence of dedicated staff allowing sufficient time to review records and images during the transfer process.

HEALTH AND HOUSING: A COMPREHENSIVE COMMUNITY HEALTH NEEDS ASSESSMENT OF LOW-INCOME COMMUNITIES IN PUEBLA, MEXICO

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BACKGROUND: In Mexico and the U.S., those living in poverty suffer disproportionately from chronic diseases and face barriers accessing care. In order to improve population health we must start with a detailed understanding of community health needs, as well as the underlying social determinants of health related to poverty. A comprehensive health needs assessment in four low-income communities in Puebla, Mexico was designed with the following objectives:

1. Understand the perceptions and priorities of the health needs of families
2. Characterize health behaviors, risk factors, utilization patterns and access issues
3. Describe the intersection between the built environment and health through an exploration of housing, water, and air quality

METHODS: A mixed-methods approach was used to assess community health needs and explore social determinants of health. This included semi-quantitative household surveys (n=242), key informant qualitative interviews (n=4), focus group discussions (n=6), intensive case studies of dwelling units (n=5), and technical air and water quality sampling of each household. The household surveys covered demographics and economic indicators, perceived health challenges, health care utilization, access, and quality of care, women's health, nutrition, mental health, health risk behaviors, water quality, cooking practices, air quality, and housing conditions.

RESULTS: Low-income communities in Puebla, Mexico face multiple health challenges at both the individual and health system levels, but also due to underlying social determinants of health. Diabetes is widely thought to be the major health problem affecting these communities and nutritional practices are poor. There are many barriers to accessing health care, including geographic isolation as well as health system quality issues. Despite a policy of universal health coverage, there is high use of the private sector for primary care (38% of households surveyed) associated with having to pay out-of-pocket costs and travel longer distances to access care. Trauma related to the 2017 earthquake in Mexico is still pervasive, with over 80% of respondents reporting persistent symptoms of earthquake-related trauma. Indoor air pollution was a problem, with mean CO2 and PM2.5 concentrations being above the recommended thresholds on average in all community households. A detailed analysis showed that the housing environment poses health risks related to hygiene, mobility, and safety.

CONCLUSIONS: These findings illustrate the importance of engaging with communities to develop a deep understanding of their needs and priorities. Addressing these needs will require a combination of further research, education, clinical care, public health interventions, and new policy proposals. This community health needs assessment galvanized the start of an academic global health partnership between UT and BUAP that will work with communities and public-sector health care delivery systems to improve population health.

HEALTH BEHAVIORS OF AN IMMIGRANT SOUTH ASIAN, INDO-CARIBBEAN POPULATION IN A PRIMARY CARE CLINIC IN QUEENS, NEW YORK: A PILOT STUDY

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BACKGROUND: South Asians are a fast- growing minority group in the US with a high prevalence of chronic conditions. Many community-based studies exist, but few studies look at immigrant South Asians in a primary care setting. We conducted a pilot study of patients originally from countries in South Asia and the Caribbean to assess dietary and physical activity behaviors, health seeking behaviors and acceptability of text message use for nutritional advice. The goal is to develop future interventions that are most applicable to this population.

METHODS: We approached patients in the Ambulatory Care Unit of a large academic medical center in Queens, NY. Inclusion criteria included individuals originally from South Asian and the Indo-Caribbean countries of Guyana and Trinidad, aged 18 to 84. Patients were approached in the waiting area or examination room. Informed consent was obtained followed by administration of a 15-minute paper survey. Participants received a $5 gift card for participation. We performed descriptive statistics on the data.

RESULTS: We approached 80 patients and completed 69 surveys. Thus, our response rate was 86%. The population was 52% female; 43.5% Muslim and 34% Hindu, largely from Bangladesh (34%) and Guyana (30%) with 12% from India. While 61.2% rated their health as "excellent/very good/good," 38.8% reported a "fair/poor" health status. Chronic conditions are prevalent: 66.7%, 62.3%, 71% reported being told they have high cholesterol, hypertension and diabetes, respectively. The majority consumed 1 to 2 serving of fruits and vegetables daily. While over 90% reported no daily intake of soda, 44% drank 1-2 sweetened beverages per day. During the past month, 56% participated in a physical activity like jogging or walking. Preferred sources of health information about eating healthy included internet (51%), doctors (38%) and family/friends (28%). Over 60% would be willing to receive text messages about healthy eating.

CONCLUSIONS: Chronic conditions are common among this immigrant population of South Asian and Indo Caribbean patients. Though the sample reported their health positively, many had diabetes, hypertension or high cholesterol. Future interventions about eating healthy can come from multiple sources such as the internet and health providers. Limitations include English-speaking research assistants and an English language consent form, resulting in a largely English speaking sample which excluded a large amount of non- English speaking South Asian immigrants. In addition, over the study period, the clinic scheduled a reduced number of patients in preparation for relocation to a new site. Nevertheless, this study will inform future interventions around diet and nutrition for immigrant South Asian and Indo Caribbean patients.

HEALTHCARE ACCESS AND HEALTH RISK BEHAVIORS AS MEDIATORS FOR THE RELATIONSHIP BETWEEN TRANSGENDER IDENTITY AND NEGATIVE HEALTH OUTCOMES: EVIDENCE FROM THE BRFSS (2017)

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BACKGROUND: New guidelines from the American College of Physicians recognize internists as the first line of care for transgender individuals. It is critical that internists, most of whom are already treating gender diverse patients, understand the unique health needs of this medically vulnerable population. Transgender individuals have worse health outcomes than their cisgender peers, and health outcomes vary within the transgender community. It is also known that transgender individuals are less likely to have health insurance or a personal health provider. Previous work, however, has been unable to determine causal relationships between these factors and the negative health outcomes seen in this population. An understanding of these relationships would allow us to better target interventions to support the wellbeing of our transgender patients.

METHODS: In order to demonstrate potential causal pathways between transgender identity, factors influencing health, and health outcomes, factor analysis and structural equation modeling (SEM) were used. Using a large national sample from the Behavioral Risk Factor Surveillance System, we were able to account for many factors, including proxies for mental and physical health, healthcare access, chronic illness, health risk behaviors, and many demographic factors. An initial measurement model was fit to the data and subsequently adjusted. A SEM was then fit to the data and found to have good overall fit. Finally, the Sobel Test was used to test for multiple mediation.

RESULTS: In the final model, transgender identity was a significant negative indicator of healthcare access and a significant positive indicator of negative health behaviors, but it was not associated with chronic health conditions. Healthcare access and health behaviors significantly mediated the relationship between transgender identity and health outcomes. When transgender groups were disaggregated, the same mediation relationships held true for male-to-female transgender individuals, while access was the only significant mediator for female-to-male individuals, and health behaviors was the only significant mediator for gender non-conforming individuals. Socioeconomic status also significantly mediated the relationship between transgender identity and healthcare access.

CONCLUSIONS: This study adds a crucial missing piece to the literature by focusing on the pathways that drive health outcomes for transgender individuals. We were able to demonstrate that healthcare access and negative health behaviors mediate the relationship between transgender identity and negative health outcomes. Findings have implications for policy aiming to improve insurance access and programs aiming to address negative health behaviors. Providers may play a role in ameliorating these factors by becoming more educated on transgender care, screening for and addressing negative health behaviors with their patients, and referring patients to services that address their social determinants of health.

HEALTH CARE CONSUMERISM IN A MEDICAID EXPANSION PROGRAM TO ENCOURAGE COST-CONSCIOUSNESS AMONG BENEFICIARIES

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BACKGROUND: State Medicaid programs are increasingly using cost-sharing, premiums, and cost information to encourage health care consumerism. In Michigan's Medicaid expansion, Healthy Michigan Plan (HMP) beneficiaries have MI Health Accounts (MIHAs) into which they pay copays after services and, for those with incomes 100-133% of the Federal Poverty Level, premium contributions equal to 2% of their income. Quarterly MIHA statements tell beneficiaries what they owe and what their managed care plan paid for services. Little is known about engagement in consumer behaviors among beneficiaries subject to these policies.

METHODS: We used data from a longitudinal telephone survey in which 1,489 HMP beneficiaries age 19-64 were surveyed at least 36 months after enrollment. Beneficiaries were asked if in the last 12 months they had carefully reviewed their MIHA statements; checked how much they would have to pay for a service before they received care; asked a provider to recommend a less costly prescription drug; talked with a provider about how much a service would cost out-of-pocket (OOP); or compared quality ratings for services. We used 5 multivariable mixed-effects regression models to estimate associations between engagement in each consumer behavior and demographic characteristics, income, chronic conditions, health status, literacy, perceived affordability of HMP payments, previous forgone care due to cost, and previous OOP spending. All models incorporated weights to adjust for probabilities of sampling.

RESULTS: In the last 12 months, 87.5% of enrollees who recalled receiving a MIHA statement carefully reviewed their statements; 21.0% checked how much they would have to pay for a service before they received care; 20.6% asked a provider to recommend a less costly prescription drug; 15.5% talked with a provider about how much a service would cost OOP; and 12.5% compared quality ratings. Compared to being age 19-34, being age 51-64 was associated with carefully reviewing MIHA statements [odds ratio (OR) 1.82]. Female gender was associated with checking costs before receiving care (OR 1.85), asking for a less costly prescription drug (OR 2.42), and comparing quality ratings (OR 2.61). Compared to a high school education or less, having at least a bachelor's degree was associated with checking costs before receiving care (OR 2.54), talking with a provider about OOP costs (OR 1.89), and comparing quality ratings (OR 3.30). Compared to < $50 in OOP costs in the previous year, $101-$500 in OOP costs was associated with checking costs before receiving care (OR 1.90), asking for a less costly prescription drug (OR 1.90), and talking with a provider about OOP costs (OR 2.45).

CONCLUSIONS: Medicaid beneficiaries often carefully review quarterly statements with cost information, but in a setting of relatively low cost-sharing may not engage in other consumer behaviors at high rates without additional strategies to support decision-making.

HEALTHCARE DELIVERY INTERVENTIONS TO IMPROVE HYPERTENSION MANAGEMENT IN COMMUNITY HEALTH SETTINGS: A SYSTEMATIC-REVIEW

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BACKGROUND: The high prevalence of uncontrolled hypertension in underserved patient populations is a major cause of health disparities in the United States and treatment of hypertension has a significant impact

on reducing cardiovascular disease mortality. Evaluating practice based change models for underserved patients with a high burden of uncontrolled hypertension is important and emphasized by the Institute of Medicine report in 2010 on population-based policy and systems change approaches to prevent and control hypertension. Healthcare delivery interventions to improve blood pressure control are particularly challenging in low resource settings, such as community health centers (CHCs).

METHODS: We conducted a systematic review of randomized controlled trials (RCTs) and comparative observational studies examining the effectiveness of systems change and quality improvement interventions aimed at improving blood pressure control in community health settings published from 2010 to 2019. The broader purpose was to identify intervention characteristics associated with the most success serving a low- income, underserved population with high rates of uncontrolled blood pressure. Inclusion criteria were studies of multi-component practice improvement interventions conducted in North America at FQHCs, CHCs, and safety-net practices, reporting blood pressure as the primary outcome of interest (either as proportion of patients with controlled blood pressure or reduction in systolic and diastolic blood pressure) with pre and post measurements.

RESULTS: Of the 400 articles screened, 25 studies with 31,744 hypertensive patients were included. Studies had a high proportion of patients with a low-income, racial/ethnic minorities, and comorbidities. Of these, 5 studies demonstrated effectiveness of integrating pharmacists into community health centers for blood pressure management using medication therapy management. Four studies involved community health workers and led to improved blood pressure control, and importantly reported high patient satisfaction with this model. Close and regular follow-up with patients was shown to be an important part of improved blood pressure control. One study evaluated financial incentives to clinics for uninsured patients and Medicaid patients meeting performance criteria, resulting in improved blood pressure control in those clinics. Studies involving combined physician and patient education were generally successful in improving blood pressure, but not any more than other interventions. Very few studies discussed patient-reported outcomes and side effects. The majority of the studies in this systematic review showed improvement in blood pressure; which may suggest publication bias.

CONCLUSIONS: Multi-component practice improvement interventions conducted in North America at FQHCs, CHCs, and safety-net practices are effective in lowering blood pressure. Several components of the interventions were identified as being associated with higher efficacy.

HEALTHCARE FRAGMENTATION AND BLOOD PRESSURE CONTROL AND APPARENT TREATMENT-RESISTANT HYPERTENSION AMONG BLACK AND WHITE ADULTS WITH HYPERTENSION.

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BACKGROUND: Black adults have higher blood pressure (BP) and are more likely to have apparent treatment-resistant hypertension (aTRH) versus white adults. Prior studies suggest that fragmented ambulatory healthcare may be associated with poor BP control. It is not known whether the associations between healthcare fragmentation and BP control and aTRH differ among black versus white adults.

METHODS: We analyzed data from black and white participants ≥66 years of age in the REasons for Geographic and Racial Disparities in Stroke (REGARDS) study who attended an in-home study visit between 2013 and 2016, had hypertension, were taking antihypertensive medication, and had continuous Medicare fee-for-service healthcare insurance coverage and ≥4 ambulatory care visits in the year prior to their study visit. Healthcare fragmentation was measured using Medicare claims for ambulatory visits in the year prior to the study visit. High healthcare fragmentation was defined as a reversed Bice-Boxerman Index ≥75th percentile of the distribution. BP control was defined as having a systolic/diastolic BP of <140/90 mm Hg. aTRH was defined as having uncontrolled BP while taking ≥3 antihypertensive medications or taking ≥4 antihypertensive medications regardless of BP.

RESULTS: Among 2,897 participants (mean age 76 years, 69% female, 31% black), BP control was 80.8% and 81.9% in those with and without high healthcare fragmentation, respectively. After multivariable adjustment, the prevalence ratio (PR) for BP control associated with high healthcare fragmentation was 0.98 (95% CI 0.94, 1.02). The prevalence of aTRH was 17.7% and 15.9% among participants with and without high healthcare fragmentation, respectively. The PR for aTRH associated with high healthcare fragmentation was 1.15 (95% CI 0.97, 1.37). In race-stratified analyses, high healthcare fragmentation was associated with a higher prevalence of aTRH among black but not among white participants (Table).

CONCLUSIONS: Healthcare fragmentation was not associated with BP control in this population of black and white adults with hypertension. However, healthcare fragmentation may be associated with a higher risk for aTRH in black adults.

HEALTHCARE FRAGMENTATION AND CARDIOVASCULAR RISK CONTROL AMONG CANCER SURVIVORS IN THE REASONS FOR GEOGRAPHIC AND RACIAL DIFFERENCES IN STROKE (REGARDS) STUDY

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BACKGROUND: Cardiovascular disease (CVD), not cancer, is the #1 cause of death among 5-year cancer survivors. The reasons for this are not well established. A possible explanation is that because cancer survivors see many different providers after cancer care, lack of coordination among those providers may contribute to poor CVD risk factor control. Our objective was to determine, among cancer survivors, if more fragmented ambulatory care (i.e., receipt of care from multiple providers without a dominant provider) is associated with worse CVD risk factor control. We also examined findings stratified by health status, as in our prior work the association between fragmentation and CVD outcomes varied by health status.

METHODS: This study included participants in the nationwide REGARDS cohort study with linked Medicare claims data who: 1) were aged 66+ years; 2) reported a history of cancer (that did not receive treatment in the past two years); 3) had diabetes, hypertension, or hyperlipidemia; and 4) had continuous Part A and B Medicare coverage for the 12 months prior to baseline. Fragmentation of ambulatory care in the 12 months before baseline was calculated from Medicare claims using the reversed Bice-Boxerman Index (rBBI). Higher scores reflect more fragmentation. We determined associations between fragmentation and CVD risk factor control using separate logit models for each risk factor, defining "good control" as fasting glucose<126/non-fasting glucose<200 for diabetes, blood pressure <140/90 mm Hg for hypertension, and TC<240 or LDL<160 or HDL>40 for hyperlipidemia. We examined results overall and stratified by self- reported excellent, very good/good, and fair/poor health, adjusting for demographics, comorbidities, and health status.

RESULTS: The 1,002 cancer survivors had mean age of 75 years at baseline, 39% were women, and 23% were Black. Survivors had a median of 10 visits (IQR 7-15) with 5 providers (rBBI 0.80) and 43% of visits were with their most frequently seen provider. Among individuals with diabetes (N=225), hypertension (N=660), and hyperlipidemia (N=516), separately, 61% had diabetes control, 59% had hypertension control, and 60% had hyperlipidemia control, respectively. Fragmentation was not associated with CVD risk factor control in the overall sample (RR 1.03 (0.99, 1.08), p=0.12). However, among cancer survivors who reported very good r good health, more fragmentation (every 0.1-unit increase in rBBI) was associated with a 36% decrease in the likelihood of diabetes control (95% CI 0.46-0.89), adjusting for potential confounders. We did not observe this pattern for hypertension or hyperlipidemia control.

CONCLUSIONS: More fragmentation of ambulatory care was associated with worse glycemic control among cancer survivors with diabetes who self-reported very good or good health, concordant with our past findings. Fragmentation was not associated with hypertension or lipid (control for any health status.

HEALTHCARE FRAGMENTATION AND INCIDENT ACUTE CORONARY HEART DISEASE EVENTS

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BACKGROUND: Highly fragmented ambulatory care (i.e., care spread across many providers without a dominant provider) has been associated with excess tests, procedures, emergency department visits, and hospitalizations. Whether fragmented care is associated with worse health outcomes, or whether any association varies with health status, is unknown. We sought to determine whether fragmented care is associated with the risk of incident coronary heart disease (CHD) events (definite or probable fatal or non- fatal myocardial infarction or CHD death), overall and stratified by self-reported general health.

METHODS: We conducted a secondary analysis of the nationwide prospective REasons for Geographic And Racial Differences in Stroke (REGARDS) cohort study (2003-2016). We included participants who were ≥65 years old, had linked Medicare fee-for-service claims, and had no history of CHD (N = 10,556). We measured fragmentation with the reversed Bice-Boxerman Index (rBBI), with high fragmentation defined as scores greater than or equal to 0.85 (on a scale from 0.00 to 1.00). We used Cox proportional hazards models to determine the association between fragmentation as a time-varying exposure and adjudicated CHD events in the 3 months following each exposure period. We considered 32 potential confounders, including demographic characteristics, medical conditions, medications, health behaviors, psychosocial variables, and physiological variables.

RESULTS: The mean age was 70 years; 57% were women, and 34% were African-American. Overall, 18% of the sample had excellent self-reported health, 67% had very good or good self-reported health, and 14% had fair or poor self-reported health. During the first year of observation, those with high fragmentation had on average 29% of their ambulatory visits with the most frequently seen provider (rBBI 0.91), compared to those with low fragmentation, who had on average 58% of their ambulatory visits with the most frequently seen provider (rBBI 0.63) ($p < 0.001$ for each comparison). Over 11.8 years of follow-up, 569 participants had CHD events. Overall, the adjusted hazard ratio (HR) for the association between high fragmentation and CHD events was 1.14 (95% confidence interval [CI] 0.92, 1.39). Among those with very good or good self-reported health, high fragmentation was associated with an increased hazard of CHD events (adjusted HR 1.35; 95% CI 1.06, 1.73; p = 0.01). Among those with fair or poor self-reported health, high fragmentation was associated with a trend toward a decreased hazard of CHD events (adjusted HR 0.54; 95% CI 0.29, 1.01; p = 0.052). There was no association among those with excellent self-reported health.

CONCLUSIONS: High fragmentation was associated with an increased independent risk of acute incident CHD events among those with very good or good self-reported health, which was the majority of the sample, adjusting for known cardiac risk factors.

HEALTHCARE UTILIZATION AND PATIENT AND PROVIDER EXPERIENCE WITH A HOME VISIT PROGRAM FOR PATIENTS DISCHARGED FROM THE HOSPITAL AT HIGH RISK FOR READMISSION: A MIXED METHODS STUDY

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BACKGROUND: We recently implemented a home visit program delivered after discharge by advanced practice nurses (APRN) and paramedics for patients at high risk for readmission. We aimed to assess the effect of the program on health care utilization and mortality and to examine provider and patient experience.

METHODS: Utilizing a convergent, mixed methods design, we studied adult patients discharged to home from a medicine service in the Cleveland Clinic Health System (CCHS) from November 2017-September 2019 with a CCHS primary care physician (PCP). Patients receiving home visits for 4 weeks after discharge were matched 1:3 using coarsened exact matching to a comparison group discharged in the same period by age, gender, race, insurance, median income, an internal CCHS readmission risk score, and number of admissions and primary care visits in 180 days prior to admission. Outcomes at 30, 90, and 180 days, including hospital admission, emergency department(ED) use, and death, were analyzed in two time periods- Phase 1(5 months, APRN or paramedic delivered home visits based upon geographic location) and Phase 2 (6 months, APRNs and paramedics both delivered visits to the same patient). Mixed effect models adjusted for patients with multiple discharges. Patients declining home visits and those accepting were also compared. Semi-structured audiorecorded interviews were conducted with home visit patients, APRNs, paramedics, PCPs, and primary care nurse care coordinators (CC). Interviews were transcribed and coded, then, using an editing analysis, emergent themes identified.

RESULTS: In Phase 1, 144 home visit patients were matched to 432 comparison patients. There were no differences in readmissions, ED visits, or death at 30, 90, and 180 days. In Phase 2, 197 home visit patients matched to 591 comparison patients had fewer 30-day readmissions (21.8% vs. 31.5%, p 0.013) and no differences in the other outcomes. Compared with patients declining home visits, patients accepting had lower odds of 30 day readmissions: Phase 1(Odds ratio (OR) 0.89, p 0.013), Phase 2(OR 0.882, p 0.001). Forty-four interviews were conducted (22 patients, 7 CC, 9 PCPs, 3 paramedics, 3 APRNs). Themes of lack of understanding medications (APRN: "a lot of times you find that they didn't pick up a prescription or … didn't know it was decreased or increased "), health literacy, need for education, patient complexity(PCP: "The support needed for those really sick-sick patients to get them their meds, to assist them with their daily needs …They're exhausted,)"

financial barriers, need for social support, and patient reassurance after discharge (Patient: "… knowing that she's coming out … makes me feel better") emerged.

CONCLUSIONS: A post-discharge home visit program delivered by APRNs and paramedics to patients at high risk for readmission was associated with reduced 30 day readmissions. Barriers to remaining healthy at home related to medication understanding, health complexity, financial issues, and need for social support.

HEART FAILURE DISEASE MANAGEMENT VERSUS USUAL CARE IN PATIENTS WITH A PRIMARY DIAGNOSIS OF HEART FAILURE IN SKILLED NURSING FACILITIES

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BACKGROUND: Skilled nursing facilities (SNFs) are common destinations after hospitalization for patients with heart failure (HF). However, readmissions from SNFs and immediately after SNF discharge are common. In this study, we examined whether patients with a primary hospital discharge diagnosis of HF may benefit from a HF disease management program (HF-DMP) while undergoing post-acute rehabilitation in SNFs.

METHODS: This is a sub-group analysis of a cluster-randomized controlled trial of HF-DMP vs usual care (UC) for patients in SNF (n=671) with a HF diagnosis, regardless of ejection fraction (EF), conducted in 47 SNFs in the Denver-metropolitan area. The HF-DMP standardized SNF HF care using HF practice guidelines and performance measures and was delivered by a HF nurse advocate (HFNA). The HFNA directed a 7-component intervention focused on optimizing HF disease management through the following: documentation of EF, symptom and activity assessment, weights 3 times a week with dietary surveillance, recommendations for medication titration, patient/caregiver education, discharge instructions, and 7-day post- SNF discharge follow-up.

This sub-group analysis examined patients discharged from hospital to SNF with a primary hospital discharge diagnosis of HF (n=125). The primary outcome was a composite of all-cause hospitalization, emergency department visits, and mortality at 60 days post-SNF admission. The etiology (HF related, non-HF cardiovascular (CV) related, or "other") of the first event was adjudicated by a Clinical Endpoints committee that was blinded to treatment group. Secondary outcomes were the composite outcome at 30 days, and change in health status and self-management from baseline to 60 days measured by the Kansas City Cardiomyopathy Questionnaire (KCCQ) and the Self-care of HF Index (SCHFI).

RESULTS: Of the 125 patients with a primary hospital discharge diagnosis of HF, 50 were in the HF-DMP and 75 in UC. Overall mean age was 79±10, 53% were women, mean EF was 46±15%. At 60 days, the rate of the composite outcome was lower in the HF-DMP group (30%) compared to UC (52%) (p=0.02). Adjudicated events in the HF-DMP group revealed one HF related event, one CV related event, and 12 events classified as "other" within 60 days. In contrast, the UC group had 12 HF related events, 5 CV related events, and 19 events classified as "other" within 60 days. The rate of the composite outcome at 30 days for the HF-DMP group was 18% versus 31% in the UC group (p=0.11). Change in KCCQ and SCHFI measures were not significantly different between groups at 60 days.

CONCLUSIONS: Patients with a primary hospital discharge diagnosis of HF who received HF-DMP while receiving rehabilitation in a SNF had lower rates of the composite outcome at 60 days and less HF related events. Standardized HF management during SNF stays may be particularly important for patients with a primary discharge diagnosis of HF.

HEART FAILURE TRAINING AND JOB SATISFACTION: A SURVEY OF HOME CARE WORKERS CARING FOR ADULTS WITH HEART FAILURE IN NEW YORK CITY

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BACKGROUND: Home care workers (HCWs), which include home health aides and personal care attendants, frequently care for adults with heart failure (HF). Despite being heavily involved in HF patients' care, prior qualitative studies have found that HCWs lack training and confidence, which creates challenges for this workforce and potentially for patient care. As the foundation for future interventions, we aimed to: 1) Quantify the prevalence of HF training and confidence among HCWs providing HF care; 2) Determine the association between HF training and job satisfaction.

METHODS: We conducted a cross-sectional survey of HCWs caring for HF patients from August 2018 - May 2019. Using purposeful sampling, we recruited English-speaking HCWs employed by home care agencies across NYC. The survey was comprised of 64-items including a demographic questionnaire and novel and validated instruments on HF caregiving. HF training was assessed with a 1-item question, *"Have you received prior HF training?"* Job satisfaction was assessed with a 1-item question, *"How satisfied are you with your job?"* The association between HF training and job satisfaction was determined with robust poisson regression adjusting for agency, participant demographics and heart failure care characteristics.

RESULTS: 323 HCWs from 23 home care agencies participated. They had a median (IQR) age of 50 (37,58) years, 94% were women, 44% were Non-Hispanic Black, 23% were Hispanic, 78% completed ≥ high school education, and 72% were foreign-born. They had a median (IQR) of 8.5 (4,15) years of caregiving experience, and the majority (73%) had cared for 1-5 HF patients. While 63% of HCWs contributed adequately to HF maintenance tasks, only 23% contributed adequately to HF management tasks; 44% did not feel confident with HF caregiving. Overall, 66% of HCWs reported receiving none or a little HF training. 82% of HCWs reported feeling satisfied with their job. Compared to those with none or a little HF training, HCWs with some or a lot of HF training had 14% higher job satisfaction, after adjusting for demographic characteristics, agency size, years as a HCW, and number of prior HF patients (PR 1.14; 95% CI 1.03-1.27; p-value 0.014).

CONCLUSIONS: Despite contributing to HF self-care, the majority of HCWs received none or a little HF training and lacked confidence providing care to HF patients. In this diverse sample of HCWs, HF training was associated with higher job satisfaction. Our findings suggest that HF training programs may improve HCWs' experience caring for this patient population.

HELP ME WITH THAT URINE TOXICOLOGY RESULT: INSIGHTS AND CHALLENGES TO PROVIDING LABORATORY-GENERATED INTERPRETATIONS FOR PATIENTS RECEIVING CHRONIC OPIOID THERAPY

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BACKGROUND: Urine drug testing (UDT) is commonly used to monitor opioid misuse for patients on chronic opioid therapy (COT). Our prior study showed that nearly 30% of UDT results at an academic hospital using liquid chromatography-tandem mass spectrometry were misinterpreted by clinicians. Therefore, clinicians may benefit from receiving expert UDT interpretations from the laboratory.

METHODS: This mixed methods study is part of an effectiveness and implementation evaluation (Type II hybrid design) of a laboratory-generated interpretation of UDT results to reduce misinterpretation while improving documentation and decision-making for clinicians managing patients on COT. Participants completed a survey adapted from the Technology Acceptance Model Questionnaire at baseline, 3 months and 6 months and participated in focus groups at the end of the study to: a) evaluate the usability of laboratory- generated interpretations; b) identify barriers to implementation; and c) assess impact on workflow, communication, and patient care. We evaluated clinician experience and responses at 4 ambulatory clinics (primary care [2], palliative care, and pain management) at a U.S. academic medical center.

RESULTS: A total of 8 clinicians (7 physicians and 1 nurse practitioner; 2 [25%] women) participated: 4 primary care, 2 palliative care, and 2 chronic pain management clinicians. Their mean age (SD) was 57.1 (9.8). On a 5-point Likert scale, participants' scores improved from baseline to 6 months in the following areas: results comprehension (3.3 to 5, respectively); interpretation accuracy (4 to 5); interpretation speed (2.7 to 4.7); and interpretation confidence (3.1 to 4.8). During focus group discussions, six themes emerged: layout and language of interpretive reports; utility in aiding clinical decision-making and overcoming knowledge deficits; impacts on clinician-patient relationships and communication; interplay of human factors, systems, and workflow considerations; effects of external factors on interpretive report utility; and impact on interprofessional communication. Clinicians found the interpretive reports concisely summarized toxicology results, serving as an accessible, reliable reference when clinicians had knowledge deficits regarding the opioid metabolite findings. They also described ways lab-generated interpretations prevented near misses by flagging aberrant results and enhanced clinician confidence when communicating aberrant results to patients. Cited areas for lab-generated report improvements included a preference for descriptive accuracy while maintaining non-judgmental language; accuracy of patient medication lists referenced for the UDT interpretations; and timeliness of receiving reports.

CONCLUSIONS: Clinicians receiving laboratory-generated UDT interpretations reported multiple benefits from this intervention, identified limitations, and suggested improvements.

HETEROGENEITY IN TRUST OF CANCER INFORMATION AMONG HISPANICS IN THE UNITED STATES

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BACKGROUND: Cancer is the leading cause of death among Hispanics in the United States (US), but subgroups of the population are heterogenously burdened by inequities in cancer outcomes. Increasing cancer knowledge among Hispanics may aid in reducing these inequities, but little is known about how Hispanics differentially trust varying sources of health information. The objective of this study was to examine heterogeneity in trust of cancer information from various sources among US Hispanic adults.

METHODS: We analyzed data on self-identified Hispanic respondents of the Health Information National Trends Survey (HINTS), a nationally representative self-administered survey. Using data from HINTS 4, Cycles 2 and 4, and HINTS 5, Cycle 2, we examined 9 trust questions: doctor/healthcare providers, government health organizations, charitable organizations, media (print, television, radio and internet), family/friends and religious organizations. Multivariable logistic regression models identified independent predictors of high or low levels trust in cancer information, using jackknife replicate weights for accurate standard errors. Independent variables examined were gender, Hispanic ethnic categories (Mexican American, Cuban/Puerto Rican, and other Hispanics), age, education, income, English proficiency, nativity and length of time residing in the US, adjusting for smoking status, personal cancer history, family cancer history, and HINTS cycle.

RESULTS: Among 1,512 Hispanic respondents, trust in sources of information ranged from 27% for radio to 91% for doctors. Multivariable models showed that Cuban/Puerto Rican respondents were nearly twice as likely to report high levels of trust in cancer information from print media when compared to Mexican/Mexican American participants [OR 1.95 95% CI 1.12-3.41]. Participants who did not speak English were 55% less likely to report a high level of trust in cancer information from print media relative to those who spoke English very well [0.22-0.92]. Participants living in the U.S. <10 years were more likely to trust information from government health agencies (OR 8.66 [2.74–27.38]) when compared to those living in the U.S. >10 years. Hispanic women were 59% more likely to trust cancer information from the internet compared to men [CI 1.10-2.32] and Hispanics >50 years old were more likely to trust cancer information from religious organizations relative to those aged 18-34 (50-64 years old, OR 1.68 [1.04-2.70]).

CONCLUSIONS: Sub-group variability in trust of health information sources may be masked by broad racial and ethnic categories, particularly for the heterogenous Hispanic population. There is significant variation by ethnicity and other socio-demographics in trust of sources of cancer information across multiple constructs, with notable implications for disseminating cancer information.

HETEROGENEOUS CHANGES IN INPATIENT CARE UTILIZATION ASSOCIATED WITH 2014 AFFORDABLE CARE ACT REFORMS

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BACKGROUND: Prior research on the impact of the 2014 Affordable Care Act (ACA) on inpatient care utilization has largely focused on evaluation of Medicaid expansion, and concluded unequivocally that expansion was associated with no change in inpatient care use. There has been little work examining potential heterogeneity of ACA effects, particularly across geographic regions by baseline uninsured rates, and whether the changes varied across expansion and non-expansion states.

METHODS: We used all-payer inpatient discharge data (2012-2016) from 12 Medicaid expansion states (AR AZ CA CO IA IL KY MA NJ NY OR PA) and six non-expansion states (FL GA NC TX VA WI), which together account for 65 percent of the national population. We stratified all hospitalizations by patient residence zip code into five groups (regions) of

zip code-level baseline (2012) uninsured rates: ≤ 10%; 10% to 20%; 20% to 35%; 35% to 45%; >45%. The main outcome was the quarterly count of all hospitalizations ("hospitalization volume") from each zip code of patients aged 26-64 stratified by age (four groups) and sex cohorts (N=9,281 zip codes and 1,410,712 cohort observations). Secondary outcomes included volumes of hospitalizations with and without ED admission. Using a quasi-experimental difference-in-differences study design and Poisson regression models, we estimated changes in hospitalization volume, by baseline uninsured rate regions, arising from (a) all 2014 ACA reforms, separately for expansion and non-expansion states and (b) Medicaid expansion alone. All regression models used zip code-level fixed effects with standard errors clustered at the state level.

RESULTS: Study data included 62.3 million and 38.9 million hospitalizations from the expansion and non-expansion states, respectively. Highest baseline uninsured rate zip codes (>45%) were concentrated in TX, CA and FL, with a sizable share of other higher uninsured rate groups across all states. The pattern of longitudinal changes in hospitalization volumes varied by uninsured rate zip codes. In expansion states, relative to lowest uninsured rate region (reference), hospitalization volume increased in higher uninsured rate regions with a change of 7.2% (95% CI, 5.2% to 9.3%) in the highest uninsured rate region. In the non-expansion states, volume increases were observed in some of the higher uninsured rate regions (2.1% [95% CI, 0.6% to 3.7%] in regions with 35% to 45% uninsured rate). Medicaid expansion alone was associated with a larger increase in hospitalization volume (relative to reference region), with a change of 5.0% (95% CI, 1.8% to 8.3%) in the highest uninsured rate region. Similar patterns were found for ED and non-ED hospitalizations.

CONCLUSIONS: Regions with higher baseline uninsured rates experienced a higher increase in inpatient care utilization relative to the lowest uninsured rate regions. The increases were larger in states with Medicaid expansion. Our findings likely represent pent-up demand for health care.

HIGH-DISPARITY CAUSES OF PREMATURE MORTALITY AMONG RACIAL/ETHNIC MINORITY VETERANS IN THE VETERANS HEALTH ADMINISTRATION

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BACKGROUND: Recent evaluation of racial/ethnic variations in all-cause mortality among Veterans using Veterans Health Administration (VA) healthcare identified disparities for Black and American Indian/Alaska Native (AIAN) Veterans, relative to non-Hispanic Whites; decreased mortality for Asians and Hispanics; and similar mortality for Native Hawaiian/Other Pacific Islanders (NHOPIs). Identifying causes of death (CODs) disproportionately contributing to premature mortality can inform actions needed to close racial/ethnic disparities in life expectancy. Our objective was to identify CODs resulting in disproportionate premature mortality in racial/ethnic minority VA users.

METHODS: Linking VA records for a national cohort of Veterans using VA care 10/2008–9/2009, with CDC National Death Index records through 12/2016, we assessed cause-specific mortality for 5,032,009 Veterans. We calculated years of potential life lost before age 75 (YPLL) as the difference between 75 and age of death for those who died before age 75, and zero for all others. We used the direct standardization method to compute joint age/sex-standardized mortality rate ratios (SRRs) by race/ethnicity compared to Whites for the overall top 20 CODs. For each racial/ethnic group, we first summed YPLL for CODs with SRRs >= 1.2 (and $p < 0.05$; high disparity CODs); next, we calculated the percentage of total YPLL that high disparity CODs accounted for using the formula (YPLL from high disparity CODs / YPLL from all causes) * 100%; then, we contrasted this percentage to the corresponding percentage for the same CODs in Whites.

RESULTS: Nine CODs were high disparity CODs (% of overall YPLL: A-cerebrovascular disease=2.6%; B-accidents=8.5%; C-diabetes=4.2%; D-nephritis=1.4%; E-septicemia=1.4%; F-chronic liver disease/cirrhosis=3.7%; G-hypertension/hypertensive renal disease=0.8%; H-assault/homicide=0.7%; I-HIV disease=0.7%). High disparity CODs by race/ethnicity were: BCFI for AIANs; ACDEGHI for Blacks; CEFGHI for Hispanics; D for NHOPIs; none for Asians. High disparity CODs accounted for 24.2% of YPLL for AIANs (vs 16.7% for Whites), 17.5% for Blacks (vs 10.0%), 18.1% for Hispanics (vs 10.3%), and 1.6% for NHOPIs (vs 1.1%).

CONCLUSIONS: Diabetes and HIV disease contributed to premature mortality disparities in AIANs, Blacks, and Hispanics. Seven additional high disparity CODs had more heterogeneous effects. Four CODs disproportionately affected AIANs. The "Hispanic paradox" of decreased all-cause mortality masks increased Hispanic premature mortality for 6 CODs. Several common CODs (e.g., heart disease, cancer, and suicide) were not high disparity CODs. Several CODs contributing to Veteran racial/ethnic mortality disparities are for conditions that may be prevented or controlled with guideline-adherent healthcare. Further work is needed to identify tailored best practices within VA for achieving equity in control of chronic conditions (e.g., hypertension, diabetes, HIV) and addressing behavioral risk factors.

HIGH-DOSE INFLUENZA VACCINE AND LIVE ATTENUATED INFLUENZA VACCINE DELIVERY PRACTICES AMONG US PRIMARY CARE PROVIDERS (2016-17 AND 2018-19 INFLUENZA SEASONS)

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BACKGROUND: As nine types of influenza vaccine are licensed for use in adults, primary care physicians may not be fully cognizant of Advisory Committee on Immunization Practices (ACIP) current recommendations for their use. High-dose inactivated influenza vaccine (HD-IIV) is licensed for use in adults ≥65 years based on improved immunogenicity data. ACIP has not preferentially recommended HD-IIV over other vaccines. ACIP recommended against use of live-attenuated influenza vaccine (LAIV) for the 2016-17 season based on lower vaccine effectiveness; in 2018-19, it was again recommended after presentation of new data.

METHODS: Surveys were conducted in 2017 and 2019 among nationally representative samples of FPs and GIMs.

RESULTS: Response rates were 67% (620/930) in 2017 and 69% (642/926) in 2019. Many providers reported the belief that HD-IIV is more effective than standard-dose IIV in patients ≥65 years (76%) or that their patients ≥65 years believe they need HD-IIV rather than standard-dose IIV (67%). Incorrectly, most respondents thought ACIP preferentially

recommended HD-IIV for adults ≥65 years (89%). 66% 'almost always/always' recommended HD-IIV for adults ≥65 years. Some providers incorrectly reported that ACIP preferentially recommended HD-IIV for adults <65 years with cardiopulmonary disease (38%) or immunosuppression (48%), and some respondents recommended HD-IIV for these groups of patients (25% and 28% respectively). In 2017, 88% of respondents knew that ACIP recommended against use of LAIV during the 2016-17 influenza season, and 4% recommended LAIV to patients. In 2019, 63% knew that ACIP recommended that LAIV could be used during the 2018-19 influenza season, and 9% recommended LAIV.

CONCLUSIONS: Many physicians incorrectly thought ACIP had preferential recommendations for HD- IIV. Any age-appropriate influenza vaccine can be used in adults ≥65 years since no preferential recommendation exists.

HIGHER IMPACT ON CLINICAL OUTCOMES FROM DELAYS IN COLORECTAL CANCER SCREENING WITH THE FECAL IMMUNOCHEMICAL TEST VS MULTITARGET STOOL DNA: CRC-AIM MICROSIMULATION MODEL RESULTS

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BACKGROUND: Patients may delay colorectal cancer (CRC) screening beyond the recommended age for initiation or repeat testing. The impact of delayed adherence on subsequent CRC outcomes is not fully understood. The CRC-AIM microsimulation model was used to estimate the impact of delays in recommended triennial multitarget stool DNA (mt-sDNA) or annual fecal immunochemical test (FIT) screening strategies on resulting CRC outcomes.

METHODS: CRC-AIM contains natural history and screening components and has been cross-validated against the Cancer Intervention and Surveillance Modeling Network models. Sensitivity and specificity from DeeP-C trial data were used for screening inputs. Predicted outcomes for mt-sDNA and FIT screening strategies were simulated for 40-year-olds born in 1975 free of diagnosed CRC and screened between ages 45–75 or 50–75. For this analysis, it was assumed that recommended triennial mt-sDNA or annual FIT was delayed by 12, 18, or 24 months every time screening was due. For example, with a 12-month delay for triennial mt-sDNA, an individual would take their first test at age 51 instead of 50 and their second test at age 55 instead of 53 (age 51 + 3-year interval + 12 months delay=age 55). Outcomes are reported per 1000 individuals vs no screening.

RESULTS: For individuals screened between ages 50–75, the predicted life-years gained (LYG) and reductions in CRC-related incidence and mortality were highest for triennial mt-sDNA and FIT when there was no delay vs the delayed adherence scenarios. The LYG with a 12, 18, and 24-month delay was greater with triennial mt-sDNA (278, 262, and 247 LYG, respectively) than annual FIT (271, 245, and 226 LYG). The reduction in CRC-related incidence with a 12, 18, and 24-month delay was greater with triennial mt- sDNA (59.7%, 57.0%, and 52.7%, respectively) than annual FIT (54.8%, 49.6%, and 44.4%). The reduction in CRC-related mortality with a 12, 18, and 24-month delay was greater with triennial mt-sDNA (67.5%, 64.1%, and 59.8%, respectively) than annual FIT (64.9%, 58.5%, and 53.6%). Similar results were obtained when screening ages were between 45–75. With no delay, FIT provides an additional 1 LYG per additional 4.7 colonoscopies (COL) but requires 10,244 more stool-tests vs mt-sDNA. This relationship reverses with screening delays; with a 12, 18, and 24-month delay, mt-sDNA provides an additional 1 LYG per 35 additional COL, 18 additional COL, and 13 additional COL, respectively, but with 4456, 3099, and 2415 fewer stool tests, respectively, vs FIT.

CONCLUSIONS: Delays in screening adherence resulted in less favorable outcomes vs no delay for each of the modeled CRC screening strategies, although even delayed screening provides substantial clinical benefit. The relative efficacy of mt-sDNA was better than FIT when clinically realistic delayed screening adherence scenarios were considered.

HIGH RATES OF ORAL ANTICOAGULATION IN ATRIAL FIBRILLATION PATIENTS AT A SAFETY NET INSTITUTION

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BACKGROUND: Atrial fibrillation (a-fib) is associated with significant morbidity and mortality. This risk can be mitigated by the use of oral anticoagulation (OAC). The use of OAC remains underutilized, as nearly 45% of eligible patients are not on OAC. These rates are even worse among certain sub-populations, including racially diverse and underserved groups. The objective of this evaluation is to assess utilization of OAC among patients with a-fib in a safety net health system.

METHODS: International Classification of Diseases, Tenth Revision (ICD-10) codes were used to identify patients with a-fib and at least one visit with a primary care provider from April 2016 through November 2018. CHADs2VASc and modified HAS-BLED scores were calculated using ICD-10 codes, medication lists, recent vital signs and demographics. Patients eligible for guideline appropriate OAC were then identified using a CHADs2VASc score > 1. Among patients eligible for OAC, overall rates of OAC was calculated and clinical characteristics of those not on OAC were compared to those who were on OAC in a cross sectional design.

RESULTS: A total of 1669 patients with a-fib were identified, a large proportion of whom were at high risk for stroke with a CHADs2VASc score > 1 (78% of total a-fib population). Nearly one-third of this population was of non-white race, and 97% of the group was on either government issued or financially assisted insurance. Of this high-risk group, 64% of patients were on OAC. When comparing the high-risk groups based on OAC status, there was no significant difference between the two groups based on many baseline characteristics. Those on OAC had higher average CHADs2VASc scores, and the rates of OAC increased with stroke risk. Those on OAC also had higher rates of heart failure, diabetes, stroke, and vascular disease, HAS-BLED scores and were more likely to have been seen by cardiology. Those not on OAC had significantly higher rates of falls and dementia.

CONCLUSIONS: We demonstrated that a safety net institution can have rates of OAC that is better than the national average for high risk a-fib patients. Systems level factors that may have contributed to these rates of OAC include: an integrated health system including specialists, primary care and a hospital all on the same electronic medical record; clinic-based clinical pharmacists to manage the population on OAC; and a long standing inpatient-outpatient anticoagulation work group that works on care standards and transitions between settings. While a third of those eligible were not on OAC, that may in part be intentional and rational prescribing behavior as those not on OAC had significantly higher rates of dementia and falls. There may be additional unmeasured factors that

explain why these patients were not on OAC, which could guide future interventions to further improve guideline adherence.

HOME IS WHERE THE MOLD GROWS: USING UNANNOUNCED STANDARDIZED PATIENTS TO UNDERSTAND CLINICAL REASONING AND SOCIAL DETERMINANTS OF HEALTH

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BACKGROUND: The importance of addressing patients' social determinants of health (SDoH) is widely recognized, but less is known about how physicians specifically elicit, respond to, and document these determinants. We sought to describe resident practices when caring for a patient whose SDoH is integral to accurate diagnosis and treatment using Unannounced Standardized Patients (USPs).

METHODS: USPs were used (n=68) to assess how medicine residents responded to the consistent portrayal of a patient with asthma exacerbation and concern that her living situation (moldy, dilapidated housing) might be contributing to her symptoms. USPs, or "secret shoppers", were sent to two of New York's safety-net hospitals. Resident practices were assessed by the USP during a post-visit behaviorally-anchored checklist (7 items) and through a systematic chart review (3 items). Checklist items included whether or not a provider explored and fully elicited the USPs concerns, how they responded once shared, and what the provider actually did in response. Chart review items included whether or not a provider documented their patient's housing concerns in the history of present illness (HPI), problem list, or through use of a billing-related Z-code.

RESULTS: 68/79 consented residents participated: 11 PGY1 (16%), 31 PGY2 (46%), and 26 PGY3 (38%). 65% (44/68) of residents elicited the patient's housing SDoH and of those, 75% (33/44) responded by acknowledging/exploring and providing notes/practical support. 30% (10/33) connected the patient to informative resources or direct referral. Less than half (14/33; 42%) of those who acknowledge/explored documented appropriately in the EMR. No residents documented housing in the problem list or with a housing-related ICD10 Z-code. Of the 14 high performers, 6 successfully elicited, acknowledged, and documented housing concerns for one of our other five SDoH cases. More than half (55%) of the residents who elicited housing information connected the mold to the asthma exacerbation as a possible trigger, either during clinical interaction or in documentation. All but one (93%) of those who elicited, acknowledged, and documented made this connection.

CONCLUSIONS: Using USPs to directly observe resident practice behaviors in gathering information about, documenting and taking action on a consistently portrayed SDoH case closely linked to clinical symptoms is the first piece of the puzzle needed to better understand education and training that prepares physicians to address SDoH. Our study identifies practice gaps at all stages – adequately collecting information, understanding the clinical/treatment consequences of, effectively responding to needs, and in documentation of SDoH. Future research should explore the influence of the clinical microsystem (e.g., SDoH screening tools, available resources and referrals, and workflows) on physician SDoH-related practices.

HOME TELEHEALTH IN THE VETERANS HEALTH ADMINISTRATION: PREDICTORS AND TRENDS IN ENROLLMENT FROM 2010-2017

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BACKGROUND: Remote monitoring of chronic illness may facilitate patient self-management and has generated increasing interest among patients, clinicians, and payers. The Veterans' Health Administration's (VHA) Home Telehealth (HT) program was created in 2003 to improve chronic disease management for Veteran patients. Prior evaluations of the program have been limited, and the program has expanded rapidly since 2010. Our primary objective was to describe this expansion and identify patient characteristics associated with HT enrollment from 2010 through 2017.

METHODS: This was a retrospective cohort study. Primary sources of data were the VHA Corporate Data Warehouse (CDW) for administrative data and the VHA Support Service Center (VSSC) Capital Assets Databases for enrollment data. The longest enrollment period of each HT patient was identified and examined using specific codes for telehealth services in the VHA.

Two authors (LE, AR) categorized all disease management protocols according to Agency for Healthcare Research and Quality criteria. CDW data was used to define patient characteristics including age, sex, race, patient comorbidity index (Gagne), drive time to the nearest VHA, urban/rural, and neighborhood socioeconomic status. We used Chi-square tests to compare categorical variables and Kruskal-Wallis to compare continuous variables. Tests of significance were two-tailed (alpha level of 0.05). Univariate and multivariate survival analyses described the relationship between these variables and length of enrollment in HT services.

RESULTS: Enrollment in HT expanded from 30,000 patients in 2010 to nearly 85,000 patients in 2015, and the program continues to enroll over 60,000 patients per year (2017). For the 427,461 patients who were enrolled between 2010-17, patient's average age was 63.6 years (SD 12.9), and the majority were male (91%) and white (67%). Most patients lived urban areas (61.3%) and had an average drive time of 22.3 minutes to the nearest VA clinic (SD 24.4). The 3 most common conditions treated were hypertension (27.1%), obesity (22.5%), and diabetes (16%). The median length of enrollment in the HT program was approximately 8.4 months (IQR 1.45 years). Patient characteristics associated with continued enrollment at 90 days included male gender, rural residence, and low income.

CONCLUSIONS: In this descriptive study, we highlight the rapid expansion of HT services from 2010 through 2017 in the VHA. A majority of patients enroll for common primary care related conditions. Moreover, patients living in more rural areas and low income are continuing to engage in these services after 90 days. Future work will examine the impact of HT services on clinical quality and outcomes.

HOSPITALIST YEARS OF EXPERIENCE AND ASSOCIATION WITH INPATIENT LABORATORY TESTING

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BACKGROUND: Thoughtful laboratory testing is a key component of high-value and cost-effective patient care. Studies estimate that nearly half of laboratory tests may be unnecessary in certain patient populations. The drivers of observed variation in laboratory testing are not clearly established; our study aims to examine whether testing varies by hospitalist years of experience.

METHODS: We conducted a retrospective study of a direct-care physician-staffed hospitalist service at a tertiary-referral academic medical center from July 2018 to June 2019. Data on hospitalist characteristics, including years of experience (defined as years since initial American Board of Internal Medicine certification) were obtained for all providers. We identified all orders for complete blood count (CBC), basic metabolic panel (BMP), prothrombin time, serum albumin, serum magnesium, and serum phosphorus from the electronic health record. Using multivariable linear regression, we then tested the association of years of experience with the mean total laboratory tests per patient-day, adjusted for physician gender and patient characteristics (demographics, comorbidity index, length-of-stay).

RESULTS: Over the study period, 81 hospitalists (47 women and 34 men) with years of experience ranging from 0 to 26 years (mean: 5.6 years) on the direct-care service ordered a total of 47268 laboratory tests over 16045 patient-days. For the entire study population, the average number of laboratory tests per patient-day was 2.95. The most common test was a CBC, with or without differential (0.81 per patient-day), followed by a BMP (0.73 per patient-day). For every year of experience, there was a decrease in 0.03 laboratory tests per patient-day (95% confidence interval [CI] -0.05 to -0.002, p = 0.03). First-year hospitalists (n = 11) ordered significantly more laboratory tests than all others (n = 70) with 3.53 laboratory tests per patient-day vs 2.90 (p = 0.002). Early-career hospitalists (0-3 years of experience, n=32) ordered more laboratory tests than mid- career hospitalists (4-7 years of experience, n=30) (3.19 vs 2.80, p = 0.01) and later-career hospitalists (9 or more years of experience, n=19) (3.19 vs 2.87, p = 0.04). Physician gender was not significantly associated with laboratory testing.

CONCLUSIONS: Our study found an inverse association with hospitalist years of experience and laboratory testing. Early-career hospitalists ordered on average more tests per patient day than did mid- or later-career hospitalists. Hospitalists in their first year of practice ordered over 20% more laboratory tests than all other hospitalists. Efforts to promote high-value care should examine physician experience as a potential contributor to utilization.

HOSPITALIZATIONS WITHIN 6 MONTHS AFTER INDEX ADMISSIONS: IMPACT OF THE HOSPITAL READMISSIONS REDUCTION PROGRAM

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BACKGROUND: The Hospital Readmissions Reduction Program (HRRP) penalizes hospitals based on readmissions within 30 days after index admissions for specific conditions such as heart failure (HF), pneumonia (PNA), acute myocardial infarction (AMI), and chronic obstructive pulmonary disease (COPD). While prior work has associated HRRP with reductions in 30-day readmissions for some conditions, little work has examined whether this policy has resulted in improvement of care that could reduce admissions beyond this short-term window. Our objective was to assess if this policy, focused on 30-day readmissions, was associated with reductions in hospitalizations within 6 months of an index admission.

METHODS: Retrospective cohort study of Medicare beneficiaries in New York (NY) and Florida (FL) age 65 and older who had an index admission for HF, PNA, AMI, or COPD, using 2008-2014 Healthcare Cost and Utilization Project discharge claims data before and after the October 2012 implementation of HRRP. We predicted the total unplanned hospitalizations within 180 days after index admissions for HF, PNA, AMI, COPD in each state after HRRP implementation (October 2012-June 2014) based on hospitalization rates prior to implementation (October 2008-June 2012). For each state, we used piecewise Poisson regression to assess the difference in the predicted versus observed hospitalizations per year, which was then used to estimate the number of hospitalizations within 6 months of a patient's HRRP-qualifying index admission. Subsequent hospitalizations were reported as a percentage of predicted hospitalizations, as well as the median number of estimated "saved" hospitalizations per hospital.

RESULTS: The expected reduction or 'savings' in hospitalizations (number, % of predicted hospitalizations, and median hospitalizations saved per hospital) within 6 months of qualifying index admissions overall averaged 2.6% of predicted hospitalizations, but varied by state and index admission. NY hospitals experienced greater savings than FL for each condition:

1. HF (NY: 1929, 3.5%, 4 per hospital; FL: 1303, 1.9%, 3 per hospital)
2. PNA (NY: 874, 3.4%, 2 per hospital; FL: -22, 0%, 0 per hospital)
3. AMI (NY: 643, 4.5%, 1 per hospital; FL: 540, 2.6%, 1 per hospital)
4. COPD (NY: 1789, 4.8%, 5 per hospital; FL: 826, 1.6%, 2 per hospital)

CONCLUSIONS: HRRP only resulted in median reduction of 0-5 hospitalizations per hospital over a 6-month period for patients with an HRRP-qualifying index admission, a small percentage of total hospitalizations over the same period. HRRP was designed to reduce readmissions and Medicare cost ostensibly by improving quality of care. True improvements in quality and associated cost should extend beyond the 30-day policy period. Our results show that the median hospital saw minimal reductions in 6-month re-hospitalizations for patients with HRRP index admissions. Further, for many hospitals, cost savings from "saved" hospitalizations are likely more than offset by costs related to HRRP implementation.

HOW ARE THE ARTS AND HUMANITIES USED IN MEDICAL EDUCATION? A SCOPING REVIEW OF THE LITERATURE.

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BACKGROUND: Research increasingly suggests that integrating the arts and humanities (A&H) into medical education may lead to important learning outcomes. The range of A&H that can inform medical learning and, ultimately, patient care is vast—from literature and reflective writing to visual arts and philosophy. As part of an Association of American Medical Colleges initiative (https://www.aamc.org/what-we-do/mission-

areas/medical-education/humanities), we conducted a scoping review to identify how and why the A&H are being used to educate physicians and interprofessional learners across the spectrum from premed to CME.

METHODS: We followed Arksey & O'Malley's (2005) five scoping review stages and included the sixth stage of stakeholder consultations suggested by Levac (2010). We developed a search strategy that a health sciences librarian implemented across seven databases in May and June 2019, locating 21,988 citations. Five authors independently screened all titles and abstracts and six reviewers screened the full text of 4,652 records. At both stages, each record was screened by two trained reviewers, and discrepancies were resolved by a third reviewer. In the end, 772 citations met inclusion criteria. We collected descriptive data such as learner level, setting, and type of A&H. Using frameworks by Dennhardt et al (2016), we performed a conceptual analysis of epistemic function (e.g., assumptions about how teaching and learning with the A&H occurs) and a discursive analysis of how the A&H are positioned (e.g., as intrinsic, additive, or curative) in relation to medicine. Stakeholder interviews included leading voices in the literature, institutional administrators, teachers, learners, and patients.

RESULTS: This literature is diverse and dominated by: a) conceptual works that either call for the use of A&H in general or critically engage with its ideas and methods, b) works that describe implementations of A&H, and c) empirical works, mostly qualitative studies that evaluate A&H-based interventions. Absent in the literature are the voices of medical students, patients, and artist- and community-based educators as well as robust engagement with A&H in interprofessional, pre-medical, and continuing medical education contexts. Conceptual analysis demonstrates the A&H being seen to function foremost as a means for learners to develop skills or expertise, or to engage learners in dialogue and perspective taking. Less commonly, A&H are seen to function as a medium for personal growth or activism/advocacy. In the discursive analysis, the A&H were positioned as additive most of the time (498 records) as opposed to intrinsic (36 records) or curative (128 records).

CONCLUSIONS: The literature is complex, and can inform local and national discussions. To the extent that the literature reflects on-the-ground discussions, the position and perceived function of the A&H has important implications for how they are implemented, and ultimately, how successful they can be in medical education.

HOW DO CLINICIANS RESPOND TO ELEVATED HOME BLOOD PRESSURE READINGS FOR PATIENTS WITH HYPERTENSION?

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BACKGROUND: Remote blood pressure monitoring (RBPM) is a common strategy for managing hypertension, but how clinicians respond to elevated readings is poorly described. To understand how such programs might be improved and scaled, we characterized and quantified the spectrum of clinician actions in response to elevated readings during a trial of automated RBPM.

METHODS: We analyzed data from a 16-week randomized clinical trial, SupportBP. 201 patients randomized to the intervention arms received automated text message prompts to submit home readings. Clinicians were notified in the electronic health record (EHR) for elevated readings, defined as: (a) 3 of the last 10 readings ≥140/90; or (b) single reading ≥180/110. Notifications contained the elevated readings plus 5-10 recent readings.

Of 201 patients, 165 (82%) met criteria for escalation at least once during the trial. The remaining 36 did not participate (n=4) or did not meet escalation criteria. For this analysis, two internists reviewed charts first collaboratively to code categories of clinician action, then independently. In the final analysis, inter-reviewer correlation will be calculated and differences resolved through discussion.

RESULTS: Preliminary review of 55 patients revealed 189 escalations (mean 3.4, SD 1.6). Most commonly, alerts did not change practice (47%, n=89). Of these, clinicians documented receipt of the alert in the EHR for 19% (n=17), while 76% (n=68) were not acknowledged. The independent reviewers judged it was clinically reasonable not to act on 40% (n=36) of these alerts because BP values were borderline; however, they judged that 53% (n=47) warranted action.

For almost 31% of escalations, clinicians instructed the patient to schedule an appointment, yet only 15% of encounters resulted in an office visit. Less than 20% of encounters resulted in a medication change.

At a patient level, a mean of 1.8 actions (SD 1.3) were taken by the clinicians over 16 weeks. Among the 55 patients reviewed, 84% had at least one escalation that resulted in no action; for 7 patients (13%), all escalations resulted in no action. Attempts to schedule the patient, medication changes, and clinic visits were the most common actions at both patient and encounter levels.

CONCLUSIONS: Limited clinician responses to elevated blood pressure alerts in a remote monitoring program demonstrates a level of inertia to overcome prior to changing medications in this setting, as less than half of all patients received medication changes. Additionally, most clinicians preferred to schedule patients for an in-person evaluation, suggesting that these programs build new infrastructure and practice culture to support RBPM. Finally, some alerts justifiably did not change practice, implying opportunity to improve the clinical utility of alerts to clinicians.

HOW DOES GENDER IMPACT CLINICAL PERFORMANCE ASSESSMENT IN CORE CLERKSHIPS?

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BACKGROUND: Clinical performance assessment is an inherent part of undergraduate medical education (UME) to show competency and achievement of milestones. Assessment of clinical performance, however, has shown variability and poor reliability across clerkships yet remains a central tenet of clerkship grading. Variability of student and assessor characteristics and structural clerkship components introduce subjectivity into clinical grading. The impact of gender on assessment has been limited predominantly to faculty opinion and behavior on scripted vignettes with little empirical data available. This study aimed to examine how gender affects performance assessment within core clinical clerkships.

METHODS: A single institution, retrospective review was performed on all completed clinical evaluations of clerkship students during the 2017-18 academic year across seven core clerkships at the UAB School of Medicine, Birmingham campus. Data consisted of numerical scores on 11 items with a 4-point ordinal scale indicating student performance within each domain (e.g. exam skills), structural components (e.g. contact time), and a yes/no designation of clinical honors. Self-identified gender was obtained from UME and GME databases. The data was examined at the level of individual evaluations and organized by evaluator-evaluatee gender concordance or discordance (MM, FF, MF, FM). Analysis used Chi-square and Fisher's exact test to assess how gender affected clinical performance rating and likelihood of clinical honors. Logistic regression determined odds ratios (OR) of honors recommendation by gender concordance or discordance for each clerkship.

RESULTS: 4,362 evaluations of 187 medical students (100 M, 87 F) were analyzed and revealed a statistically significant impact of gender upon honors recommendation for four of the seven clerkships: family medicine (p=0.008), internal medicine (p<0.001), neurology (p<0.001), and surgery (p=0.009). The impact of gender did not reach statistical significance for OBGYN, pediatrics, or psychiatry. Within internal medicine, gender discordance (M:F or F:M) increased likelihood of an honors recommendation (p=0.012) compared to gender concordance, OR 1.43 (95% CI=1.09-1.88). Gender concordance was marginally significant for surgery (p=0.048), OR 0.77 (95% CI 0.586-0.998). Concordance was not significant for any of the other five clerkships. Additionally, direct observation of clinical skills and contact time (hours per week and number of weeks) significantly increased likelihood of honors recommendation (p<0.0001).

CONCLUSIONS: Gender of evaluators and students impacted clinical performance assessment across several clerkships in our study; however, our findings question the prevailing notion that gender concordance inflates assessment. On the contrary, within internal medicine gender discordance conferred a higher likelihood of honors. Structural factors such as direct observation and contact time also increased likelihood of honors recommendation.

HOW DOES SELF-WEIGHING IMPROVE WEIGHT CONTROL: ANALYSIS FROM A RANDOMIZED BEHAVIORAL WEIGHT LOSS INTERVENTION.

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BACKGROUND: Daily self-weighing promotes weight loss and weight loss maintenance and has been shown to improve the ability to refrain from excess caloric intake. Behavior change theory states that self- observation improves self-efficacy, but the mechanisms by which self-weighing improves weight is not fully known. Therefore, we explored longitudinal associations between self-weighing and both self-control attributes (e.g., cognitive restraint, uncontrolled eating) and weight loss efficacy (e.g., emotional eating, social eating) in the BestFIT behavioral weight loss randomized controlled trial.

METHODS: BestFIT was a two-stage sequential multiple assignment randomized trial for adults with body mass index (BMI) between 30 and 45kg/m^2. All participants received standard behavioral weight loss treatment (SBT) that included advice to self-weigh daily. Patients were randomized to a response assessment at either 3 weeks or 7 weeks, and non-responders were then re-randomized to either augmenting SBT with portion-controlled meals or switching to an acceptance-based enhanced version of SBT. Measures included self-reported self-weighing frequency, collected at 0, 6, 12, and 18 months, and Power of Food Scale (PFS), Three-Factor Eating Questionnaire (TFE), and the Weight Efficacy Lifestyle (WEL) surveys, each collected at 0, 6, and 18 months. Relationships between self-weighing pattern and longitudinal changes in weight, PFS, TFE, and WEL were examined using mixed-effects models adjusted for treatment assignment.

RESULTS: Overall 468 participants were enrolled, mean age 49y, mean BMI 36 kg/m^2, 76% women. Three distinct temporal patterns of self-weighing frequency were identified using latent class analysis: low frequency (n=52), moderate frequency (n=228), and high frequency (n=188). The high frequency group achieved the most weight loss at 6, 12, and 18 months (p<0.05). Mean weight loss at 18 months was 1.6kg, 3.6kg, and 8.3kg in the low-, moderate- and high-frequency groups (p<0.05), respectively. There were statistically significant associations (p<0.05) between self-weighing patterns and improvements in the following measures, with high frequency weighers showing the greatest improvements: PFS overall, PFS present domain; TFE cognitive restraint, TFE uncontrolled eating, TFE emotional eating; WEL total and the following domains: emotion, availability, social, physical, and addictive.

CONCLUSIONS: This analysis offers unique insight into behaviors and attributes that might explain the mechanisms through which self-weighing improves weight control. While causality cannot be determined, more frequent self-weighing was associated with improvement in measures of the psychologic impact of living in a food abundant environment, self-efficacy, cognitive restraint, uncontrolled eating, and emotional eating. These associations warrant further exploration because better understanding of these relationships may offer insight into more effective tailoring of behavioral weight loss treatment.

HOW GOOD IS THE SUPPLIED CRYSTAL BALL? EVALUATION OF AN ELECTRONIC HEALTH RECORD (EHR) NO-SHOW (NS) PREDICTION MODE

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BACKGROUND: Studies analyzing appointment data from EHRs demonstrated certain social determinants contribute to no-show (NS). The large amount of data collected in EHRs allows for the application of artificial intelligence (AI). However, knowledge gained from AI may contain potential biases. The objective of our study is to evaluate the accuracy of our NS prediction model adopted from vendor with local modification and to explore potential bias for patient subgroups. In our academic primary care setting, we compared the EHR vendor generated NS prediction rate to the actual NS rate. We further analyzed data from patient subgroups to investigate the possibility of potential bias.

METHODS: We analyzed appointment data from our EHR for the last 3 years. We included 38,443 active patients who had completed an encounter in the last 3 years and were alive on the day of the analysis. No-shows were defined as an appointment where the patient did not show or did not cancel in time. Reports for all appointments including all NS were generated within the EHR and exported to Excel for further analysis. Sub-analysis of NS prediction and actual rates included the following factors: gender, patient portal activation, depression PHQ9 scores, smoking status, insurance and marital status.

RESULTS: In our population, the NS prediction model overestimated actual NS by 1.9% absolute percentage points (37% relative) on average. The overall NS prediction was 7.3% compared to actual NS rate of 5.4%. NS overestimation in women was 2.1% vs men 1.8%. Patients who did not activate their patient portal were more likely to NS (actual rate of 8.6% vs 5.1% for those with portal activation). Male patients who did not activate their portals were most likely to NS and best predicted in that subgroup. In all patients with depression, not only did the prediction match the actual NS rate better than in the general patient population, but the more severe the depression, the more accurate the prediction. Similar to established literature, our analysis showed that smokers are more likely to no show compared to nonsmokers (9.8% vs 6.15%). Our observation also suggests that patients who are identified as self-pay are more likely to no show when compared to Medicare (7.3% vs 5.5%). However, patients with Medicare or with managed care showed an underestimation of NS by the prediction model (delta of 1.4% and 1.5% respectively). Single patients are more likely to have an overestimated NS rate compared to the general population (delta of 5.6% vs 1.9%).

CONCLUSIONS: Our study found overestimation of NS rates by the vendor provided prediction model. In our subgroup analysis, patients without portal use and with depression were found to have more accurate NS prediction rates. In patients with Medicaid or managed care, the prediction model underestimated the NS rates. Organizations may consider examining the performance of risk models and their potential biases prior to their implementation and with continued monitoring throughout their use.

HOW PAYERS ARE LEVERAGING OPPORTUNITIES TO PAY FOR BENEFITS TO ADDRESS SOCIAL RISK FACTORS? A QUALITATIVE STUDY OF EXPANDING SUPPLEMENTAL BENEFITS AMONG MEDICARE ADVANTAGE PLANS

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BACKGROUND: Health care payers are increasingly experimenting with interventions to address social risk factors. Recent federal policy changes (the Bipartisan Budget Act's CHRONIC Care Act of 2019) allowed for greater flexibility in the definition of supplemental benefits, creating opportunities for plans to adjust organizational approaches to social risk-related programming. Despite this, few plans have increased offerings of supplemental benefits addressing non-medical needs. An understanding of implementation challenges and opportunities health plans currently face will allow adjustment of future policy decisions to maximize avenues for MA plans to advance social care initiatives.

METHODS: In this qualitative study, we interviewed executive leadership representatives from a nationally-representative sample of Medicare Advantage plans (n=25 across 14 plans) to assess plan motivations to offer social-risk related interventions and challenges plan face in decisions to expand benefits. Plans were selected to be representative based on the following criteria: geographic coverage (regional, state, and national), Special-Needs plans vs. Special-Needs plans, tax status (non-profit vs. for-profit), and plan type (HMO, PPO, and PFFS).

RESULTS: Results suggest that plans have interest addressing members' social risk factors through supplemental benefits, but most have not widely expanded the scope of their supplemental benefits due to internal and external factors. Plans that expanded or offered new benefits most commonly reported expansion of meal programs and transportation benefits.

Internal factors influencing plan motivations to address social needs included (1) plan missions and values drive decisions to change benefit offerings over considerations about return on investment (2) provider-driven initiatives and (3) member needs. External factors influencing plan decisions included evidence of positive returns on investment (ROI), improved health care costs and outcomes, and competition with other plans covering a similar beneficiary population.

Plans face several challenges that influence decisions to address social risk factors via supplemental benefits: difficulty in selecting and designing interventions during tight bid cycles, resource allocation challenges, lack of operational research of benefits implementation, and limited evidence of uptake of new benefits.

CONCLUSIONS: This study elucidates some of the drivers for MA Plans to address social determinants of health of their enrollees and highlights the challenges plans face in doing so. As Medicare Advantage continues to grow, increasingly more Medicare beneficiaries will be affected by changes in the MA program. Increased opportunity to address adverse social determinants of health constitutes a major change in Medicare Advantage. Future efforts should monitor the implementation of new or expanded benefits in considerations for future policy directions for Medicare Advantage.

HOW WE LEARN: A NATIONWIDE SURVEY OF THE USE AND PERCEIVED VALUE OF NOVEL AND TRADITIONAL EDUCATIONAL RESOURCES AMONG INTERNAL MEDICINE RESIDENTS.

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BACKGROUND: Medical residents have access to novel educational resources including podcasts, YouTube, and Twitter. These resources are largely unregulated and non-peer reviewed and they have direct implications for medical education. We sought to describe the use and perceived value of novel and traditional educational resources among internal medicine (IM) residents.

METHODS: This was a cross-sectional survey of IM residents in January 2020. Residency programs were contacted via email and sent a SurveyMonkey link to distribute to residents. Residents were asked to check which resources they used at least once in the past three months for attaining general medical knowledge and for point-of-care decision making. They rated the helpfulness of each resource using a 5 point Likert scale and identified their "go-to" resource in each category. We categorized Twitter, YouTube, online blogs, podcasts, and Wikipedia as "novel resources" since they are non-peer reviewed, and less characterized in the literature. Traditional resources included textbooks, pocketbooks, peer-reviewed digital media (Up-to-date, DynaMed), professional guidelines, clinical experience, peer-reviewed articles, residency curriculum and board-review guidebooks (MKSAP). Questions were field tested for content and face validity. Resources were considered valuable if identified as "very helpful" or "helpful". We collected demographics, commute time, and type of program (academic or community). A logistic regression model was used to identify the association between these variables and the odds of using a novel resource.

RESULTS: We received 439 responses from PGY1-3 residents from 32 different programs across 19 states. Average age of the resident was 29 and 45% were female. The most common resource was independent reading of peer-reviewed digital media for both general (46%) and point-of-care (87%) knowledge. On average, residents used 7 (out of 8) traditional resources and 2 (out of 5) novel resources. The most commonly used novel resource was podcasts (58%) followed by YouTube (57%) and these were used by more residents than textbooks (54%). The majority of residents who used YouTube rated it valuable (83%), and 73% of residents who used podcasts rated them valuable. Regarding traditional resources, 94% of residents who used a peer-reviewed digital clinical resource rated it valuable, and 70% of residents who used textbooks rated them valuable. There was no association between demographics, commute, or the type of program on odds of using a novel resource ($p>0.05$).

CONCLUSIONS: We found that residents use novel resources frequently and that their use is not associated with age, gender, commute time or PG year. Textbooks (both print and digital), once the centerpiece of medical knowledge acquisition, are no longer used by almost half of the residents surveyed. Despite not being systemically peer-reviewed, novel resources are rated as valuable by residents and may influence clinical decisions and patient care.

HYPERTENSION MANAGEMENT IN AN INTERNAL MEDICINE RESIDENT CLINIC: A QUALITY IMPROVEMENT PROJECT UPDATE

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BACKGROUND: The Barnes-Jewish Hospital Primary Care Medicine Clinic is an academic internal medicine resident clinic with an average of 1960 patient visits per month; 62% of our patients have a diagnosis of hypertension (HTN). We started a quality improvement project in August 2018 with the aim of improving the percentage of hypertensive patients with controlled blood pressure (defined as <140/90) from a baseline of 65.8% to 80.0%. We established a multi-disciplinary nurse HTN clinic, in which patients are scheduled with a nurse, who measures blood pressure, consults with a resident for medication changes if blood pressure is uncontrolled, and educates patients regarding lifestyle and blood pressure goals. Patients can follow up regularly until they have reached their goal blood pressure. The first PDSA cycle involved changing the nurse HTN clinic referral process from paper-based to electronic to increase use of this resource by residents. While this improved referral rates to this clinic, it did not affect overall blood pressure control. After tracking referral rates and no-show rates to the nurse HTN clinic visits, we found that a high no-show rate limited the effectiveness of this clinic.

METHODS: The next PDSA cycle focused on addressing the no-show rate by assigning one specially- trained nurse to be responsible for the nurse HTN clinic for improved continuity. Other changes included reminder phone calls prior to appointments and enhancement of patient education efforts. In the most recent PDSA cycle, we obtained blood pressure monitors to give to patients free of charge to facilitate patient engagement in HTN management.

RESULTS: The percentage of patients with controlled HTN decreased from baseline of 65.8% (June to September 2018) to 62.5% in November 2018, then increased to 68.6% in May 2019 but decreased again from October 2019 onward. There were 1243 completed visits in the nurse HTN clinic from August 2018 to December 2019, serving 717 unique patients. The no-show rate decreased from 50% to 34%. From August 2019 through December 2019, 131 blood pressure monitors were distributed to selected patients.

CONCLUSIONS: By using reminder phone calls, our clinic was able to decrease the no-show rate for patients in the nurse HTN clinic. With ongoing interventions, the percentage of hypertensive patients with controlled blood pressure steadily improved from December 2018 to May 2019. Blood pressure control worsened in the fall and winter of 2019. Possible reasons for this include staff turnover, and dietary indiscretions during the holidays. Sustained improvement may be difficult to appreciate because the interventions only directly affect a small subset of patients with HTN. We attribute our successes and momentum to our multidisciplinary team, including physicians, nursing, pharmacy, and information technology. Future PDSA cycles include developing resident HTN management guidelines, improving HTN documentation in the electronic medical record, and patient engagement.

IDENTIFYING BARRIERS TO PHYSICIAN ENGAGEMENT AMONG COMMUNITY-BASED PHYSICIANS IN A LARGE ACADEMIC HEALTH SYSTEM

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BACKGROUND: Prior research has documented the impact of healthcare delivery and financing changes on physician perceptions of their work and personal wellbeing. Engaging physicians in practice re-design and management has been identified as a protective factor for burnout, and high-performing health systems make extensive efforts to listen to provider experiences before engaging in practice transformation. Less known are the specific ways systems can enhance provider engagement and reduce burnout. This investigation sought to identify drivers of provider dissatisfaction in preparation for a comprehensive physician wellbeing initiative.

METHODS: Randomly selected practice-based physicians completed an anonymous online survey to obtain perceptions of (a) the electronic health record (EHR); (b) practice based workflows, scheduling, staffing, and quality improvement (QI); (c) the effectiveness of health system marketing support; (d) opportunities for professional development; and (e) general satisfaction with health system affiliation. Physicians responded to questions using a 100-point visual analog scale (VAS), and were also asked to provide open-ended explanations for their answers.

RESULTS: We obtained surveys from 161 of 230 physicians. Frequently cited reasons for provider dissatisfaction included inefficiencies in EHR documentation and task management, with older respondents endorsing greater difficulty with the EHR than younger physicians ($P<.05$). Management of patient phone calls was also of concern, with greater dissatisfaction identified among providers using an external call center ($P<.001$). Overall pride in health system affiliation was high. Providers working in practices with a greater number of allied health professionals (e.g., nurses, social workers, psychologists, etc.) had more positive attitudes to QI standards ($P<.001$) and greater overall pride in health system affiliation ($P<.05$). Across content areas (i.e., call management, marketing, QI, and work-life balance) physicians reported more positive attitudes when they felt involved in problem-solving and connected to other colleagues rather than when tasks were removed from their local environment or practice's set of responsibilities.

CONCLUSIONS: We obtained baseline data upon which to establish benchmarks and targets for improvement, and inform a new provider wellness program. Results describing ways the EHR and call management problems exacerbate time and staff-related pressures are broadly consistent with prior research. Interestingly, commitment to QI and overall satisfaction were higher in practices with more interprofessional support, suggesting a tangible physician-reported benefit of working within a Patient Centered Medical Home (PCMH). Results also suggest that provider wellness initiatives must balance efforts at promoting self-care and work-life balance with tangible efforts to improve practices with extensive involvement of physicians at all levels of training and experience.

IDENTIFYING CULTURAL AND SOCIO-ECONOMIC BARRIERS IN LONG TERM CARE PLANNING

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BACKGROUND: The lives of individuals with intellectual/developmental disabilities (IDD) continue to extend into adulthood as medicine continues to advance. Many components of long term care (LTC) are neglected due to a lack of knowledge or resources which then cause uncertainty in the health, financial, and legal welfare of individuals with IDD. Furthermore, resources available to families to help LTC are not individualized to a family's values, culture, and socio-economic status. The aim of this study was to gain a better understanding of the cultural and socio-economic barriers families face when considering next steps for LTC planning.

METHODS: Semi-structured in-depth interviews were conducted with families, siblings, and individuals with IDD. Before each interview, participants were asked to browse through an existing web-based resource for LTC planning. Participants were also asked to report current socio-economic status, education level, and race/ethnicity. Previous semi-structured interviews with this population identified the following domains of LTC planning: caregiving, transportation, housing, health management, financial management, and legal management. Participants were asked to expand on barriers to planning any of these domains. Participants were prompted to follow-up questions regarding their cultures, values, and finances. Additionally, they were asked to compile a comprehensive "wish list" for LTC in an ideal setting.

RESULTS: From October-December 2019, ten in-depth interviews were conducted. Each participant identified with at least one of the following: non-white (4,40%), English as a second language (1,10%), education equivalent to or less than a high school diploma (2,20%), or income less than $50,000 annually (7,70%). Interviews revealed a web-based tool would help facilitate planning if viewers felt there were photos of individuals of diverse backgrounds and disease states; availability in multiple languages; and peer collaboration. Participants states financial security in the short term (i.e. social security assistance), but lack of LTC in most of the domains, particularly legal and financial management.

CONCLUSIONS: LTC planning is a challenging process for families with children with IDD. Cultural and socio-economic factors play a large role in a family's ability to be receptive to the resources provided.

IDENTIFYING DISTINCT SUBGROUPS OF HIGH-NEED, HIGH-COST VETERANS USING MACHINE LEARNING CLUSTERING METHODS

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BACKGROUND: To improve care management for high-need, high-cost (HNHC) Veterans, the Veterans Health Administration (VA) developed the Care Assessment Needs (CAN) score, a model that predicts a patient's percentile risk of hospitalization and/or death at one year. We used machine learning (ML) clustering methods to examine subgroups of HNHC Veterans with combined one-year CAN scores ≥75th percentile.

METHODS: In this cross-sectional study of 110,000 Veterans, we used data from the VA Corporate Data Warehouse (CDW). We categorized 2014 data into 119 independent variables, grouped into 6 categories: demographics, comorbidities, pharmacy, vital signs, labs, and prior utilization. We applied a validated density-based clustering algorithm to ten randomly selected training sets of 10,000 Veterans to optimize model hyperparameters; then applied our optimized algorithm to a holdout set of 10,000 Veterans to generate clusters. To label each cluster, we used ridge regressions to compare estimated coefficients for each independent variable within and across clusters. For each cluster, we calculated average two-year utilization and mortality.

RESULTS: We identified 30 subgroups of HNHC Veterans ranging from 50-2,446 patients (see table). Elixhauser comorbidities and pharmacy information had greater importance for subgroup identification than vital signs and demographics. Mean CAN score ranged from 72.4-90.3 among subgroups. Two-year mortality ranged from 0.9%-45.6% and was highest in the home-based care subgroup. Mean inpatient days ranged from 1.4-30.5 and were highest in the post-surgical infection subgroup. Mean emergency room visits ranged from 1.0-4.3 and were highest in the sedative use subgroup. Mean outpatient visits ranged from 22.9-119.1 and were highest in the home-based care subgroup.

CONCLUSIONS: HNHC Veterans are a heterogeneous population consisting of 30 subgroups with distinct utilization and outcome patterns. Distinct HNHC subgroups may benefit from individualized interventions that address their unique needs.

Disease-based
Metastatic cancer
Blood-loss anemia
Spinal cord injuries
Pulmonary vascular disease
Lymphoma
Psychoses without drug abuse
HIV/AIDS
Post-surgical infection
Chronic renal disease
Valvular heart disease
Rheumatologic disease
Peptic ulcer disease
Cardiac arrhythmias
Cirrhosis
Ischemic heart disease
Thyroid disease with diabetes
Insulin-dependent diabetes
Iron-deficiency anemia
Thyroid disease without diabetes
Low comorbidity burden
Pharmacy-based
Sedative use
Amphetamine use
Opioid use
Polysubstance use
Utilization-based
Home-based primary care
Uncomplicated surgery
Missing data
Sociodemographic-based
Dual Medicaid
Hispanics
Females

IDENTIFYING PATIENTS' UNMET HEALTH-RELATED SOCIAL NEEDS IN AN ACADEMIC PRIMARY CARE PRACTICE IN SAN FRANCISCO, CA

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BACKGROUND: Unmet health-related social needs may lead to negative health outcomes and increase healthcare utilization by patients. There is growing interest in integrating social needs care into healthcare to reduce disparities and promote health equity. We conducted a needs assessment of unmet health-related social needs in a diverse, urban academic primary care practice to help prioritize strategies to integrate social needs care.

METHODS: We recruited a convenience sample of patients from clinic waiting rooms in a three-site academic primary care practice to complete a self-administered anonymous paper survey from February to October 2019. The survey was available in English, Chinese and Spanish. We

used questions from the Accountable Health Communities Health-Related Social Needs Screening Tool from Centers for Medicare and Medicaid Services covering these domains: food insecurity, housing instability, transportation problems, utility health needs, interpersonal safety, financial strain, and family and community support. We also collected age, gender and zip code of residence. Participants received a $5 gift card incentive and a 4-page in- language printed resource guide for these health-related social needs. Survey responses were recorded in REDCap. We used STATA for bivariate analyses.

RESULTS: 679 patients completed the survey. Participants were 56% female with a mean age of 58±18 years old (range 18-101). 5% of respondents completed the survey in Spanish while 10% completed the survey in Chinese. The table presents the prevalence of each health-related social need for the total study population and then separately stratified by gender, age (<65 vs 65+), and language of completed survey. Presentation of needs assessment findings to key stakeholders including the practice's Patient Advisory Council, clinicians, clinical team members, and clinical and administrative leadership is ongoing.

CONCLUSIONS: In a convenience sample of patients from an academic primary care practice, the burden of unmet health-related social needs was not insignificant. Food insecurity (23%), housing-related problems (27%) and financial strain (34%) were the most prevalent social needs overall. These survey findings, paired with planned geographic-based data visualization, can help inform development of a clinical infrastructure and population health approach to support health-related social needs screening and care within the primary care practice.

IDENTIFYING THE SICKEST ON TRIAGE: TEST CHARACTERISTICS OF POINT-OF-CARE SEVERITY SCORES FOR PREDICTING PROGNOSIS IN EMERGENCY DEPARTMENT PATIENTS PRESENTING WITH SUSPECTED SEPSIS

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BACKGROUND: Early risk stratification and treatment is critical in sepsis. Sepsis-3 introduced the quick Sequential Organ Failure Assessment (qSOFA) score to determine patient risk at bedside. Other point-of-care prognostic scores are available, such as the easy to calculate Shock Index (SI) and the more difficult to derive National Early Warning Score-2 (NEWS2) adopted by the NHS, but the comparative performance of these scores has not been evaluated in patients presenting with suspected sepsis. Our objective was to compare how well qSOFA, SI, and NEWS2 calculated at emergency department (ED) triage predicted in-hospital mortality and ED-to-intensive care unit (ICU) admission in patients with suspected sepsis.

METHODS: We identified adults who presented to an academic ED between June 1, 2012 and December 31, 2018 with suspected sepsis, defined as having blood cultures ordered and intravenous antibiotics received within 72 hours of ED presentation. Discharge disposition, demographics, laboratory studies, vital signs, and medication administrations were collected. Patients were considered at increased risk of poor outcomes using a qSOFA score ≥2, an SI value of <0.5 or >0.7, or a NEWS2 score ≥7 based on their first ED triage vitals, all standard abnormal cutoffs. We calculated test characteristics for each score to predict in-hospital mortality and ED-to-ICU admission.

RESULTS: There were 26,079 ED patients that met inclusion criteria. At ED triage, 2,053 (8%) were at increased risk of poor outcomes by qSOFA, 5,206 (20%) by SI, and 5,324 (20%) by NEWS2. There were 1,594 (6%) deaths and 3,483 (13%) ED-to-ICU admissions. All scores had high specificities and negative predictive values. Sensitivities and positive predictive values were similar for SI and NEWS2, but lower for qSOFA (Table).

CONCLUSIONS: All scores were notable for high specificity and high negative predictive value, which may provide reassurance for prognosis when negative in the general ED population with suspected sepsis. If selecting a point-of-care bedside risk stratification score based on sensitivity, the SI is simple to calculate and has similar test characteristics to NEWS2.

Mortality				
	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
qSOFA	29.8% (CI 27.6-32.1%)	93.6% (CI 93.2-93.9%)	23.1% (CI 21.6-24.8%)	95.3% (CI 95.2-95.5%)
SI	47.0% (CI 44.5-49.5%)	81.8% (CI 81.3-82.3%)	14.4% (CI 13.7-15.1%)	96.0% (CI 95.8-96.1%)
NEWS2	47.9% (CI 45.5-50.4%)	81.4% (CI 80.9-81.9%)	14.4% (CI 13.7-15.1%)	96.0% (CI 95.8-96.2%)
ED-to-ICU Admission				
	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
qSOFA	28.8% (CI 27.3-30.3%)	95.4% (CI 95.1-95.6%)	48.8% (CI 46.8-50.8%)	89.7% (CI 89.5-89.9%)
SI	54.1% (CI 52.4-55.7%)	85.3% (CI 84.8-85.8%)	36.2% (CI 35.2-37.2%)	92.3% (CI 92.1-92.6%)
NEWS2	50.0% (CI 48.3-51.6%)	84.1% (CI 83.7-84.6%)	32.7% (CI 31.7-33.7%)	91.6% (CI 91.3-91.9%)

CI: 95% confidence interval; qSOFA components: respiratory rate, systolic blood pressure, altered mental status; SI components: heart rate, systolic blood pressure; NEWS2 components: respiratory rate, oxygen saturation (Scale 1), use of supplemental oxygen, heart rate, temperature, systolic blood pressure, altered mental status

IMAGING FOR LOW BACK PAIN IN THE URGENT CARE SETTING: DOES AN EDUCATIONAL INTERVENTION FOR INTERNS CHANGE RADIOLOGIC MANAGEMENT?

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BACKGROUND: Low back pain (LBP) is among the most common presenting symptoms in a primary care clinic, and up to a quarter of those visits result in imaging. However, imaging for simple lumbago without red flag symptoms has not been shown to provide clinical benefit, and rather increases costs, anxiety, and radiation exposure. As a result, LBP has been a substantial focus in health services research in an effort to reduce waste and expenses, with several guidelines on appropriate image ordering. We sought to determine the patterns of LBP imaging in an academic urgent care setting and assess the impact of an educational intervention on appropriate image ordering practices among internal medicine (IM) residents.

METHODS: An interactive lecture series ("Imaging Wisely") was developed for the University of Chicago's IM interns for the 2017-2018 academic year. The curriculum aimed to guide evidence-based imaging by introducing the American College of Radiology's (ACR) Appropriateness Criteria through two lectures and interactive, case-based, Radiology-TEACHES assignments between lectures. Previous research found that the program improved knowledge and intention to change imaging practices. The purpose of this study was to assess for behavior change by focusing on rates of radiologic mismanagement of LBP pre- and post-intervention. An electronic medical record query was conducted of all urgent care visits with diagnoses related to LBP among interns (n=27) who participated in the Imaging Wisely lectures. Patient encounters were reviewed and coded for diagnosis, red

flag symptoms, type of imaging ordered, and appropriateness of imaging ordered.

RESULTS: A total of 219 urgent care encounters for LBP were reviewed. Nineteen percent (n=41) of encounters involved a red flag symptom (duration >6 weeks and failed conservative therapy; concern for cancer, infection, cord compression, or fracture; progressive neurologic symptoms; history of lumbar surgery). Among LBP visits, radiologic mismanagement was noted in 10% of cases (n= 22). This mismanagement was equally attributable to over- and under-imaging. Rates of radiologic mismanagement did not change after interns participated in the Imaging Wisely sessions (χ^2 p =0.67; 11.3% incorrect imaging pre-intervention vs. 9.5% post-intervention). Controlling for resident and attending fixed effects increased the odds of correct imaging after the intervention but remained statistically insignificant (OR=3.87 [0.77-19.4]).

CONCLUSIONS: The Imaging Wisely lecture series did not lead to a statistically or clinically significant decrease in radiologic mismanagement of low back pain in the urgent care setting by the participating interns. Notably, radiologic mismanagement was attributable to equal amounts of under- and over-imaging. This suggests that curricula should not only focus on decreasing excessive image ordering but also reinforce situations in which imaging is indicated.

IMAGINING THE FUTURE OF PRIMARY CARE – A GLOBAL LOOK AT INNOVATIVE HEALTHCARE DELIVERY

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BACKGROUND: Given the exponentially growing burden of noncommunicable diseases (NCDs) combined with the national shortage in primary care providers who are best able to target and treat NCDs, there is a need for strong primary healthcare (PHC) delivery models within the USA. Concurrently, there has been an increasing number of global PHC models that have created novel methods for chronic disease management. By identifying and investigating these global "exemplars" of innovative PHC delivery, we can inform future priorities by learning from today's most promising models of primary care.

METHODS: Our team at Innovations in Healthcare (IiH) has curated a network of 92 innovators across nearly 90 countries to evaluate multimodal approaches to identify innovative primary healthcare models. These innovations were characterized by archetype and evaluated by a Delphi Method of expert interviews to select the four most innovative primary care models to investigate thoroughly using stakeholder analysis and company interviews.

RESULTS: Of the 92 innovators in our network, we selected four that were considered most innovative by our panel of experts within Duke Global Health Innovation Center and the Bill and Melinda Gates Foundation. These four "exemplars" are: CASALUD (Mexico), North Star Alliance (Sub-Saharan Africa), Possible (Nepal), OneFamilyHealth (Rwanda).

CONCLUSIONS: CASALUD in Mexico created a suite of digital health technologies to help patients and providers continuously manage NCDs. As of May 2018, they had spread to 12,400 clinics, providing NCD monitoring and management for over 2 million people. North Star Alliance (NSA) operates in 13 countries throughout Sub-Saharan Africa focused on delivering care to mobile workers in the region. Since their founding in 2006 as a public-private partnership between the World Food Programme and TNT, NSA has opened 90 roadside clinics, serving nearly 200,000 patients including truck drivers, sex workers, and local communities per year, with a total revenue of about $6 million per year. Possible, based in Nepal, uses an integrated care approach based on community health workers and government-owned facilities to provide comprehensive care. They are able to operate with annual expenses at less than $25 per capita and demonstrate a reduction in under 2 mortality from 36.9 in 2015 to 18.5 as of 2017, and a tripling of the institutional birth rate from 30% in 2012 to 96% in 2017. OneFamilyHealth is a franchising primary health clinic system based in Rwanda. They are in 110 clinics across 14 districts and have 1.5 million registered patients as of 2018. Their model has averted nearly 1000 deaths and saved upwards of 84,000 DALYs. These models all integrate digital health technologies to expand their reach to patients, select business models that align with patient behaviors, standardize operating procedures, and unlock the power of data to deliver high- value, high-quality primary care to millions of people

IMPACT OF A PREP CHAMPION BASED INTERVENTION ON QUALITY OF HIV PRE- EXPOSURE PROPHYLAXIS (PREP) CARE IN AN URBAN, SAFETY-NET, HOSPITAL-BASED PRIMARY CARE PRACTICE

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BACKGROUND: New HIV infections continue to number 40,000 per year in the United States (US). HIV pre-exposure prophylaxis (PrEP) with daily oral tenofovir disoproxil fumarate/emtricitabine (TDF/FTC) reduces HIV incidence by more than 90% in people at risk for sexual transmission, and by more than 74% in those with injection-related risk. The Centers for Disease Control and Prevention (CDC) and the US Preventive Services Task Force recommend PrEP for people at risk; however, PrEP uptake remains low and significant racial and ethnic disparities in access persist. The goal of this work is to describe the impact of a novel "PrEP Champion" based intervention on the quality of PrEP care within an urban, hospital-based primary care practice.

METHODS: The intervention was launched on 1/1/2017 within the General Internal Medicine (GIM) primary care practice at Boston Medical Center in Boston, MA, which serves 37,000 diverse patients. Program components included a GIM faculty PrEP champion, who supported colleagues and reviewed charts for quality, a PrEP program navigator, and an infectious disease physician available for consultation. Quality metrics included meeting recommended intervals for HIV, creatinine, hepatitis B virus (HBV), and bacterial STI (bSTI) screening according to 2014 CDC PrEP guidelines. Program volume (the number of PrEP patients), and quality data were abstracted on a per month basis from 1/1/2016-12/31/2017. Interrupted time- series (ITS) models analyzed the program's short-term and sustained impact on program volume and quality of care.

RESULTS: Ninety-one patients with a GIM primary care provider received a PrEP prescription, the majority of whom were male (76.9%), white (50.6%), and non-Hispanic (68.1%). Although the number of patients on PrEP rose steadily during the study period, the program did not have a significant effect on patient volume. The PrEP program led to a significant short-term (coefficient= 6.03; p=0.0081) and sustained (coefficient=1.11; p=0.0004) increase in the percent of individuals up to date on gonorrhea and chlamydia screening. The program was also associated with a short-term decrease in the percent of patients with up-to- date creatinine screening (coefficient=-2.98; p=0.0071), though no sustained change was observed. Lastly, the PrEP program led to a significant short-term increase in the percent of PrEP users with up-to-date HBV screening,

though it was associated with a sustained decrease over time (coefficient=-1.70 p<0.0001). Intervention effects on HIV and syphilis screening were not seen.

CONCLUSIONS: Implementation of a "PrEP Champion" model in an urban, safety-net, primary care clinic was associated with improved gonorrhea and chlamydia screening among patients on PrEP. Given rising bSTI rates in Massachusetts during the study period, this likely conferred individual and public health benefits. Comprehensive PrEP programs that include internal champions and navigation support show promise for increasing the quality of PrEP care.

IMPACT OF A SUBSIDIZED FARM SHARE PROGRAM ON DIET AND FOOD SECURITY: RESULTS OF A PILOT RANDOMIZED CONTROLLED TRIAL

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BACKGROUND: Food insecurity has an adverse effect on diet quality and is associated with multiple negative outcomes. Fruit and vegetable subsidy programs may address food insecurity and improve diet and health, but the impacts have not been fully investigated. Our objective was to assess impact of an RCT farm share subsidy program on diet quality and food insecurity.

METHODS: We recruited participants from internal medicine or pediatric primary care clinics. The health system team partnered with a community fresh produce distributor, a local food pantry, and a national non- profit. We block randomized participants to two groups. The immediate intervention group (treatment group) received 6 months of bi-weekly subsidized farm shares starting at enrollment, and the comparison group received the same intervention but starting 6 months later (delayed intervention group). All participants received information about local emergency food resources at enrollment. Inclusion criteria included: 1) food insecurity (as measured by the 2-item Hager screen) and/or receipt of SNAP and/or WIC and 2) age 5-11 years with obesity or age >/= 18 years with uncontrolled diabetes. Data collected at baseline, 6 months, and 12 months included: socio-demographics, the 18-item USDA food security survey (categorizing 4 levels of FI), and diet recall (ASA-24, used to derive Healthy Eating Index). Descriptive statistics, chi-squared and Fisher's Exact tests, mixed effects, and generalized estimating equation models were used.

RESULTS: We enrolled 95 participants, 50 adults and 45 children with their parents or guardians. The group was 57% Hispanic and 36% Black; 52% were female. 72% had income < $30,000. At baseline, the treatment and comparison groups were similar with respect to age, gender, race, education, employment, food security status and Healthy Eating Index, but differed with respect to ethnicity. There was no significant difference between the two groups with respect to change in Healthy Eating Index at 6 months (p=0.3). At month 6, the estimated odds of high or marginal food security (versus low or very low food security) was 3.5 times higher in the treatment versus the comparison group (95% CI 1.3-9.6, p=0.014).

CONCLUSIONS: While a change in diet quality was not seen in this RCT, we did see an improvement in food security status associated with the intervention. The results of this pilot study indicate the impacts of subsidy interventions are likely multifaceted, and may improve household finances even in the absence of effects on diet. Research on how to ensure these programs optimize diet quality is needed.

IMPACT OF CALIFORNIA'S GLOBAL PAYMENT PROGRAM ON BEHAVIORAL HEALTH SERVICES UTILIZATION

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BACKGROUND: The goal of California's Global Payment Program (GPP) is to provide more effective and higher-value care to uninsured individuals through the delivery of care in more appropriate settings. GPP aims to accomplish this by establishing a point system that allows payments for services including outpatient non-emergent, emergent, residential, and acute inpatient health services. We assess changes in overall utilization of behavioral health (BH) services between 2015-2016 and 2017-2018 and shifts in utilization between low-intensity clinical and substance use (SU) outpatient, and high-intensity emergency department (ED), inpatient, and residential services.

METHODS: We analyzed data on service utilization by uninsured patients that were submitted by GPP's 12 participating public health care systems (PHCS). Using a pre-post design, we compared utilization in service categories between program years 1 and 3. We also administered surveys and interviews to leaders of participating PHCS to understand strategies used to facilitate change and to assess progress in meeting GPP goals.

RESULTS: Overall, across all PHCS, the number of points earned for BH services declined slightly, by 0.3% across the three years. An overall increase in the percentage of points earned was observed for SU visits (15%), methadone treatments (11%), sobering center (46%), and mental health inpatient stays (21%). A decrease in the percentage of points earned was observed for mental health outpatient visits (-6%), mental health ER and crisis stabilization (-14%), and mental health/SU residential stays (-18%). BH utilization trends within PHCS demonstrated declines in BH service use for most PHCS, but there was substantial variability by service and PHCS. Declines in outpatient service use were observed in nine PHCS (changes in percentage of points earned ranged from -44% to +12% across the 12 PHCS). Declines were observed for BH ER services in seven PHCS (range -86% to +218%), and for BH inpatient services in seven PHCS (range -84% to +153%). Five PHCS saw notable increases in BH inpatient service use.

Analyses of surveys and interviews with PHCS leaders indicated important changes in coding of mental health conditions and services as well as ongoing efforts to integrate BH outpatient and traditional primary care settings, as contributing to observed BH utilization changes.

CONCLUSIONS: Utilization changes across the GPP's initial implementation years reflected a decrease in points for BH outpatient, ED, and residential visits but an increase in SU, sobering center, and inpatient points. Declines in outpatient BH points might reflect a shift from ambulatory care in BH to primary care settings where group visits, health coaching and behaviorists are becoming integrated. Observed changes in GPP's BH services likely reflect the delivery and integration of non-BH and BH care in the ambulatory, ED, inpatient, and community settings, as well as coding practices.

IMPACT OF CALIFORNIA'S GLOBAL PAYMENT PROGRAM ON THE BREADTH AND UTILIZATION OF NONTRADITIONAL (NT) SERVICES FOR UNINSURED INDIVIDUALS

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BACKGROUND: The goal of California's Global Payment Program (GPP) is to provide higher-value care to uninsured individuals. The GPP aims to accomplish this by establishing a point system that allows payments for a variety of services including non-traditional (NT) services, which typically have not been paid for under programs like Medi-Cal. NT services may entail the involvement of NT providers on care teams and NT settings such as mobile clinic visits and telehealth. Of the 50 services that earn points in the GPP, 33 are NT, including: outpatient services provided by non-physicians (RNs, PharmDs, and care managers); prevention and patient support services (e.g., case management, health education); chronic and integrative services (e.g., group medical visits); community-based encounters (e.g., home nursing visits); technology-based services (e.g., email, text, eConsults, telehealth); as well as residential services for sobering center care and recuperative and respite care.

METHODS: We analyzed the utilization of services by individuals uninsured for each service using data submitted by all 12 public health care systems (PHCS) participating in the GPP. Using a pre-post design, we compared utilization between program years 1 and 3 in different service categories.

RESULTS: Overall, from year 1 to 3, points earned increased by 42% for NT outpatient services and 79% for NT residential services. Rates of NT service per uninsured patient served increased by 28%. The ratio of NT services to traditional primary, specialty, and other non-emergent care increased by 40%, suggesting a shift towards more use of NT versus traditional services. The most frequently provided NT services were eConsults, RN-only visits, and case management, which collectively accounted for 59-66% of points earned for all NT services in any given year. Over the 3 program years, large increases occurred for PharmD visits (418% increase), real-time telephone consults (382% increase), paramedic treat and release (120% increase), mobile clinic visits (106% increase), and recuperative and respite care days (86% increase). Based on interviews with PHCS leaders, the PHCSs generally viewed NT services as a way to expand access to services by uninsured patients while improving health system efficiency.

CONCLUSIONS: The GPP point system that awards points to NT services was accompanied by increased utilization of NT services from program year 1 to 3, potentially providing the uninsured with increased access to a wider range of preventive, diagnostic, and therapeutic services. The share of NT services may grow as PHCS further test and scale up those services that are most effective in meeting their goals of delivering higher-value care in more appropriate settings. NT services may be especially effective in improving outcomes for uninsured patients who often face challenges in obtaining traditional care, or experience gaps in care as they navigate multiple providers, settings, and treatments.

IMPACT OF DIGITALLY ACQUIRED INPUT FROM PEERS ON CLINICIAN DIAGNOSTIC CONFIDENCE IN REAL-LIFE OUTPATIENT CASES: A PRAGMATIC RANDOMIZED TRIAL

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BACKGROUND: Each year 1 in 20 adults experiences a diagnostic error in outpatient care. Clinician confidence impacts errors. Overconfidence results in inadequate work-up while underconfidence is associated with use of unnecessary tests. Peer input on decision-making may reduce errors by affecting confidence to ensure appropriate work-up. Few have explored interventions on the diagnostic process in real-life cases, particularly in general outpatient medicine. We sought to assess if peer input on real-life outpatient cases impacted diagnostic confidence

METHODS: This pragmatic randomized trial of a peer input intervention occurred among 28 primary care providers (PCPs) with randomization at a case level. Physician scribes reviewed PCPs' encounters and identified cases with new/unresolved complaints. Case information (one-line summary and relevant history, exam, and tests) was entered into a digital tool, where input from other clinicians was collected. After 3+ clinicians provided input, their feedback was collated into a collective opinion about the diagnosis and plan, which was provided to PCPs for intervention cases. The primary outcome was high vs low diagnostic confidence, collected via survey after PCPs provided baseline perceptions about case uncertainty. Our primary analyses assessed for differences in rates of high confidence between the control and intervention group; we also a priori planned a stratified analysis by baseline uncertainty.

RESULTS: From the 28 outpatient clinicians, we identified 519 cases (257 control; 259 intervention), of which 127 (24%) were thought to have higher uncertainty. Intervention vs control cases had similar level of difficulty, patient characteristics, and clinician traits ($p>0.05$). The rate of high confidence was 46% (119/257) in control vs 54% (140/259) in intervention cases with a trend towards higher confidence in intervention cases ($p=0.078$). Baseline case uncertainty was associated with higher confidence ($p<0.05$). In analyses stratified by baseline diagnostic uncertainty, the intervention was associated with high confidence in high uncertainty cases [9% (6/65) in control vs 23% (14/62) in intervention cases ($p=0.039$)] but not low uncertainty cases [59% (113/192) in control vs 64% (126/197) in intervention cases ($p=0.301$)].

CONCLUSIONS: Outpatient clinicians report high uncertainty in ~25% of interactions with new/unresolved complaints. Peer input on clinical decision-making increased diagnostic confidence only in cases when clinicians felt high uncertainty, consistent with findings that clinicians seek input primarily for cases with continued uncertainty. Since uncertainty is associated with increased use of resources, increasing confidence in high uncertainty cases may reduce resource allocation. Next steps include exploring how digitally facilitated peer input on cases can be implemented in real-time in diverse settings and assessing impact on outcomes, such as time to diagnosis, diagnostic accuracy, or tests/referrals ordered.

IMPACT OF ELECTRONIC PRIOR AUTHORIZATION ON MEDICATION FILLING

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BACKGROUND: Medications frequently require prior authorization (PA) from payors before reimbursement is authorized. Obtaining PA creates delays in filling prescriptions and may reduce patient adherence.

Electronic PA (EPA), based in the electronic health record (EHR), can remove some of these barriers. We evaluated the impact of implementation of an EPA system on prescription filling.

METHODS: The study took place at an integrated health care system in California. EPA was implemented in a 2-phase process in 2018, so that some areas of the system began using EPA in 9/2018 while other began in 11/2018, allowing use of the later-implementing sites as a concurrent control group. We obtained data from the EHR that included all prescriptions written during the study period, patient health insurance (which determines whether PA is required for a given medication), all occasions on which the EPA intervention appeared, and information on whether the prescriptions were filled, which the EHR obtains from the medication history function.

We reviewed EPA records and retained those for which the EPA request was approved. We identified as a control group matched prescriptions for the same medications to the same patients with the same drug benefits in the months prior to EPA implementation. We linked the prescribed medications to the medications history to calculate the proportion of prescriptions filled within 30 days after being written.

RESULTS: We identified 74,546 prescriptions that triggered EPA during the study period. Of that total, 19,167 (26%) were approved and were candidates for the study cohort, 11,097 (15%) were denied and 44,282 (59%) did not have a resolved status. Of the approved EPAs, 4,475 occurred for patient/medication/benefit combinations that also appeared in the pre-EPA control period.

The Table shows that in the early adoption sites the filling rate after EPA implementation increased by 3% compared to baseline, while filling at that time in the later adopting sites that did not yet have EPA decreased by 4%, a difference-in-differences of 7%. When the later adopting sites implemented EPA the filling rate decreased by 1%, compared to a decrease of 7% over that time period in the early adopting sites.

CONCLUSIONS: Adoption of EPA was associated with a small increase in the prescription filling rate in the early adopting sites, while there was a small decrease in filling at the later adopting sites. Limitations include challenges with EPA implementation, since 59% of EPAs did not result in either approved or denied status, and potential changes in which medications required PA, which could affect the control group. Additional analyses of larger samples of EPAs will be needed to determine whether these preliminary effects are sustained.

IMPACT OF EXECUTIVE ORDER 13769 IMMIGRATION BAN ON HEALTHCARE UTILIZATION AND STRESS RELATED DIAGNOSES IN MINNEAPOLIS-ST. PAUL, MN

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BACKGROUND: On January 27, 2017, President Trump issued Executive Order (EO) 13769, "Protecting the Nation from Foreign Terrorist Entry into the United States," which banned citizens from 7 Muslim majority countries (Iraq, Syria, Iran, Libya, Somalia, Sudan, and Yemen) from entering the US, suspended the US refugee program, and banned Syrian refugee US resettlement. Stress due to discrimination and Islamophobia has been previously associated with negative health outcomes among Muslim and Arab Americans. The impact of restrictive immigration policies on Muslim refugee and immigrant populations is less known.

METHODS: We performed an observational, retrospective study evaluating changes in health care use by people from EO 13769 targeted nations one year before and after issuance of EO 13769 using EHR data from HealthPartners clinics and emergency departments (EDs). Using a differences-in-differences analysis, we compared healthcare utilization between patients whose nation of origin was one of seven countries named in EO 13769 to non-Latino U.S.-born citizens during the pre-EO period (January 1, 2016 - January 26, 2017) and the hpost-EO period (January 27, 2017 - December 31, 2017). We defined stress related diagnoses using ICD10 codes. Comparisons made included changes in visits overall, stress-related clinic and ED diagnoses, missed appointments, and ED visits for ambulatory sensitive conditions. We estimated the effect at increasing time intervals, beginning with 30 days pre- and post-intervention and increasing in 30-day increments up to 360 days pre- and post-intervention.

RESULTS: Of the 252,594 patients included in this analysis, 5,667 were from one of the seven countries named in EO 13769 and 245,673 were non-Latino US-born citizens. There was no statistically significant change in healthcare utilization rates. Within the EO group we observed a trend toward increasing clinic visits for stress related diagnoses. However, the effect was only slightly more than zero and only in the last 180 days. There was an initial rise in the point estimate for ED visits for stress related diagnoses and ambulatory sensitive conditions, but this was not statistically significant. Overall, there was no statistically significant difference observed between stress responsive diagnoses in the ambulatory setting or in the ED.

CONCLUSIONS: Our analysis found no significant change in healthcare utilization or stress related diagnoses among this sample of individuals from EO 13769 targeted nations in Minneapolis-St.Paul, MN. However, among ambulatory patients, stress related diagnoses became more common over time. This is suggestive of an emerging trend within outpatients following EO 13769. This study advances health research exploring the relationship between Islamophobia and healthcare utilization. The health consequences of immigration policy may not impact populations equally. Further research is needed to identify sub- populations more vulnerable to social stressors from restrictive immigration policies.

IMPACT OF GLOBAL PAYMENTS FOR UNINSURED UNCOMPENSATED CARE: EVALUATING CALIFORNIA'S GLOBAL PAYMENT PROGRAM (GPP)

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BACKGROUND: California's Medi-Cal 2020 waiver authorized a new payment model, the Global Payment Program (GPP), for reimbursing services provided to the state's remaining uninsured. Under GPP, which included California's 12 county-based public healthcare systems (PHCS), the state gained unprecedented flexibility to use its federal Medicaid Disproportionate Share Hospital (DSH) allotment to make prospective payments for services provided to the uninsured in hospital, clinic, and community settings. Historically, DSH funding has been used to retrospectively finance only hospital-based care. GPP was designed to encourage participating PHCS to invest in infrastructure and processes that could better tailor care to patients' needs and expand the delivery of preventive

services. We assessed changes in service utilization through GPPs's first 3 years.

METHODS: We used aggregate service utilization data submitted by each of the 12 county-based PHCS that collectively served most of the state's uninsured (nearly 3 million annually). We compared changes in utilization by type of service during the demonstration's first 3 years (through June 2018). The study population comprised uninsured California residents receiving care from participating PHCS.

RESULTS: The number of uninsured served by PHCS increased 6 percent over the 3 years. For physical health services, use of outpatient non-emergent services increased by 12 percent while use of emergency room (ER) and inpatient services decreased by 14 and 15 percent, respectively. Outpatient mental health and substance abuse treatment services decreased by 4 percent; ER and crisis stabilization services decreased by 14 percent; and mental health inpatient service use increased by 21 percent. The decreases in outpatient behavioral health service utilization are consistent with shifts in delivery of these services to primary care settings, while increases in inpatient services are consistent with progress in addressing unmet needs through increased access to high-intensity care. Non-traditional service use increased by 10 percent driven by greater use of case management, mobile clinic visits, PharmD visits, eConsults, and store-and-forward telehealth. PHCS varied widely in their relative use of physical, behavioral, and non-traditional services and trends over time in these services.

CONCLUSIONS: These results suggest that it is feasible to implement global payments for the uninsured, although the long-term effects of the observed changes in utilization on health outcomes and expenditures must also be assessed. Other states might consider using Section 1115 waiver authority to test similar value- based payment programs that can make more efficient use of available Medicaid DSH funding. Such strategies are particularly important in light of the recent growth in the uninsured that followed repeal of the individual mandate's tax penalty and as the first of $43 billion in Medicaid DSH funding cuts begin in 2020.

IMPACT OF HIGH-DEDUCTIBLE HEALTH PLAN ENROLLMENT ON THE TIMING OF RETINOPATHY CARE AND VISION LOSS DIAGNOSIS

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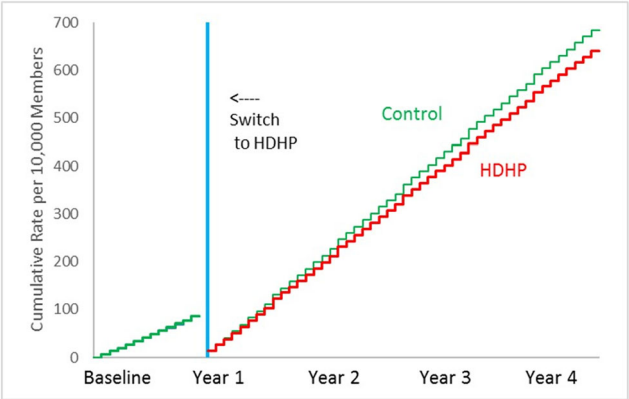
BACKGROUND: Diabetes patients require timely care to prevent retinopathy progression and blindness. High-deductible health plans (HDHP) require large out-of-pocket payments for most health services including retinopathy screening and ophthalmologist visits. We sought to determine the effect of HDHPs on the timing of retinopathy screening, retinopathy diagnosis, and vision loss diagnosis.

METHODS: We studied 2004-2014 data in a large commercial and Medicare Advantage claims database. We included a national sample of 39,798 HDHP members with diabetes enrolled for 1 year in a low deductible (≤$500) plan followed by up to 4 years in a HDHP (≥$1000) after an employer-mandated switch. We matched HDHP patients to 305,852 contemporaneous controls whose employers offered only low-deductible plans. Outcomes included time to first: (a) retinopathy screening, (b) diagnosis of mild-to- moderate and (c) severe retinopathy, and (d) vision loss diagnosis. We used Cox proportional hazards models adjusted for multiple baseline characteristics to estimate baseline and follow-up hazard ratios.

RESULTS: At baseline, adjusted hazard ratios (aHRs) between HDHP members and controls were not statistically different. At follow up, HDHP members experienced delays in first retinopathy screening (aHR: 0.89 [085, 0.92]), diagnosis of mild-to-moderate retinopathy (aHR: 0.82 [0.76, 0.89]), diagnosis of severe retinopathy (aHR: 0.90 [0.81, 1.00]), and vision loss diagnosis (aHR: 0.93 [0.88, 0.99], Figure).

CONCLUSIONS: HDHP members with diabetes experienced delayed retinopathy screening, retinopathy diagnosis, and vision loss diagnosis compared with similar patients in more generous health plans. Reducing financial barriers to care might improve retinopathy outcomes.

Figure 1. Time to first vision loss diagnosis.



IMPACT OF HOSPITALIST TEAM STRUCTURE ON PATIENT REPORTED SATISFACTION WITH PHYSICIAN PERFORMANCE

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BACKGROUND: Patient experience is valuable because it reflects how patients perceive the care they receive within the healthcare system and is associated with clinical outcomes.[1–3] In addition, as part of the Hospital Value-Based Purchasing (HVBP) program, the Center for Medicare and Medicaid Services (CMS) rewards hospitals with financial incentives for patient experience.[4] It is unclear how the addition of residents and advanced practice clinicians (APCs) to hospitalist-led inpatient teams affects patient satisfaction. This study compares patient satisfaction scores reported on the HCAHPS and Press Ganey physician performance survey domains between resident, APC and solo hospitalist teams.

METHODS: We conducted a retrospective cohort study at the University of Utah Medical Center for all inpatients discharged from the Internal Medicine service between July 1, 2015 and July 1, 2018. The post-discharge patient experience survey was distributed to all eligible patients by Press Ganey, Inc., and included the HCAHPS 29-question survey instrument and an additional 45 questions developed by Press Ganey, Inc. Patients were stratified into one of three cohorts: 1) "Resident team" comprised of one senior resident and 1-2 medical students, or one senior

resident, two interns, and 1-2 medical students supervised by a hospitalist physician; 2) "APC team" comprised of 1-2 APCs supervised by a hospitalist physician; and 3) "Solo Hospitalist" comprised of one hospitalist physician. Hospitalist physicians work on all three team types at our institution.

Patient responses were compared for both the HCAHPS and Press Ganey physician performance survey domains for the corresponding admission. Responses for HCAHPS questions were converted to binary responses with only a response of "Always" receiving credit as only "top box" scores meet the CMS incentive funding requirement. Press Ganey survey responses were evaluated on a Likert scale (1-very poor, 2-poor, 3-fair, 4-good, 5-very good). Responses were adjusted for differences in age, gender, Charlson Comorbidity Index, and time of admission.

RESULTS: No differences were observed in the selection of "top box" scores on the HCAHPS physician performance domain between resident, APC and solo hospitalist team. Compared with resident teams, solo hospitalist teams had significantly higher scores on the Press Ganey physician performance domain survey in three areas: time physician spent with you (4.58 vs. 4.38, p=0.050); physician kept you informed (4.63 vs. 4.43, p=0.047); and physician skill (4.80 vs. 4.63, p=0.027). Solo hospitalists were also perceived to have higher physician skill in comparison to APC teams (4.80 vs. 4.69, p=0.042).

CONCLUSIONS: While Press Ganey survey results suggest that patients have greater satisfaction with physicians on solo hospitalist teams, these differences are not seen on the HCAHPS physician performance survey domain, suggesting team structure should not impact HVBP incentive payments.

IMPACT OF IMPLEMENTATION OF COMPREHENSIVE, LANGUAGE-CONCORDANT DISCHARGE INSTRUCTIONS ON RATES OF PATIENT CONCERNS ABOUT DISCHARGE MEDICATIONS OR DISCHARGE INSTRUCTIONS

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BACKGROUND: One in five patients experiences an adverse drug event after discharge. Comprehensive discharge instructions improve transitions by communicating critical information, such as med changes, but there is large variation in instructions; moreover, patients with limited English proficiency (LEP) rarely receive instructions in their preferred language creating increased vulnerabilities. We assessed if language- concordant written instructions improve patient understanding.

METHODS: On the hospital medicine service in an academic center, we assessed two discharge instruction interventions. In 11/2017, we adopted a new after visit summary (AVS) that included some text in non-English languages. We also implemented standardized instructions (created with patient & clinician stakeholders) in English (3/2018) and in Spanish and Chinese (8/2018). Our two outcomes were rates of questions about instructions or medications collected from 11/1/2016–4/30/2019 via automated post- discharge phone calls conducted in English, Spanish, or Cantonese. We assessed interventions using interrupted time series analyses (ITSA) stratified by language status.

RESULTS: *Questions about dc instructions*: Among English-speakers, similar rates of patients had questions about discharge instructions at baseline, post-AVS, and post-standard instructions (6.3% vs 7.4% vs 6.5%); after adjusting for secular trends (i.e., ITSA), we found decreases in rates of questions at time of both AVS (p=0.023) and standardized instruction implementation (p=0.007). In contrast, among LEP patients, both interventions seemed to decrease questions: 46.4% baseline, 28.8% post-AVS, 14.7% post-standard instructions (X^2, p<0.05), but this was not significant after considering secular trends. *Questions about meds* (Table): In English-speakers, neither intervention impacted med-related questions. Among LEP patients, there were differences between rates at baseline and post-standard instruction implementation (18.4% vs 12.0%, p=0.024). After considering secular trends, only the AVS decreased rates of questions (p=0.036).

CONCLUSIONS: Modifying written discharge instructions impacts patients' rates of questions about discharge medications and instructions. Providing written instructions in their preferred language to LEP patients can reduce medication-related questions post-discharge.

Table. Rate of medication-related questions

Baseline	Post AVS	Post Standard Instructions
English-speaking Patients		
302/2679 (11.27%)	91/768 (11.85%)	282 / 2463 (11.45%)
Limited English Proficient (LEP) Patients		
64 / 347 (18.44%)	50 / 295 (16.94%)	36 / 300 (12.00%)

P>0.05 for all pairwise comparisons except between rates at baseline and post-standard instructions in LEP patients

IMPACT OF INTEGRATED MENTAL HEALTH SERVICES ON DIABETES AND HYPERTENSION CONTROL AMONG VA PRIMARY CARE PATIENTS

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BACKGROUND: Increasing evidence supports the effectiveness of collaborative care management for co- occurring mental and physical health conditions. Over the past decade, the Veterans Health Administration (VA) transformed primary care practices into team-based patient centered medical home models nationally through Patient Aligned Care Teams (PACT) initiative with embedded mental health care through Primary Care–Mental Health Integration (PC-MHI, i.e., collaborative care model). Models included increased staff and resources to support primary care teams in treating mental health conditions and addressing health behaviors (e.g., sleep, pain coping), alongside chronic medical disease management. While the original goal of PC-MHI was to improve mental health care access, this study explored whether addressing mental health issues through these collaborative primary care models resulted in downstream improvements to Veteran's chronic medical disease management and physical health.

METHODS: Our retrospective longitudinal study examined 828,050 primary care patients in 396 VA clinics mandated to offer integrated

mental health services nationally (October 1, 2013 to September 30, 2016).

Robustness of each clinic's mental health integration was approximated via the proportion of primary care patients seen by PC-MHI providers annually (median=6.3%). As part of VA's quality monitoring program, chart abstractors rated established diabetes and cardiovascular measures among an approximately 5% random sample of each clinics' patient health records. In multilevel regressions, we examined how clinic level of mental health integration predicted patient odds of meeting each quality measure, controlling for year, region, clinic characteristics (e.g., size, medical home implementation), and patient characteristics (e.g., age, gender).

RESULTS: Nearly 1 in 5 Veterans with diabetes had poor glycemic control (hemoglobin A1c greater than 9) and 5% had severely elevated blood pressures (greater than 160/100, or not recorded). Among Veterans with diabetes, each two-fold increase in proportion of clinic patients seen by PC-MHI providers was associated with, on average, 2% lower odds of poor glycemic control (95% Confidence Interval [CI]=.96-.99; p=.01) and 3% lower odds of severely elevated blood pressure (CI=.94-0.998; p=.04). While there was no observed effect among all Veterans with diagnosed hypertension, we noted 5% lower average odds of severely elevated blood pressures among Veterans without diagnosed hypertension (CI=.92-.99; p=.01).

CONCLUSIONS: Patients cared for in primary care clinics with increased access to collaborative mental health care had significantly better physical health quality. Healthcare system-wide policies to improve access to mental health collaborative care may lead to improved overall chronic disease health. Increasing reach of integrated mental health services across all health system clinics could help maximize chronic disease quality of care.

IMPACT OF LONGITUDINAL VIRTUAL PRIMARY CARE ON DIABETES QUALITY OF CARE

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BACKGROUND: Individuals living in rural areas experience a higher prevalence of diabetes and diabetes- related morbidity than their urban counterparts due to socioeconomic challenges and limited access to care. In randomized controlled trials, use of telemedicine has been effective in increasing access to care and lowering hemoglobin A1C levels in diabetic patients, but whether these results can be generalized to real-world primary care settings remains unknown. The Virtual Integrated Multisite Patient Aligned Care Team (V- IMPACT) is a novel primary care delivery model implemented by the Department of Veterans Affairs (VA) that utilizes video visits to provide longitudinal primary care services in rural areas. We compare diabetes quality of care among veterans who received V-IMPACT versus those who received traditional in-person care.

METHODS: We conducted a retrospective quasi-experimental study utilizing difference-in-differences analysis to evaluate diabetes quality of care before and after implementation of V-IMPACT in participating primary care clinics from January 1, 2016 through December 31, 2019 with staggered V-IMPACT implementation across clinics occurring in 2018. We identified 64,639 veterans with type 2 diabetes receiving care in 44 participating VA primary care clinics. Patients were eligible for analysis if they had at least one primary care encounter and one documented hemoglobin A1C level available during the observation period. We excluded patients younger than 18 years old and those with metastatic cancer. Propensity score matching was used to construct a matched-pair cohort of patients with balanced demographics and comorbidities who did and did not receive V-IMPACT services. Our primary outcome of interest was change in hemoglobin A1C (HbA1C) before and after implementation of V-IMPACT. Secondary outcomes included the proportion who received urine microalbuminuria screening and were prescribed statins, ACE or ARBs.

RESULTS: Our propensity-matched cohort included 9,150 veterans split evenly between those who participated in V-IMPACT and those who remained in usual care. Mean HbA1C decreased from 7.35% to 7.29% among diabetics who were exposed to V-IMPACT and from 7.29% to 7.23% among those receiving traditional in-person care before and after V-IMPACT implementation. No significant difference was found in the change in HbA1C between groups (difference-in-differences estimate, 0.0035%; -0.034 to 0.041%). We observed a 4.1% (95% CI 1.4-6.8%) greater absolute increase in the proportion of diabetic Veterans prescribed statins in the V-IMPACT group compared to the control group, and a 5.7% greater increase in the proportion prescribed ACE/ARBs. V-IMPACT implementation was not associated with significant changes in the proportion of veterans receiving urine microalbuminuria screening (-0.06%, 95% CI -2.9 to 2.8).

CONCLUSIONS: The quality of diabetes care delivered by a longitudinal virtual primary care model was similar if not better than traditional in-person care.

IMPACT OF MASSACHUSETTS' AMBULANCE DIVERSION BAN ON ED DESTINATION PATTERNS BY RACE/ETHNICITY

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BACKGROUND: The impact of ambulance diversion (AD) in response to ED crowding and AD bans is largely unknown despite decades of AD and growing experience with AD bans. We aimed to examine the association between AD and destination ED patterns incorporating Massachusetts' 2009 AD ban as a quasi- natural experiment. Our focus was on concordance in destination ED across patients of different race/ethnicity from the same geographic location, since prior literature indicates that disparities in patient outcomes are associated with which EDs/hospitals patients are treated in.

METHODS: Using administrative data for a national sample of Medicare enrollees (2007-2012) aged 66 and older, we selected all zip codes with at least 10 Hispanic, 10 (non-Hispanic) black and 10 (non-Hispanic) white enrollees and obtained data on all EMS transports to ED before and after the ban. We identified the most frequent ED destination of white transported patients as the reference ED (RefED) and defined a dichotomous indicator (0/1) of whether each EMS transport in each zip code was to the respective RefED as the main outcome. We treated Massachusetts residents as the target population of the ban and residents of 18 other states as the comparison population. Based on a difference-in-differences specification of a linear probability regression model, with zip code fixed effects, and adjusting for patient demographics, ED diagnosis and comorbidities, we estimated the change in the proportion of transports to the RefED associated with the ban. We also examined transportation to a safety-net ED.

RESULTS: In our study cohort of 843,247 enrollees from 3,354 selected zip codes, there were 361,006 EMS transports to an ED. At baseline the proportion of transports to the RefED was 61.0 percent overall, and lower among blacks (46.1 percent) and Hispanics (53.0 percent) relative to whites (64.2 percent; all p-values < 0.01). The ban was associated with a 2.7 percentage point reduction in the proportion transported to RefED among Massachusetts patients (95% CI, 0.8% to 4.6%), with no difference by race/ethnicity. At baseline, the proportion transported to a safety-net ED was higher among blacks (28.4 percent) and Hispanics (26.1 percent) relative to whites (16.1; all p-values < 0.01). Among white patients, the ban was associated with a 1.2 percentage point reduction in transportation to a safety-net ED (95% CI, 0.2% to 2.2%). The corresponding change among blacks was similar, but among Hispanics there was a 3.0 percentage point increase in transportation to a safety net (95% CI, 0.3% to 5.7%).

CONCLUSIONS: Black and Hispanic EMS patients were less likely to be transported to the RefED as compared to their white counterparts from the same zip code location. The AD ban in Massachusetts was associated with a reduction in transportation to the RefED among all groups. As RefED is usually the nearest facility, a plausible implication of our findings is that destination ED is influenced by patient preference.

IMPACT OF MEDICAID EXPANSION ON MOUD TREATMENT ACCESS FOR OPIOID USERS EXPERIENCING HOMELESSNESS

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BACKGROUND: State Medicaid expansions under the 2010 Affordable Care Act increased access to medications for opioid use disorder (MOUD) in the general population. No studies have examined how Medicaid expansion affected MOUD access for people experiencing homelessness, who face higher opioid mortality than individuals who are housed. People experiencing homelessness face challenges with coordination of care and stigma that we hypothesized may reduce their MOUD access gains after expansion.

METHODS: Data were obtained from the Treatment Episodes Data Set-Admissions for 2000-2017. The sample consisted of 7,245,956 admissions for which opioid use was the primary substance. The primary outcome variable indicated whether admission treatment plans included MOUD. The first regression specification used difference-in-differences to evaluate whether Medicaid expansion's effect on the proportion of treatment admissions including MOUD differed between housed and homeless clients. The second regression specification examined whether this effect was differential for outpatient admissions, given that outpatient episodes administer MOUD more frequently and that people experiencing homelessness are less likely to receive outpatient treatment. Controls were included for socio-economic demographics, referral source, and clinical severity.

RESULTS: Across states, people experiencing homeless made up a mean (SD) of 13.9% (5.2%) of admissions. The mean proportion of admissions with planned MOUD was 33.5% (18.1%) for housed clients and 17.1% (10.2%) for homeless clients.

Medicaid expansion was associated with a 10.5 (95% CI, 3.3 to 17.8) percentage point increase in the proportion of MOUD-inclusive treatment plans. The effect of the intervention on people experiencing homelessness was not statistically different (95% CI, -9.4 to 3.6). People experiencing homelessness, however, were overall 12.4 (95% CI, -18.0 to -6.8) percentage points less likely to have MOUD treatment plans.

After adding a treatment setting interaction term, expansion was only associated with an MOUD increase in outpatient settings, with a 13.0 (95% CI, 3.7 to 22.3) percentage point increase in MOUD likelihood. This increase was not statistically different for homeless clients in outpatient settings in expansion states. People experiencing homelessness, however, were 25.9 (95% CI, -29.6 to -22.2) percentage points less likely to access treatment in an outpatient setting.

CONCLUSIONS: State Medicaid expansion increased the likelihood of planned MOUD among housed and homeless clients alike at substance use treatment centers. Yet, the pre-existing disparity in access between the groups persisted, indicating that barriers beyond insurance reduce the likelihood of planned MOUD for this vulnerable population.

IMPACT OF MEDICAID EXPANSION ON THE HOSPITAL USE PATTERNS OF SUPER- UTILIZERS

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BACKGROUND: Care fragmentation is associated with a number of clinical and socio-demographic features which have been thought to increase hospital utilization as well as morbidity and mortality. Patients who receive fragmented care at the hospital level are often underinsured and uninsured. It is unclear to what degree lack of insurance and subsequently lack of continuous preventive care drives fragmentation and high hospital use. In this study we aim to determine if Medicaid expansion was effective in improving insurance rates in this challenging population and improve hospital continuity and utilization.

METHODS: We identified high-utilizing patients within the Health Care Utilization Project's State Inpatient Dataset from 6 states: 3 that expanded Medicaid (IA, VT, NY) and 3 that did not (GA, FL, and UT) from 2011 - 2015. Super-utilizers were identified if they had 4 or more hospitalizations in 1 year. We determined the efficacy of medicaid expansion in reducing the rate of uninsured using differences-in-differences (DiD) analysis using non-expansion states as a control following the first quarter of 2014. Then we then used DiD to test the association between Medicaid expansion and the number of different hospitals visited, number of encounters, total length of stay, diagnosis rates, and charges of high utilizing patients.

RESULTS: Medicaid expansion was associated with a reduction in the number of uninsured encounters (OR 0.24, 95% CI 0.23 - 0.25, p <0.001) and specifically better for patients with fragmented care (p<0.001 for interaction). Medicaid expansion was specifically successful in reducing the rate of uninsured of patients with care fragmentation (p <0.001 for interaction). Medicaid expansion was associated with a lower degree of fragmentation as measured by number of different hospitals visited in 1 year (coef -0.025, p<0.001), lower number of encounters (coef -0.03, p<0.001), lower total charges (coef -0.249, p<0.001), but higher total length of stay, (coef 0.106, p<0.001). Hospital reported mortality and chronic diagnosis rates did not change.

CONCLUSIONS: Medicaid expansion was effective in reducing the rate of uninsured patients with care fragmentation, particularly in patients that lack continuity. We also found reductions in the degree of fragmentation, and lower hospitalization rates; however, this did not translate to a

reduction in the total number of days hospitalized nor mortality. We conclude that while improving insurance coverage improved continuity to a small degree, more work is needed to specifically address drivers of fragmentation and hospital utilization.

IMPACT OF MEDICAL SCRIBES ON CLINICAL EFFICIENCY IN ACADEMIC PRIMARY CARE

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BACKGROUND: Medical scribes are increasingly being used to assist physicians with Electronic Health Record (EHR) documentation. However, little is known about the impact of scribes on clinical efficiency in primary care. We assessed the impact of scribes on clinical efficiency in an academic internal medicine practice.

METHODS: We piloted a 3-month scribe program at an academic general internal medicine clinic with six faculty and one full-time medical scribe. The scribe drafted EHR notes that faculty reviewed and signed. Patient visits for 3 months prior to the intervention (baseline control), unscribed physician-only visits during the intervention period (concurrent control), and physician-scribe (intervention) visits were included in the study. The main clinical efficiency measures included number of patients seen per clinic session, physician time to close encounter, and patient time to check-out. Secondary measures included physician review of the problem list, immunizations, and medications. Generalized linear mixed models were used to determine the effect of scribe presence on the outcome measures. Physicians were treated as a random effect. For time to close encounter, patient visits were nested within physicians and modeled using repeated measures.

RESULTS: A total of 789 baseline control, 605 concurrent control, and 579 intervention patient visits were used for data analysis. Overall, 949 (48.8%) visits were by patients over 65 years old and 1,234 (62.5%) of visits were by women. Median physician time to close encounter (Interquartile Range [IQR]) decreased from 1.2 (5.9) and 2.9 (5.4) days for baseline and concurrent control respectively, to 0.4 (4.8) days for intervention visits ($p<0.05$ for both). Scribe presence did not affect the number of patients seen per clinic session or patient time to check-out. Compared with baseline control visits, the problem list was more likely to be reviewed during intervention visits (OR, 1.85, 95% CI 1.23-2.77, p=0.003). Similarly, current medications were more likely to be reviewed during intervention vs. baseline control visits (OR, 1.70, 95% CI 1.22-2.35, p=0.002). However, immunizations were less likely to be reviewed during intervention visits compared to baseline control visits (OR 0.55, 95% CI 0.38-0.79, p=0.002).

CONCLUSIONS: In this short pilot, we found evidence of decreased provider time to close encounter associated with scribe presence. However, the effect of scribe presence on other clinical efficiency measures was mixed. These findings suggest that hiring scribes may improve some aspects of clinical efficiency in primary care. Additional research is needed on which physicians may benefit greatest from medical scribes.

IMPACT OF NEW ONSET ATRIAL FIBRILLATION IN PATIENTS HOSPITALIZED WITH PNEUMONIA

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BACKGROUND: There is little information on the incidence of atrial fibrillation ("a-fib") in patients hospitalized with pneumonia. Our aim was to assess the incidence of atrial fibrillation after hospitalization for pneumonia and the impact of a-fib on 30-day mortality.

METHODS: We conducted a retrospective cohort study using United States Department of Veterans Affairs (VA) national data including patients >65 years hospitalized with pneumonia in fiscal years 2002-2007 that did not have a prior diagnosis of a-fib. We included only the first pneumonia-related hospitalization. We identified patients who had a new diagnosis of a-fib within 30-days of admission. The primary outcome was all-cause 30-day mortality. Our primary analysis was a multilevel regression model, adjusting for >40 potential confounders including sociodemographics, health care utilization, comorbidities, medications, and severity of illness.

RESULTS: We identified 38,679 patients who met the inclusion criteria. Of these, 2,690 (7%) had a new diagnosis of a-fib within 30-days of admission. In the univariate analysis, a-fib was associated with increased 30-day mortality (20.1% vs. 13.2%, P<0.0001). In the multivariable regression model, incident a-fib was significantly associated with increased 30-day mortality (odds ratio 1.32, 95% confidence interval 1.18-1.47).

CONCLUSIONS: A clinically significant number of patients hospitalized for pneumonia have new onset a-fib and it is associated with increased 30-day mortality. Additional research is needed to identify the potential causes of a-fib as well as to determine the ideal way to manage these patients.

IMPACT OF PRIMARY AND RECURRENT CLOSTRIDIOIDES DIFFICILE INFECTION ON PATIENT QUALITY OF LIFE

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BACKGROUND: *Clostridiodes difficile* infection (CDI) is associated with significant morbidity and mortality and places a huge burden on our healthcare system. Patients with CDI experience significant decrements in quality of life (QoL), but evidence for these decrements is limited. Here, we assessed the impact of CDI on QoL using the recently developed, disease specific, health-related quality-of-life questionnaire, Cdiff32 in a cohort of hospitalized patients.

METHODS: We surveyed adults who were hospitalized at Cleveland Clinic main campus from July to December 2019 and were diagnosed with CDI. Patients were identified as having CDI if they were symptomatic (≥3 episodes of diarrhea in 24 hours) and had a positive laboratory test positive for *C. difficile* (toxin gene PCR and/or toxin EIA). Patients were consented and completed both the CDI-specific Cdiff32 questionnaire and the generic Patient-Reported Outcomes Measurement Information System – Global Health (PROMIS-GH) questionnaire at bedside. We collected demographic and relevant clinical data from the electronic health records (EHR), including CDI severity and past history of CDI. The Cdiff32 scores were converted from a 5-point Likert scale to a 100-point scale, with 100 representing the best QoL. Overall and subdomain (physical, mental, social) QoL scores were calculated from Cdiff32 and PROMIS-GH responses. PROMIS-GH scores from our cohort were compared to the general population T-score of 50 using one- sample t-tests. We performed univariate analysis for potential predictors of Cdiff32 scores (age ≥65 or <65, sex, recurrent CDI, CDI severity, and presence of immunosuppression) using two-sample t-tests. Finally, we constructed a multiple linear regression model to identify predictors for Cdiff32 scores.

RESULTS: A total of 92 inpatients (mean age =58.4 years, 52.2% male, 88% white) diagnosed with CDI completed the QoL questionnaire survey. Mean length of stay at the time of survey was 11.6 days. Most patients experienced primary vs recurrent CDI (88% vs 12%), and most cases of

CDI were either non-severe (44.6%) or severe (50%), with only 5 cases (5.4%) being fulminant. Mean Cdiff32 score was 48.7±15.5. Cdiff32 subdomain scores for the physical, mental and social health subdomains were 51.5±17.5, 44.4±16.8 and 58.1±22.2, respectively. PROMIS-GH physical ($T = 37.2$, $p<.001$) and mental ($T = 43.7$, $p<.001$) health domain scores were lower compared to the general population. On univariate analysis, CDI recurrence status and CDI severity were associated with lower Cdiff32 scores (primary vs recurrent, 49.8 vs 40.1, p=.046; non-severe vs severe, 52.6 vs 46.1, p =.048). The multiple linear regression model did not identify any independent predictors influencing the Cdiff32 scores.

CONCLUSIONS: CDI is associated with significantly decreased QoL in multiple health domains. The Cdiff32 questionnaire is sensitive to decreases in QoL experienced by patients with CDI, particularly those with recurrent disease.

IMPACT OF REDUCED MEDICATION OUT-OF-POCKET COSTS ON ACUTE DIABETES COMPLICATIONS AND HIGH-ACUITY OUTCOMES: A NATURAL EXPERIMENTS FOR TRANSLATION IN DIABETES (NEXT-D2) STUDY

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BACKGROUND: In an attempt to improve diabetes outcomes, some employers and insurers have adopted Preventive Drug Lists (PDLs) that reduce out-of-pocket costs for antidiabetic and cardioprotective medications to $0. We sought to determine whether shifts to PDL coverage reduce acute diabetes complications and high-acuity outcomes among commercially insured patients with diabetes.

METHODS: Our study design was a natural experiment comparing changes in outcomes 1 year before and after the PDL switch in matched study groups. This study was completed using a national commercial and Medicare Advantage health insurance claims database. The Intervention group included 16,174 commercially-insured diabetes patients age 12-64 switched by their employers to PDL coverage; the Control group included 711,085 coarsened exact-matched contemporaneous patients whose employers offered no PDL. We conducted similar analyses in a subset of low-income members switched to PDL plans and their matched controls. Outcomes were acute diabetes complication visits, high-severity emergency department visits, and hospitalization days.

RESULTS: Transition to the PDL was associated with a relative pre-post change of 1.6% (95% confidence interval, -7.2% to 10.3%) in acute diabetes complication visits, -3.2% (-14.4% to 8.1%) in high-severity emergency department visits, and 2.2% (-9.8% to 14.1%) in hospitalization days. Findings were similar in the low-income subgroup.

CONCLUSIONS: We did not find detectable changes in acute diabetes complication visits and high-acuity outcomes among diabetes patients switched to low drug cost sharing health plans. Further research should assess longer-term outcomes and examine effects of reducing financial barriers to outpatient and emergency department care.

IMPACT OF THE 2009 U.S. PREVENTIVE SERVICES TASK FORCE MAMMOGRAPHY SCREENING RECOMMENDATIONS: ARE PHYSICIANS ENGAGING IN SHARED DECISION MAKING?

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BACKGROUND: In 2009 the U.S. Preventive Services Task Force (USPSTF) recommended against routine mammography in average risk women aged 40-49 years, instead recommending shared decision making (SDM). Population-based studies show screening rates have remained static since 2009, suggesting SDM is not taking place. Yet nothing is known about how individual physicians altered their screening behavior after 2009.

METHODS: We performed a retrospective cohort study in the Cleveland Clinic Health System. Physicians were included if they had ≥20 encounters with eligible women in the period before (2006-2008) and after (2011-2015) the USPSTF guideline change. Eligible women were mammography-naïve, aged 40 to 49 years with no personal history of breast cancer or biopsy. We assessed screening rates overall in the pre-2009 and post-2009 periods and assessed changes in individual physicians' screening rates over time, defining a 10% change as meaningful. We also assessed the screening rate among patients seen by physicians new to the health system after 2009. Multivariable mixed effects logistic regression was used to assess the odds of a woman receiving screening post 2009, accounting for clustering by physician. We included each physician's pre-2009 screening rate decile as a predictor in the model, as individual screening rates should change after 2009 if they were engaging in SDM. Patient characteristics included race, marital status, insurance type and median household income. Physician characteristics included gender, age, specialty and practice location.

RESULTS: In the pre-2009 period, the 112 study-eligible physicians saw 20,781 study-eligible patients, 50% of whom received mammography. In the post-2009 period, these physicians saw 15,630 patients, 45% of whom received mammography. For patients seen by physicians new to the health system after 2009, the mammography rate was 33%. More than two-thirds (68%) of study-eligible physicians had post-2009 screening rates within 10% of their pre-2009 rate, while 18% had screening rates that were at least 10% higher. In the mixed effects model of the odds of a patient receiving mammography post 2009, the strongest predictor of mammography receipt was their physician's pre-2009 screening rate (aOR:2.90 per decile;95%CI:1.68-4.98). Compared to having a male physician, having a female physician was associated with higher odds of screening (aOR:1.35:95%CI: 1.14-1.58). Black patients were more likely to get screened than white patients (aOR:1.49; 95%CI:1.30-1.71).

CONCLUSIONS: For patients, the strongest predictor of mammography receipt after 2009 was their physicians' pre-2009 screening rate. Physicians were therefore not individualizing screening decisions by routinely engaging patients in SDM. The screening rate was lower for physicians new to the system after 2009. Interventions aimed at increasing SDM should focus on physicians who practiced before 2009, as longstanding screening behaviors may be harder to change.

IMPACT OF THE YALE INTERNAL MEDICINE CLINICIAN-EDUCATOR DISTINCTION PATHWAY ON INTERNAL MEDICINE RESIDENCY GRADUATES

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BACKGROUND: Many residency programs offer curricula to prepare trainees to thrive as clinical- educators. Little is known, however, about the impact of these programs on resident participants. In 2016, Yale's Internal Medicine Residency Programs launched the Clinician-Educator Distinction (CED), a 2-year certificate program aimed to help residents gain proficiency in teaching, curriculum design, and medical education scholarship. We aimed to determine: 1) why residents enroll in the CED, 2) the impact of the CED, and 3) the strengths and limitations of the CED.

METHODS: Between 2016-2019, 4 cohorts of residents enrolled in the CED (n=65), with 23 of 29 graduates completing the Distinction. We conducted a qualitative study of the graduates who had enrolled in the CED using purposive sampling, representing participants across a variety of career paths and including graduates who enrolled but did not complete the CED. Individual, in-person or telephone interviews were conducted using a semi-structured interview guide. Interview transcripts were analyzed and coded using thematic analysis. A coding structure was developed using an iterative, constant comparative method of analysis. Interviews were conducted until thematic saturation was reached.

RESULTS: Of 16 participants sampled, 3 did not complete the CED, 10 graduated in 2019, and 11 are currently in academic medicine. Motivations for applying to the CED included improving teaching skills, proving or exploring interest in medical education, filling a gap in skillset, as well as fear of "missing out." Regardless of CED completion, participants reported positive impacts from the CED, such as building a foundation in educator skills, career development, membership in a medical educator community, and motivation to "go the extra mile." A common theme of unexpected professional identity formation also emerged: most residents enrolled in the CED focused exclusively on teaching but realized through the CED that "successful" clinician-educator careers are quite diverse and often require competencies aside from teaching. Effective components of the CED included relevance of curricular topics, flexibility of requirements, small group interactive didactics, direct observation with feedback, and exposure to dedicated faculty. Areas of improvement included increasing medical education scholarship mentoring, accessibility of didactics, clarity of requirement logging, and availability of funding.

CONCLUSIONS: A longitudinal clinician-educator curriculum comprised of flexible requirements, small group-based didactic sessions, observed teaching with feedback, and a mentored project helps residents develop educator skillsets and broadens participants' understanding of clinician-educator careers. Results from our study can help other internal medicine residency programs develop or enhance their clinician- educator training curricula. Future studies will need to assess the long-term impacts of CED participation.

IMPLEMENTATION AND EFFECTIVENESS OF RHEUMATOLOGY E-CONSULTS INTERVENTION TO REDUCE SPECIALIST WAIT TIMES

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BACKGROUND: US health systems have adopted e-consults to extend the specialist workforce and improve care efficiency. Though studies have demonstrated a range of benefits for e-consults, few incorporate comparison groups, focus on rheumatology, or supply understanding of factors influencing primary care provider's adoption of e-consults for rheumatology care. We sought to assess the impact of a mandatory rheumatology e-consult program on specialty appointment wait times and to understand factors influencing providers' e-consult adoption.

METHODS: We implemented e-consults in four clinics in our network of 33 community-based primary care clinics in an academic health system. We retrospectively assessed the implementation and effectiveness of the pilot comparing four matched clinics not offered the intervention. Our primary outcome was wait time from e-consult or traditional referral to first scheduled specialty appointment 1-year pre- and post- implementation. We conducted multivariable adjusted quantile regression testing for differences in median wait times and a differences- in-differences analysis. We abstracted EHR data to assess provider adoption and rheumatologist recommendations. We conducted semi-structured telephone interviews with a purposeful sample of 11 primary care providers (PCP) in the four pilot clinics and one in-person focus group of 8 rheumatologists. We used applied thematic analysis based on an a priori framework to analyze qualitative data.

RESULTS: 809 patients had scheduled appointments across the pre- and post- implementation periods in 4 implementation and 4 comparison clinics. There was a significant difference in the appointment wait time pre- to post- implementation across all clinics (-25.1 days, 95%CI -40.9- -9.3, $p<0.001$). We observed a trend towards decreased median wait times (-17.1 days, 95%CI -39.1- +4.8, $p= 0.12$) among the e-consult clinics (adjusted for age, race, clinic pair, and primary payer). The trend persisted in a sensitivity analysis adjusting for within-clinic similarities. Key implementation themes included: meeting patient needs, primary care provider task-technology fit, specialist task-technology fit, virtual team care, and technology features. Primary care providers perceived e-consults to be most helpful for initial diagnostic work-up of patients with suspected rheumatologic disease, and least helpful in cases such as fibromyalgia, where there is no clear specialty "home" for the condition. Interesting subthemes emerged around "virtual team care" including the need for better role clarity and a mechanism for iterative communication over time.

CONCLUSIONS: Our work demonstrates the impact of rheumatology e-consults implementation in community primary care practices in our large academic health system. Implications for practice include an enhanced focus on role clarity, communication, and task-technology fit in e-consult implementation. Further research could focus on features of high quality virtual team care

IMPLEMENTATION OF AN ELECTRONIC MEDICAL RECORD PRACTICE ALERT TO IDENTIFY PATIENTS FOR ADVANCE CARE PLANNING FOR THE META-LARC ACP STUDY

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BACKGROUND: Only a quarter of Americans have a documented advance directive and almost three- quarters of elderly patients at high risk of dying have not discussed their medical treatment preferences with their physician. Health data science and information technology can overcome barriers in identifying appropriate patients for Advance Care Planning (ACP) discussions at the point of care and facilitate the workflow within Primary Care (PC) settings. We developed a novel point-of-care alert to increase patient identification and referral of patients

eligible for ACP discussions within Duke PC clinics participating in the Meta-LARC ACP study.

METHODS: An algorithm within the Epic Electronic Health Record (EHR) at Duke was developed to identify patients who may benefit from ACP for the Meta-LARC ACP study, a US-Canadian multi-site cluster randomized trial comparing clinician-focused or team-based implementation of the Serious Illness Care Planning (SICP) toolkit. This algorithm identified patients who would likely benefit from ACP (age 70 or greater, with 3 or more of a specific list of co-morbidities, or with 2 or more hospitalizations in the past year) with a Best Practice Advisory (BPA) alert in the EHR. The alert reminded clinicians to have an ACP discussion and refer patients who had a conversation to the study team. Alerts and user actions in response to them were followed and measured.

RESULTS: Within 6 Duke PC clinics, 41 clinicians and 2 nurses have been trained to use the SICP toolkit, view the ACP score and receive the Meta-LARC study alert. Within the first 6 months (June – Nov 2019), 1,775 patients were identified by the ACP algorithm. Patients had a mean age of 78 (SD 9) years and were 59% female and 65% Caucasian. The alert occurred a median 137 (IQR 32 - 225) times per provider, an average of 2.8 (SD 1.0) times per patient. Top reason for alert dismissal was timing-related factors (e.g. plan for future visit, acute care visit). 172 patients were referred to the study via the alert. The referral rate per patient was 3.1% (IQR 0 – 20.7) in the team-based implementation arm and 4.6% (IQR 0.1 – 11.2) in the clinician-focused implementation arm.

CONCLUSIONS: This EHR-based algorithm with a point-of-care alert has streamlined patient identification and referral of patients undergoing ACP (SICP) discussions in primary care clinics at Duke. Further analyses will be conducted to understand whether alert-based identification results in higher rates of ACP documentation within the EHR. At the end of the study, providers will be surveyed about the usefulness and their experience with the study-related alert, plus whether they would recommend ongoing use of the alert in their clinic as part of routine care. Knowledge of provider utilization and interaction with alerts can help us understand how this innovation can be employed at other institutions to facilitate ACP discussions and referral to research studies.

IMPLEMENTATION OF A PHYSICIAN ACCEPT NOTE TO IMPROVE INTERHOSPITAL TRANSFER DOCUMENTATION ON GENERAL MEDICINE SERVICES: A QUALITY IMPROVEMENT (QI) PROJECT

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BACKGROUND: Several population wide studies have demonstrated worse outcomes for patients admitted to hospitals following interhospital transfer compared to patients admitted directly through the emergency department (ED); specifically increased risk-adjusted mortality, adverse events, and length of stay. One proposed etiology for the worse outcomes includes the transfer process itself leads to discontinuity of care. Based on a 2018 survey of internal medicine residents and hospitalists at the Medical University of South Carolina (MUSC), 74% of providers responded that interhospital transfer patients always/frequently arrive without necessary transfer records and 69% responded that a physician accept note was rarely/never available at the time of transfer. Interhospital transfer instruments, based on the transfer phone call, have demonstrated improved outcomes related to transfers. The objective of this study is to standardize interhospital transfer documentation on general medicine services by implementation of a physician accept note into the electronic health record (EHR) at the time of the transfer.

METHODS: In April 2019, baseline data regarding physician documentation of the interhospital transfer phone conversation into the EHR was obtained for patients transferred to general medicine services at MUSC. The QI intervention included creation of a physician accept note, implementation of the note into the electronic health record, and physician education. New patients without a medical record number (MRN) at the time of transfer request were excluded as physicians were unable to document in the electronic health record until an MRN was created. In August 2019, the QI intervention was implemented. The primary outcome was utilization of the physician accept note. Secondary outcomes included transfer to the intensive care (ICU) within six hours of admission as well a change in provider perception related to interhospital transfers. Pearson's chi-square test was performed to determine difference in proportions between the pre/post-intervention outcomes.

RESULTS: Baseline data obtained in April 2019 revealed only 2% of interhospital transfer patients had any physician documentation of the phone call between the outside hospital physician and the MUSC accepting physician. After implementation of the QI intervention, a 5 month post-intervention chart review performed in December 2019 demonstrated 75% of interhospital transfer patients had documentation of a physician accept note ($p<0.001$). Please note, 8 months of data will be available at the time of the SGIM presentation in May. Regarding secondary outcomes, the proportion of patients transferred to the ICU within six hours of admission and a post-intervention survey of provider perception of the interhospital transfer process will be performed in April, as not all residents have been exposed to the intervention at this time, with results available at the time of SGIM.

CONCLUSIONS: Implementation of a physician accept note into the EHR is one way to improve communication and documentation of interhospital transfer patients to general medicine services. Secondary outcomes will determine whether the physician accept note leads to decreased transfer to the ICU within six hours and improved perceptions related to the interhospital transfer process.

IMPLEMENTATION OF DEPRESSION SCREENING AT A STUDENT-RUN FREE CLINIC UNCOVERS HIGH RATES OF DEPRESSION

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BACKGROUND: Nearly 1 in 10 uninsured New Yorkers experience symptoms of depression, yet there is limited information on depression screening rates in free clinics. The Weill Cornell Community Clinic (WCCC) is a student-run free clinic that provides comprehensive multidisciplinary care to uninsured New Yorkers. The WCCC currently screens all patients for depression using the Patient Health Questionnaire (PHQ). The PHQ is verbally administered in the patient's primary language. If the initial 2-item screen (PHQ2) is positive, an additional 9-items (PHQ9) are used to estimate the severity of depression. Here we report the utility of PHQ in screening for depression in a student-run free clinic and the rate of follow-up at the WCCC mental health clinic, which is staffed by a board-certified psychiatrist.

METHODS: All WCCC patients seen between April 2017 and September 2019 were verbally screened for depression by a trained medical student using the PHQ2 (n=138) and, if positive, the PHQ9. Score on the PHQ9 range from 0 to 27, and correlate with depression severity. Patient demographics, PHQ scores, and referral to the WCCC mental health clinic were assessed using descriptive statistics.

RESULTS: 39.1% (N=54) of WCCC patients had a positive PHQ2 depression screen. Of these patients, 75.9% (N=41) had a positive

depression screen with the PHQ9 and were referred to the WCCC mental health clinic. Among patients that screened positive, six individuals reported that they were currently utilizing community mental health resources. Among the remaining patients who screened positive for depression, 62.9% (22 out of 35 patients) accepted a referral to the WCCC mental health clinic, while 13 declined referral. Among patients with positive depression screens, the demographics of patients who accepted a referral to psychiatry were similar to those who declined: age (41.0 vs. 40.7), distance traveled to WCCC (6.92 vs. 6.58), language discordance (27% vs. 38%), and the number of other medical comorbidities (6.68 vs. 5.38). Interestingly, patients who accepted referral scored significantly higher on PHQ9 than those who declined referral (10.43 vs. 7.08, p=0.013).

CONCLUSIONS: The WCCC was able to successfully implement the PHQ as a point-of-care depression screening tool for all patients. Our data reveal a 4-fold higher rate of depressive symptoms relative to city- wide estimates for uninsured patients. This underscores the need for consistent wide-spread depression screening at free clinics serving the uninsured. Referral acceptance to the WCCC mental health clinic was higher than the national average for primary care settings (62.9% vs. 50.0%), and may reflect patient's existing trust in the WCCC and the convenience of a real-time on-site referral. Further research is needed to understand the drivers of a patient's willingness to accept a referral to psychiatry.

IMPLEMENTATION OF MEDICATION TREATMENT FOR OPIOID USE DISORDER IN CORRECTIONAL SETTINGS

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BACKGROUND: Individuals who are incarcerated have a substantially elevated risk of experiencing a fatal overdose when reentering the community. Opioid agonist treatments (i.e., methadone and buprenorphine) can significantly reduce risk of overdose. However, access to these medications remains limited in most correctional settings. Efforts are increasing to expand access to these medications as early adopters, such as Rhode Island, have demonstrated notable reductions in overdose mortality and as litigation and state legislation compel correctional facilities to provide these medications. Yet little is known regarding best practices for implementing medication in correctional settings. This study identifies perceived barriers and facilitators related to provision of medications for treating OUD in correctional settings among correctional security and correctional health officials.

METHODS: The authors have conducted 35 of 50 interviews with leaders and decision-makers in correctional settings with knowledge of substance use treatment protocols. Interviews are audio-recorded, transcribed, and analyzed using a hybrid inductive-deductive approach to coding for key themes. Participants include leaders in correctional systems that currently provide medication treatment as well as systems that do not offer medication treatment for OUD beyond limited subgroups (e.g., pregnant women). Participants include wardens, sheriffs, correctional medical directors, probation and parole agency directors, and other leadership roles.

RESULTS: Key barriers to implementation include: lack of knowledge of and stigma related to medication treatment; limited community experience with medication treatment; compliance with DEA and other regulations for providing medications within correctional facilities; medication dispensation and management of relationships with medical vendors that oppose medication treatment. Facilitators include: leadership commitment to medication treatment; aligned perspectives on these medications among correctional officials and the medical vendor; robust medication treatment infrastructure in the community; Medicaid expansion to support continuity of care following release; external grant funding; and a local convening body that brings together multiple sectors to address overdose mortality.

CONCLUSIONS: Broadening access to medication treatment for OUD in correctional settings is feasible across diverse geographic settings. Jurisdictions interested in expanding access to medication treatment can learn from one another's experiences managing compliance with the regulatory requirements related to providing these medications, the logistics of dispensing medication within correctional facilities, and building mechanisms to ensure continuity of treatment. However, stigma and misinformation remain major barriers to expansion of these medications among both correctional officials and medical providers serving persons under correctional supervision.

IMPLICIT BIAS: TRENDS IN EVALUATION

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BACKGROUND: Academic medical centers have identified a need to train faculty about implicit bias. Prior to interview season, NYU held implicit bias workshops with departments, in which participants were asked to evaluate applicants for positions in their departments. Participants rated applicants on a scale from 1-10 and listed 2 positive and 2 negative adjectives about them. The resumes were identical except for gender and race. Individual assessment forms were collected without data to identify the participants or the departments in which they worked.

METHODS: The adjectives were categorized into 10 types of positive adjectives and 7 types of negative adjectives in order to analyze any systematic differences in which types of adjectives were using based on demographics. For example, the most common positive categories of adjectives related to education/experience, work ethic, and intelligence, and the most popular negative categories were related to dishonesty, social difficulty, and assertiveness. Chi-square tests were performed on positive adjectives and negative adjectives testing differences between two genders (Woman, Man) and three racial groups (Black, Caucasian, Latinx).

RESULTS: N=153 applicant evaluations were reviewed. There was no significant difference in the final rating scores for the different applicants. The gender data showed a significant difference in how men and women were described with the second of the two positive adjectives ascribed (p = 0.012, chi=21.063). For negative adjectives, the category of the first adjective written was significantly different between men and women (p = 0.043*, chi = 13.018). The most noteworthy distributions of adjectives were that "bright" was used for only females in the intelligence category, "assertive" was more often used positively for men and negatively for women. Evasiveness was more often attributed to men than women, while distractibility by familial issues was more often applied to women. Regarding race and ethnicity, there were no significant differences among race in the positive adjectives given. However, the second positive adjective given by race/ethnicity showed some statistically significant difference by category (p =0.007*, chi=35.96). With regard to the negative adjectives given, the first was statistically significant, describing Caucasians as difficult to get along with. The most noteworthy distributions of adjectives were that "hardworking" was used mostly for Latinx and intelligence categories were less likely to be used for Black applicants.

CONCLUSIONS: Even during activities that are part of implicit bias workshops, differences in perceptions of race/ethnicity and gender persist with identical descriptions of hypothetical candidates. These data also suggest that workshop participants were more likely to ascribe similar adjectives

by gender or race/ethnicity as their first instinct but when assigning a second adjective, they may have leaned more on bias or stereotype.

IMPROVING CHOLESTEROL GUIDELINE ADHERENCE IN OUTPATIENT CLINICS BY EMBEDDING ASCVD RISK CALCULATION INTO THE ELECTRONIC HEALTH RECORD

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BACKGROUND: The 2013 American College of Cardiology (ACC) and American Heart Association (AHA) guidelines for cholesterol treatment recommend the use of the Pooled Cohort Equation to estimate 10-year risk of cardiovascular events using an atherosclerotic cardiovascular disease (ASCVD) calculator to guide therapy. Online calculators are time consuming during busy clinic workflows and may contribute to low adoption of guidelines. Our objective was to examine ACC/AHA guideline adherence after automating the ASCVD calculator into the electronic health record (EHR) at 2 internal medicine clinics at Wake Forest University.

METHODS: This retrospective study examined statin prescription before and after the release of the ASCVD risk score calculator in the EHR. The analyzed population included patients with encounters from March 2018 through September 2019 who met criteria for statin therapy based on 10 year ASCVD risk (≥7.5%). The first utilization of the tool in the patient's chart was considered the index encounter to determine if the patient was prescribed a statin. We excluded those with a statin allergy, abnormal CK or ALT values. Demographic variables, ASCVD score, and statin prescription at or prior to the index encounter were collected. Statistical analysis of statin prescribing pre- and post- ASCVD score intervention was performed using McNemar's test. All other descriptive analyses utilized t-tests and chi-squared tests where appropriate.

RESULTS: A total of 1185 patients had the tool used during the study period and 778 were included for analysis. Patients were predominantly female (59%), African American (61%) and had a mean age of 58 years old. 69% of patients with an indication for statin therapy were not on a statin. After the intervention, this dropped to 26% ($p<0.0001$). Age, gender, ASCVD score, and lipid levels were not associated with statin non-prescription, though non-white patients were somewhat less likely to be prescribed a statin ($p=0.06$).

CONCLUSIONS: Automating the ASCVD calculation in the EHR increased adherence to guideline- recommended statin prescription and should be considered for implentation as a standard clinical decision support tool. In further analysis, there were no clear demographic variables that increased the likelihood of statin prescription.

IMPROVING DIABETES MEDICATION ADHERENCE THROUGH AUTOMATING PHARMACY REFILLS: A RANDOMIZED QUALITY IMPROVEMENT INTERVENTION

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BACKGROUND: Nonadherence to medications is common and leads to adverse health outcomes. The medication refill process is cumbersome and may impact medication adherence. Choice architecture in behavioral economics suggests that subtle design changes to systems can have an outsized effect on behavior. Applying this theory to medication refills, we examined the effects of an operational change from patient- initiated refills to a 'default' automated process. We implemented this change as a quality improvement project within the Veterans Health Administration Puget Sound Health Care System (VAPSHCS).

METHODS: Patients were eligible for inclusion if they had received any oral diabetic medication refills from VAPSHCS and had an A1c within the prior 6 months with a poor medication possession ratio (MPR < 80%, defined as a measure of medication dispensation over time). A random sample of 200 eligible patients was randomized 1:1 to an intervention of automated pharmacy refills versus usual care. In the intervention, oral diabetic medication refills were mailed to intervention patients two weeks prior to scheduled due date. Control patients received care as usual, requiring patients to self-initiate refills of medications. Enrollment occurred from April - June 2019. Outcomes were collected December 15th, 2019.

RESULTS: A total of 199 patients were randomized to intervention (n = 100) or control (n = 99) with baseline similarity in demographics between groups. On average, patients were 69.6 years old (SD 10.8), male 95.5%, white race 62.8%, with an average A1c of 7.7% and MPR for all diabetic drugs of 57.5% (SD = 22.0%). Of patients randomized to the intervention, 40 patients agreed to participate. We used logistic and linear multivariate regression models for analysis with cluster robust standard errors to account for repeat measures. In intent to treat analysis at 6 months, compared to control patients, intervention patients had no difference in A1cs (difference 0.02, P = 0.91) nor in MPR for diabetic medications (difference 5.4%, P = 0.15). Among patients who enrolled (per-protocol analysis), there was no difference in A1cs (difference 0.45, P = 0.08), but as expected, the MPR for diabetic medications was 21.8% greater than usual care patients (P < 0.001). However, for other medications not refilled automatically (statins, ACE/ARBs), the MPR was greater in the intervention group (difference 9.8%, P = 0.045). Feedback about the program was positive (75% of comments) among enrollees.

CONCLUSIONS: An automated refill process for oral diabetic medications among medication nonadherent patients did not impact glycemic outcomes after 6 months but may have improved patient refill behavior for other medications which were not part of the automated process. Future efforts to automate refills for chronic disease medications could feasibly be integrated into health care systems and may improve refill behavior for patients with poor medication adherence.

IMPROVING GUIDELINE-CONCORDANT CHRONIC OPIOID PRESCRIBING IN AN ACADEMIC PHYSICIAN PRACTICE: AN 18-MONTH FOLLOW-UP SURVEY

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BACKGROUND: Chronic opioid therapy (COT) may improve patient quality of life and pain, but is associated with risks of opioid misuse, overdose and death. In 2016, the CDC published the Guideline for Prescribing Opioids for Chronic Pain to provide recommendations for safe and effective COT in primary care settings. In order to increase guideline application to clinical practice, it is essential to evaluate the process of evolving physician practice. This study evaluated changes in physician knowledge, attitudes, beliefs, and practice patterns about chronic opioid prescribing after 18 months of continuous quality improvement efforts.

METHODS: In 2017, 37 internal medicine physicians at a single academic medical center anonymously completed a baseline survey (95% response rate). After the survey, quality improvement efforts included EHR implementation of policy changes (e.g. state law to check prescription monitoring program (PMP)), system- level changes (e.g. comprehensive urine drug screen (UDS), EHR tools), and physician-level interventions (e.g. didactics, local practice guideline creation, clinical decision support tools). An 18-month follow-up survey was administered (N=30, 77% response rate) which included questions about awareness, perceived usefulness, and practice patterns of key aspects of the CDC guideline. Items related to "regard" (biases, emotions, and expectations) for patients on COT were also assessed. Results were summarized by basic descriptive statistics. Fisher's Exact Test for binary outcomes was used to assess for significant changes (two- sided p-value <0.05) between surveys.

RESULTS: At 18-month follow-up, physicians had increased awareness of patient provider agreements (PPAs) (51% to 97%), naloxone prescribing (41% to 83%), UDS interpretation (35% to 72%) and PMP use (70% to 97%) (all p<0.001). Physicians' perceived usefulness of naloxone in managing patients on COT also increased (57% to 90%, p<0.001). Physicians' perceived usefulness of PPAs (76%) and the PMP (76%) were high at baseline and increased (83% and 90% respectively) but not significantly. In addition, physicians were less likely to report "never" adhering to guideline recommendations to use PPAs (46% to 10%), prescribe naloxone (73% to 4%), order UDS (65% to 20%), or check the PMP (27% to 3%) (all p<0.001), and were more likely to report increases in prescribing naloxone "frequently/always" (3% to 57%) and checking the PMP with every refill (27% to 80%) (p<0.001). Changes in physician regard for patients on COT were not significant.

CONCLUSIONS: After an 18-month multilevel quality improvement intervention to implement the CDC guideline for COT at an academic medical center, we increased physician levels of awareness, perceived usefulness, and self-reported guideline-concordant practice of many key CDC recommendations. Our approach to quality improvement could be adapted into other healthcare systems attempting to improve adherence to COT guidelines

IMPROVING PATIENT SAFETY CULTURE IN A COMMUNITY HOSPITAL SETTING

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BACKGROUND: Resident physicians do not regularly report patient safety events. According to recent literature, less than 2% of reported errors are from residents. Patient safety events increase cost, morbidity and mortality. Various methods at our institution have attempted to improve reporting events, however have only resulted in a temporary spike in reporting that decreases after the intervention. These interventions routinely fail because residents are not taught what a reportable patient safety event is, how to report events, nor have time to report events and fail to see the purpose. If residents are trained in patient safety, given protected time to report events and take part in the management of these reports this may address the failed sustainability, and finally create a successful patient safety culture.

METHODS: The subject population included residents in the PGY 1, 2, and 3 years at our institution during the 2017-2019 academic years. Events reported by residents were analyzed and compared before and after the intervention. House staff was asked to complete a survey before and after the intervention.

The intervention was a "patient safety" rotation. This involved rounding with the inpatient medicine team and assisting in identifying and reporting any patient safety errors as well as attending the institution's "patient safety huddle". This resident was required to complete online modules to receive a Basic Certificate in Quality and Safety.

Data was viewed in the password protected MIDAS system and survey results were de-identified for confidentiality. Patient safety was not negatively impacted in any way. Data was analyzed with Microsoft Excel.

RESULTS: Since the intervention, patient safety reporting dramatically increased. Within the 2 academic calendar years, 2 patient safety events were reported by residents before the intervention and 35 were reported afterwards. Before the intervention, on average 0.1 events were reported per month. This increased to approximately 4 events per month for the following 8 months after the intervention. Before the intervention, 83% of residents confirmed never having reported an error. 6 months after the intervention, this decreased to 43% of residents. Overall, our results show that the patient safety rotation intervention increased error reporting among residents and awareness to patient safety culture at our institution.

CONCLUSIONS: Improving patient safety culture is integral to the improvement of morbidity and mortality of an institution. A key component to this are residents that are forefront in many patient safety events. Our institution targeted increasing awareness and reporting of safety events via a patient safety rotation. We have found this to be a successful and welcomed addition to our program. We present the findings of our intervention with hopes that this may help other institutions to institute similar programs and eventually see dramatic improvements in patient safety culture in residency programs nationwide.

IMPROVING PRIMARY CARE EXPERIENCES FOR HOMELESS VETERANS WITH SERIOUS MENTAL ILLNESS

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BACKGROUND: Persons with serious mental illness (SMI, including schizophrenia spectrum, psychotic and bipolar disorders) are overrepresented among persons who are homeless. Compared to other patients, those with SMI and homeless experiences have increased morbidity and mortality, poor physical functioning, and high rates of dissatisfaction with their health status. In 2012, the Department of Veterans Affairs (VA) implemented a paradigm of primary care services (homeless-patient aligned care teams (HPACTs)) tailored to the needs of homeless-experienced Veterans (HEV). Compared to mainstream VA primary care, HPACTs have smaller panel sizes, more access accommodations and linkages to mental health services. To inform efforts to enhance primary care engagement and reduce morbidity and mortality among HEV with SMI, we sought to examine if HPACTs provide this vulnerable population with superior a primary care experience, compared to mainstream VA primary care.

METHODS: The Primary Care Homeless Service Tailoring (PCQ-HoST) study surveyed a random sample of HEV about their primary care experience in 26 VA facilities. For respondents with SMI documented in VA medical records (N=1,095), we determined favorable, neutral, and unfavorable experiences on 4 scales from a validated primary care instrument: Accessibility/Coordination, Patient-Clinician Relationship, Perceived Cooperation among Caregivers, and Homeless-Specific Needs. We used survey-weighted multinomial logistic regression models, controlling for demographic and clinical covariates, to assess differences in the valence of patient reported experiences for respondents in HPACTs vs. mainstream primary care.

RESULTS: Among 1,095 HEV respondents with SMI, 969 (91%) had complete data on study variables; 626 (65%) of these respondents were in HPACT. Compared to those in mainstream primary care, HPACT respondents were younger; they were more likely to be male, nonmarried, to self-report a drug problem, and to have a history of chronic homelessness. After covariate adjustment, HPACT respondents were more likely to report favorable experiences than the mainstream primary care respondents on each scale: access (adj. % = 44.9 vs. 26.9), relationship (44.9 vs. 29.9), cooperation (39.1 vs. 27.6), and homeless-specific needs (39.4 vs. 23.7); all p-values $\leq$ 0.001. Respondents in HPACT also reported fewer unfavorable experiences on all scales, with marked differences in attention to homeless-specific needs (adj. % = 43.0 vs. 60.2), cooperation (27.4 vs. 41.0), relationship (28.5 vs. 44.8), and access (28.2 vs. 40.4); p-values $\leq$ 0.001.

CONCLUSIONS: While some recently homeless Veterans with SMI hold unfavorable impressions of primary care, these unfavorable experiences are mitigated in VA clinics specifically designed for homeless Veterans. To address the profound health disparities experienced by this population, additional research is needed to identify specific primary care features that contribute to optimum experiences and outcomes for HEV with SMI.

IMPROVING SOCIAL SUPPORT DISCUSSIONS IN PRIMARY CARE CLINIC

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BACKGROUND: The physiology by which chronic social isolation stress advances cardiovascular, endocrine, neoplastic, and cognitive disease is well understood. (Cacioppo, 2015) Social isolation stress is a known risk factor for mortality with effects similar to smoking and obesity. (Holt-Lunstad, 2015) Yet little is known about if and how physicians investigate a patient's social support system in the clinic setting. (Behforouz, 2014) This study aims to highlight the frequency and nature of physicians' social support discussions with patients, in order to improve discussion and documentation of social determinants of health, specifically social isolation stress.

METHODS: This study analyzes a previously collected data-set (Schoenthaler, 2017), namely 92 audiotaped then transcribed conversations between patients and physicians during routine primary care visits. The study includes 27 primary care providers at a public hospital in NYC and 92 adult patients who are English- speaking, carry a hypertension diagnosis, and have received primary care from the same provider for at least 3 months. A grounded theory approach is used to categorize conversation themes, including how often social isolation stress is discussed as a risk factor for mortality versus other known risk factors for disease.

RESULTS: In study results to date, social isolation stress is discussed as a risk factor for mortality in 6% of physician encounters, whereas other morbidity/mortality risk factors are discussed with greater frequency (medication adherence: 99%; diet: 41%; exercise: 32%; smoking: 29%). Social support in general is brought up in 32% of transcripts, most often while asking a patient about the well-being of family members, or less commonly while asking about one's living situation or home health needs. In 53% of transcripts, patients bring up social support (or lack thereof) as a discussion topic; 40% of those efforts are met by physicians who change the subject or do not acknowledge the patient's comment.

CONCLUSIONS: The study findings suggest that, despite evidence that social isolation stress is a risk factor for worsening morbidity and mortality, physicians rarely inquire with patients about their social support systems. Improving physician social history-taking to include social isolation could be an important health system transformation leading to improved risk stratification of patients for a variety of disease processes, increased ability to connect patients to much-needed social services, and richer physician-patient relationships.

IMPROVING THE ACCURACY OF MEDICAL STUDENT PHYSICAL ACTIVITY MEASUREMENT

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BACKGROUND: Past research suggests that medical student physical activity (PA) levels are comparable to the national average. These findings support the conclusion that PA is a less suitable target to enhance trainee well-being than other metrics (e.g. fatigue, burnout, duty hours). Prior studies have relied upon CDC guidelines for aerobic activity to distinguish "active" from "inactive" medical students, but these guidelines have grouped moderately active and highly active individuals into a single "active" category. This categorization is at odds with the American Heart Association's guidelines promoting intense PA over moderate PA for its greater health benefits. In the current study, we addressed this shortcoming by applying the WHO PA suggestions to the medical student population in order to distinguish moderate PA from high PA, also termed health-enhancing physical activity (HEPA). We then compared these proportions to the CDC guidelines for aerobic exercise and an age-adjusted national average. Finally, we described the relationship between HEPA and stress levels among U.S. medical students.

METHODS: Two-point cross-sectional survey was administered in the winters of 2013 and 2014 at the David Geffen School of Medicine at UCLA. All medical students were eligible (response rate 1046/1392 [75%]). PA and perceived stress were measured by the International Physical Activity Questionnaire- Short Form (IPAQ-SF) and Perceived Stress Scale (PSS), respectively.

RESULTS: Compared to an age-matched national average, medical students had comparable rates of compliance with the CDC aerobic exercise guidelines (65% vs 58%; p=0.38). However, medical students engaged in significantly less HEPA than their peers (27% vs 72%; OR 0.14; 95% confidence interval [CI] 0.078-0.21; p<0.001). PA among medical students was instead skewed towards moderate activity compared to their age-matched peers (53% vs 16%; OR 5.92; 95% CI 2.99-8.85; p<0.001). HEPA active students were significantly more likely to be in the lowest quartile of stress (32% vs 25%; OR 1.44; 95%; CI 1.07-1.81; p=0.02) and much less likely to fall into the highest stress quartile (22% vs 29%; OR 0.71; CI 0.51-0.90; p=0.03). There were no such statistically significant relationships between stress and moderate levels of PA.

CONCLUSIONS: While they are currently the gold standard for classifying PA, the CDC aerobic exercise guidelines overestimate the PA levels of medical students, who actually engage in significantly less HEPA than the national average. HEPA active medical students manifest significantly lower stress than those engaging in moderate PA only. This demonstrates

both physical and mental health justifications for quantifying and analyzing moderate PA and HEPA separately. We therefore recommend a paradigm shift in how medical trainee PA is measured and incorporated into current and future interventions to enhance medical student well-being.

IMPROVING THE QUALITY OF INPATIENT DISCHARGE INSTRUCTIONS: AN EVALUATION AND IMPLEMENTATION OF BEST PRACTICES

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BACKGROUND: The hospital discharge process is a time that is ripe for errors and miscommunications. Studies show that many patients admitted to the hospital do not understand their reason for hospitalization or their plan of care after discharge and that when patients are not aware of their discharge plans, it is more likely that they will be readmitted or suffer a preventable adverse event. Furthermore, it has been shown that improving the quality of discharge instruction in addition to addition to other interventions, can result in an increase in completion of recommended care following discharge.

METHODS: We instituted two sequential interventions to improve the quality of discharge instructions at our institution. Our interventions included targeted educational outreach and a redesign of the discharge instructions template. A random sample of discharge instructions were reviewed monthly over a 15-month period from October 2017 through December 2018 and were evaluated using of 11 quality metrics. We evaluated the number of discharge instructions quality metrics that were completed, the readmission rate before and after each intervention, as well as patient and provider characteristics associated with number of quality metrics completed over the course of the study.

RESULTS: Discharge instructions from 225 patients were reviewed. Prior to our intervention, an average of 5.36 out of 11 possible quality metrics were completed. This increased to 5.6 after an educational intervention, and increased further to 7.16 following implementation of the redesigned template. The 30-day risk standardized readmission rate readmission rate fluctuated over this time from a baseline of 10.48% to 12.71% and 10.97% following each intervention, respectively. Among provider characteristics, medical students completed significantly more quality metrics than interns, residents, or attendings ($p<0.05$ for all). There was a non-significant difference in the number of quality criteria met for male vs female patients (6.00 vs 7.23) ($p = 0.071$). There was not a significant correlation in number of quality criteria met by patient age (correlation coefficient 0.04, $p=0.51$) or length of stay (correlation coefficient 0.05, $p=0.43$).

CONCLUSIONS: We found that while an education intervention was not effective in changing the quality of discharge instructions, a redesigned electronic template was able to improve the average number of quality metrics which were completed. Neither intervention led to a meaningful change in readmission rates.

Additionally, we found significant differences in the quality of discharge instructions based on the level of training of the author. Further research is needed to determine best practices for patient education that can result in decreased preventable readmissions and to ensure that providers at all levels of training are completing discharge instructions appropriately.

INCARCERATION AS A MEDIATOR OF BLACK-WHITE DISPARITIES IN PREMATURE MORTALITY: AN ANALYSIS OF THE NATIONAL LONGITUDINAL SURVEY OF YOUTH 1979 COHORT

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BACKGROUND: Racial disparities in incarceration and mortality are well known. However, it is not well understood if racial disparities in incarceration explain disparities in mortality.

METHODS: We conducted a retrospective cohort study using data from the National Longitudinal Survey of Youth 1979 cohort (NLSY79), an ongoing, nationally representative longitudinal study of individuals born from 1957 to 1964. The study period was from 1979 to 2016. The exposure, prior incarceration, was identified if: (a) individuals reported prior incarceration on the 1980 survey; (b) their current residence was ever identified as jail/prison; or (c) they were not surveyed in a given wave due to incarceration. The primary outcome of premature mortality (before age 60) was defined as being recorded deceased at or prior to the 2016 survey year. We used NLSY79 mutually exclusive race/ethnicity categories assigned in the initial survey: black, Hispanic, or non-black non-Hispanic. We followed a 4-step mediation analysis using multivariable logistic regression models (adjusting for age and sex) to assess the relationships between (1) race and incarceration, (2) incarceration and premature mortality, and (3) race and premature mortality, and then (4) evaluated incarceration as a mediator of the association between race and premature mortality, with the Sobel test for mediation.

RESULTS: Among 9964 individuals included in the analysis, 30.1% were black, 19.7% were Hispanic, and 50.4% were male. During the study period, 747 respondents (7.5%) were incarcerated, and 915 (9.2%) died. Compared to non-black non-Hispanic individuals, both black and Hispanic individuals were significantly more likely to experience incarceration, OR 3.76 (95% CI [3.13, 4.51]) and OR 2.86 [2.25, 3.65]), respectively. Individuals with any experience of incarceration were more likely to die prematurely, OR 1.95 (95% CI [1.59, 2.41]). Black individuals were significantly more likely to die prematurely than non-black non-Hispanic individuals, OR 1.57 (95%CI [1.35, 1.83]), but Hispanic individuals had similar odds of premature death to non-black non-Hispanic individuals OR 1.14 (95% CI [0.94, 1.37]). The inclusion of incarceration partially attenuated the association between black individuals and mortality to OR 1.48 (95%CI [1.26, 1.71]); Sobel test statistic was 3.70 ($p<.001$). Because Hispanic race/ethnicity was not significantly associated with premature death, we did not assess mediation for that group.

CONCLUSIONS: These data suggest that premature mortality among blacks may be partially explained by racial differences of incarceration. Criminal justice policy should be a key consideration in efforts to address racial disparities in public health.

INCLUSION AND EXCLUSION CRITERIA IN INDUSTRY-SPONSORED CLINICAL TRIALS OF DRUGS FOR TYPE 2 DIABETES, 2006-2015

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BACKGROUND: Clinical trials are the gold standard for evaluating the efficacy and safety of new drugs, but they are often conducted in specialized environments with narrowly-defined patient populations based on strict inclusion and exclusion criteria. This approach fosters internal validity, but at the expense of generalizability, increasing uncertainty among prescribers of the real-world benefits and harms of a drug. Our objective was to characterize the inclusion and exclusion criteria used for clinical trials of pharmaceutical products treating type 2 diabetes over one decade.

METHODS: We performed a review of all industry-sponsored clinical trials evaluating new drugs approved for type 2 diabetes by the US Food and Drug Administration (FDA) between 2006-2015. Using the ClinicalTrials.gov registry, we identified all registered industry-sponsored trials of these drugs evaluating outcomes of patients with type 2 diabetes. We excluded clinical trials not primarily evaluating efficacy or safety (e.g. those primarily enrolling healthy patients, evaluating pharmacokinetics/pharmacodynamics) and non-adult trials. Using trial registrations and corresponding publications, we identified and characterized inclusion and exclusion criteria, both by specific thresholds described (e.g. exclusion of patients with GFR<60) and by general disease categories (e.g. exclusion on the basis of renal disease). Selection of categories was informed by FDA guidance for industry on developing drugs for diabetes mellitus.

RESULTS: We identified 10 drugs initially approved by the FDA for type 2 diabetes from 2006-2015, with 338 corresponding industry-sponsored clinical trials evaluating type 2 diabetes-related indications for adults. Common inclusion criteria were age (n=338, 100%), HbA1c (n=302, 89.3%), and BMI (n=223, 66.0%). 169 (50.0%) trials contained upper bounds on inclusion age, with a median upper bound of 77 (IQR 75-80).

The most common exclusion criteria were cardiovascular and cerebrovascular events (n=239, 70.7%), renal dysfunction (n=222, 65.7%), and hepatic dysfunction (n=202, 59.8%). Among the 127 (37.6%) trials defining a GFR threshold for exclusion on the basis of renal dysfunction, the median was 60 mL/min (IQR 30-60). Among the 122 (36.1%) trials defining a liver enzyme threshold for exclusion on the basis of hepatic dysfunction, the median was 3x the upper limit of normal (IQR 2.5-3). Other patients with markers of uncontrolled or end-stage diabetes were also commonly excluded, including those with recurrent hypoglycemia or hyperglycemia (n=141, 41.7%), neuropathy including gastroparesis (n=52, 14.5%), or proliferative maculopathy or retinopathy (n=49, 15.4%).

CONCLUSIONS: Industry-sponsored clinical trials of drugs for type 2 diabetes commonly feature restrictive inclusion and exclusion criteria, including characteristics and comorbidities common to patients with diabetes. These criteria may limit the generalizability of results from clinical trials to populations of real-world patients.

INCORPORATING A PHARMACIST-DRIVEN MODIFIED MEDICATION THERAPY MANAGEMENT PROGRAM FOR IMPROVED BLOOD PRESSURE CONTROL IN A COMMUNITY-BASED RESIDENT CLINIC

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BACKGROUND: Nearly one third of the adult US population has hypertension, only half of which have optimal control of their blood pressure (BP). Patient-centered barriers to improved control, which may be especially salient in resident-driven community clinics, include low health literacy and medication nonadherence. Previous studies have demonstrated that a "team change" approach to hypertension, in which some or all of the responsibilities of management were transferred to another provider, were the most effective interventions. Our goal was to introduce a pharmacist-driven modified medication therapy management (MMTM) program within a resident clinic to target patient understanding and adherence barriers to better achieve target BPs.

METHODS: Resident physicians were asked to electronically refer patients ≥18 years of age on antihypertensive therapy with BP above 140/90 to our pharmacist-driven MMTM program. The pharmacy technician reviewed the consult and attempted contact within 24 hours to schedule an appointment. Appointments were led by a licensed pharmacist, who completed medication reconciliation and evaluated for medication errors and barriers to adherence. Personalized strategies to address barriers were reviewed and medication refills were synchronized. A BP kit and pill box were provided, and diet was reviewed. The visit was documented in the electronic medical record and a copy was sent to the patient's primary care physician. Each patient was scheduled for a 3 month follow up with BP recheck. Patients completed an anonymous feedback survey to allow for changes to program structure. Blood pressure at referral and follow up were recorded.

RESULTS: Eighty-seven referrals were made to the program. Implementation of electronic referrals significantly increased the number of referrals received. Amongst participants who completed the program in its entirety, there was a statistically significant drop in mean systolic blood pressure from 153 to 145 (p=0.006) using a paired two-tail t-test. Mean diastolic pressures dropped from 87 to 84 (p=0.087). Patient perceptions of the program were overwhelmingly positive, with 100% of surveys rated as 4 or 5 out of 5 (most helpful) on a Likert scale survey.

CONCLUSIONS: The success of our initiative highlights a novel approach for improving BP control in a resident clinic by using a multidisciplinary team. Improvements with our initiative are similar to BP reductions seen with other commonly recommended non-pharmacologic interventions, such as the DASH diet, and weight loss. Our program promoted lifestyle changes, but most importantly employed individualized tools to help attain treatment goals. Our results echo previously successful studies that utilized team-based interventions for improved control of a chronic disease, but with added benefit of enhancing systems-based practice in a resident clinic. Extensive opportunities remain to expand MMTM to other chronic disease processes in order to add clinical value and improve patient care.

INCORPORATING CVD RISK PREDICTION INTO CLINICAL PRACTICE

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BACKGROUND: With the introduction of Big Data, risk prediction is playing a growing role in clinical medicine, particularly in cardiovascular disease (CVD) prevention, where a patient's risk of developing a heart attack or stroke is now a core determinant of treatment for every class of drugs. However, the influence of these risk prediction tools on clinical decisions has been limited. We sought to understand providers' facilitators and barriers to incorporating risk prediction into their regular clinical practice.

METHODS: Between June and November 2018, we conducted 37 semi-structured interviews with primary care providers at 9 VA sites. In

interviews (30 to 60 min), we asked providers to evaluate the hypothetical introduction of a risk prediction model for CVD prevention and treatment at VA facilities that would replace the use of individual targets, such as LDL or blood pressure. We used inductive content and matrix analysis to generate findings.

RESULTS: Providers offered detailed assessments of how adopting the risk prediction model might impact their clinical practice. While most providers welcomed the model, they all mentioned both positive and negative aspects. Their assessments may be grouped into four categories.

1) The relationship between quantified medicine and holistic practice: Some providers felt a quantified approach cannot capture an individual patients' context, among other relevant factors.

2) Reliability: Many providers wanted to know the model's inputs as well as the population and studies upon which it is based, and whether an institution such as the AHA has endorsed it. Some said that other outcomes, such as rehospitalization rates, were more valid. Others said that patient compliance affects their ability to reduce a patient's risk.

3) Impact on workflow: Positive impacts mentioned included the ability to prioritize patients, looking at one measure instead of many individual ones, and that a pre-calculated and easy to access risk number could streamline workflow. Providers reacted negatively to the possibility that the model would add to tasks and pop-up reminders.

4) Whether introducing the risk prediction model would add value: Added value included reducing unnecessary fallouts, making benefits of treatment clearer, depicting meaningful outcomes, enhancing patient understanding by giving them a "visual," which motivates patients to adhere to treatment. Doubts included: basing performance measures on how much a provider can reduce a patient's risk does not solve the problems that current measures have; the model may be too technical for patients to understand; and given the sheer number of quality initiatives that are continually rolled out, adopting a risk prediction approach seems like just another "flavor of the month."

CONCLUSIONS: Providers generally welcomed risk prediction in CVD prevention. However, resistance by some must be addressed, as Big Data increasingly drives more quantified medicine.

INCREASED ACCESS AND DECREASED MORTALITY THROUGH A TRANSITIONS OF CARE PROGRAM FOR RURAL VETERANS

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BACKGROUND: The transition from hospital to home is a high-risk period for patients. Rural Veterans who receive care in urban Veterans Affairs (VA) hospitals represent a particularly high-risk group prone to experiencing gaps in care around transitions, potentially resulting in higher rates of hospital utilization and adverse health outcomes. To address these issues, the rural Transitions Nurse Program (TNP), a nurse-led pre-and post-discharge care coordination intervention, was implemented at 11 VA hospitals nationally. A transitions nurse assesses discharge readiness, provides structured post-discharge communication with inpatient and outpatient medical teams, and calls the patient within 72 hours of discharge to discuss post- discharge care and confirm attendance at follow-up appointments. We evaluated whether the program increased primary care provider (PCP) visits within 14 days of discharge, reduced readmissions, emergency department (ED) visits, and mortality rates at 30 days of discharge.

METHODS: In this cohort study, Veterans who received the TNP intervention from 5/1/2017 to 3/31/2019 were propensity matched to concurrent controls (1:2) based on likelihood of being enrolled in TNP, including demographics and comorbidities. Matching was conducted at the site level; effectiveness was assessed with standardized differences. Hazard ratios (HR) were calculated for time to event outcomes (30-day rehospitalization, ED visit and death) and odds and risk ratios (OR and RR) were calculated for binary outcomes (PCP visit). Confidence intervals (CI) were obtained using bootstrapping. Tests were conducted to assess for a mediation effect of PCP visit on the time to event outcomes.

RESULTS: Our sample included 2,608 Veterans who received the TNP intervention and 5,216 matched controls. All standardized differences in propensity matched variables were <0.1. Veterans enrolled in TNP were more likely to see their PCP within 14 days of discharge (RR 1.63 [95% CI 1.54, 1.71]) and have a reduced risk of death within 30 days (HR 0.34 [95% CI 0.21, 0.57]) than matched controls. ED visits (HR 1.01 [95% CI 0.89, 1.14]) and readmission (HR 1.11 [95% CI 0.97,1.27) at 30 days were not different between Veterans enrolled in TNP and controls. PCP visits had a significant mediating effect on ED visits, but not readmissions or death.

CONCLUSIONS: Veterans that received the TNP intervention had increased access to primary care and were less likely to die within 30 days of hospitalization compared to propensity matched controls. These benefits may be attributable to the pre-discharge interactions with Veterans to assess discharge readiness with the inpatient team. This may have ensured only those ready to go home were discharged. The post-discharge follow-up call may have also influenced the risk of death due to early identification of issues, prompting referral to a PCP, ED or hospital. These findings suggest an emphasis on pre-and post-discharge care coordination interventions could enhance Veteran outcomes.

INCREASED PREVALENCE OF METABOLIC SYNDROME AMONG PATIENTS WITH GASTRIC ANTRAL VASCULAR ECTASIA IN A CIRRHOTIC COHORT

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BACKGROUND: Gastric antral vascular ectasia (GAVE) accounts for 4% of non-variceal upper gastrointestinal bleeds (UGIB), manifesting with iron deficiency anemia and a need for blood transfusions. Approximately 30% of individuals with GAVE have cirrhosis of the liver and nearly two-thirds have an autoimmune condition, however, case series are small. Non-alcoholic fatty liver disease (NAFLD) is the most common

cause of chronic liver disease in the US. One previous case-series suggests GAVE as a manifestation of metabolic syndrome, however, it is unclear how this relates to the presence of cirrhosis. We aimed to investigate whether there is an association between GAVE and metabolic syndrome in cirrhotics by using patients with esophageal variceal hemorrhage (EVH) as a control group.

METHODS: We conducted a retrospective review on 941 patients who had an esophagogastroduodenoscopy (EGD) for an UGIB. GAVE was diagnosed based on endoscopic or biopsy findings. EVH patients were included if they had active bleeding or stigmata of recent hemorrhage. Patients diagnosed with both GAVE and EVH were excluded. Primary outcome data included the prevalence of obesity, hypertension, hyperlipidemia, and type 2 diabetes among study groups. The prevalence of autoimmune disease was also analyzed.

RESULTS: We identified 96 cirrhotic patients who met inclusion criteria in the GAVE group and 104 in the EVH group. Mean BMI was significantly higher in the GAVE cohort (33 kg/m^2 vs 28 kg/m^2, p<0.0001), as was the prevalence of type 2 diabetes mellitus, hypertension and hyperlipidemia (53.1% vs 37.5%, p<0.05; 76% vs 47.1%, p<0.0001; 38.5% vs 14.4%, p=0.0001 respectively). Non-alcoholic steatohepatitis (NASH) cirrhosis was also more prevalent in cirrhotics diagnosed with GAVE compared to those with an EVH (50% vs 24%, p=0.0001). The severity of liver disease was similar between groups according to the MELD-Na score (18.3 vs 20.2, p=0.2014), the presence of ascites (77.9% vs 71.2%, p=0.2766), and hepatic encephalopathy (64.2% vs 57.7%, p=0.3468). No significant difference in the prevalence of autoimmune disease was detected between the two cohorts (26% vs 19.2%, p=0.2492), despite the GAVE group being predominantly female (54.2% vs 27.9%, p=0.0002).

CONCLUSIONS: Cirrhotic patients with GAVE have an increased prevalence of metabolic syndrome compared to a control group of individuals with cirrhosis and EVH. To our knowledge, this is the first study to identify an association between GAVE and features of metabolic syndrome in a cirrhotic population. Translational studies are needed to determine if this relationship is causative. In other words, does metabolic syndrome induce vascular endothelial changes? Increased awareness of this relationship among physicians is likely to improve the detection of GAVE within this group.

INCREASING ACCESS TO MEDICATION-ASSISTED TREATMENT AND COMPLEMENTARY AND INTEGRATIVE HEALTH THERAPIES FOR OPIOID USE DISORDER IN PRIMARY CARE

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BACKGROUND: Evidence-based therapies for opioid use disorder (OUD) and chronic pain such as medication-assisted treatment (MAT) and complementary and integrative health (CIH; e.g., acupuncture and meditation) therapies exist. However, their adoption has been slow, particularly in primary care, due to numerous implementation challenges. We sought to expand the use of MAT and CIH by using an evidence- based quality improvement (EBQI) implementation strategy. We aimed to pilot how effectively EBQI could engage primary care in facilitating MAT and CIH delivery to patients with OUD.

METHODS: We used EBQI to engage two sites from June 2018-September 2019. EBQI included top-down and bottom-up multi-level stakeholder engagement, with external facilitators providing technical support, practice facilitation, and routine data feedback. We conducted pre-implementation key stakeholder interviews (14 providers, 5 Veterans) to understand OUD, MAT and CIH experiences at baseline. We established a local QI team at each site with diverse stakeholders (e.g., primary care, pain, nursing, addiction, pharmacy), meeting virtually twice monthly. We met monthly with regional stakeholders to review formative data on our progress and discuss methods to address implementation barriers. We twice convened a national-level advisory board to ensure alignment with national priorities. We conducted exit interviews with 8 key providers to assess their experiences with the implementation pilot.

RESULTS: Pre-implementation interviews indicated facility-level and provider-level barriers to prescribing buprenorphine, including strong provider resistance. Stakeholders indicated acceptance and utilization of CIH therapies. Both sites conducted educational meetings (e.g., Grand Rounds) and educational outreach visits (i.e., X-waiver trainings). Site A also offered clinical preceptorships for newly X-waivered primary care prescribers. Site B also used mass media and mailings to educate patients about MAT and CIH options and dashboards to identify potential candidates for MAT. After fifteen months, both sites increased their OUD treatment rates to >90th percentile of VHA medical centers nationally. Exit interviews indicated an attitudinal shift in MAT delivery in primary care. Stakeholders valued the EBQI process, particularly cross-site collaboration.

CONCLUSIONS: Despite initial implementation barriers, we effectively engaged stakeholders using EBQI strategies to overcome these challenges. QI teams used an assortment of implementation strategies, ultimately transforming their facilities to among the highest performers in VHA OUD treatment. EBQI may be an effective strategy to engage stakeholders to implement MAT and CIH therapies to treat OUD.

INCREASING KNOWLEDGE AND COMFORT IN INTIMATE PARTNER VIOLENCE SCREENING AMONG INTERNAL MEDICINE INTERNS

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BACKGROUND: Intimate Partner Violence (IPV) is common and underrecognized in primary care. Routine IPV screening increases victim identification, resource utilization, and relationship departures. Despite screening guidelines, physicians do not routinely ask about IPV. This discrepancy is often due to surmountable barriers including personal discomfort, knowledge deficits, or resource unawareness. Many residency programs do not include formal IPV training or focus principally on knowledge acquisition. The objective of our study was to increase intern knowledge, comfort, and screening rates through a combined didactic and communication skills curriculum.

METHODS: The curriculum was presented to internal medicine interns during their ambulatory block. Participants completed a pre-survey of comfort, opinion, knowledge, and demographic questions. The curriculum didactic explored definitions, power-control dynamics, screening guidelines, health impacts, and documentation. During skill development, interns brainstormed word choice for framing, screening, and response with facilitator feedback. Two simulated patient cases were completed, during which interns received supportive coaching and performance feedback. Four weeks post-curriculum, residents were invited to complete a post-survey. Comfort and opinion questions were measured on a seven-

point Likert scale and analyzed using Wilcoxon signed-rank test. Knowledge-based questions were true-false and multiple choice and analyzed using McNemar's test.

RESULTS: Forty interns completed the curriculum January-October 2019. Twenty-nine interns completed both pre- and post-surveys (72% response). Interns demonstrated statistically significant increases on all measures of self-perceived knowledge and comfort. Particularly important areas of improvement included increases in self-reported compliance with guideline-based screening recommendations (mean 2.8 to 4.24), ability to identify patients eligible for screening (mean 3.52 to 5.69), comfort discussing IPV with patients (mean 3.52 to 5.3), and ability to make referrals within the community (mean 3.05 to 4.86) ($p<0.01$). Interns demonstrated high IPV knowledge prior to the curriculum but showed statistically significant improvement in recognizing IPV perpetrator characteristics and understanding high danger situations ($p<0.05$).

CONCLUSIONS: A combined didactic-communication skills curriculum significantly improved intern IPV- specific comfort and self-reported screening practices. Improvement in knowledge was also demonstrated, but likely limited by high intern knowledge pre-curriculum and question wording that suggested a most appropriate answer. Further analysis will reveal if screening and documentation increased through chart review of eligible patients. This curriculum is feasible and easily transferrable to other programs interested in increasing resident comfort with IPV screening through skill development.

INFLAMMATORY BIOMARKER SRAGE IS ASSOCIATED WITH LIVER INJURY AND FIBROSIS IN ATHEROSCLEROSIS RISK IN COMMUNITIES (ARIC) STUDY PARTICIPANTS

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BACKGROUND: Nonalcoholic fatty liver disease (NAFLD) is the most common chronic liver disease in the United States. Inflammatory pathways are key in the development of NAFLD though the precise mechanisms that drive disease progression remain poorly understood. sRAGE is a biomarker that attenuates inflammatory pathway activation. Hence, low levels of sRAGE are correlated with increased inflammation. We sought to describe associations between sRAGE and NAFLD in a large community-based cohort.

METHODS: We conducted a cross-sectional analysis of a subset of 2553 ARIC participants at study visit 2 (1990-2). The exposure was sRAGE (analyzed by quartiles comparing the lowest vs. other quartiles); the outcome was NAFLD as determined by elevated ALT, AST or fibrosis score (FIB-4 index). We defined ALT and AST elevation as levels above the 95th percentile based on gender-specific distributions in normal weight nondiabetic subjects (ALT ≥31 U/L F, ≥32 U/L M; AST ≥33 U/L F and M). FIB-4 elevation was defined as an index ≥1.30. We used multivariable logistic regression (MLR) models to assess cross-sectional associations between sRAGE and NAFLD. We then investigated the association between sRAGE and development of NAFLD between baseline (visit 2) and 6-year follow up (visit 4) using MLR.

RESULTS: In cross-sectional analyses (n=2317, mean age 58 years, 58% female, 78% white), persons in the lowest quartile of sRAGE had significantly higher odds of elevated ALT vs. other quartiles (OR 1.66; 95% CI 1.09-2.55) but not elevated AST (OR 0.86; 95% CI 0.54-1.36). Odds of elevated FIB-4 were reduced in the lowest vs. other quartiles of sRAGE (OR 0.70; 95% CI 0.58-0.87). In the prospective analyses, there were no associations between low sRAGE and any outcome measure. However, we did find a dose response relationship between increasing quartiles of sRAGE and incident elevated FIB-4 index (p-for-trend <0.01).

CONCLUSIONS: We found an inverse relationship between sRAGE and liver inflammation (high ALT) in a cross-sectional study of ARIC participants. This is consistent with prior studies linking low sRAGE to inflammatory disease states. Surprisingly, we found a direct association between sRAGE and high FIB-4 possibly due to changes in the balance of inflammatory and prosclerotic pathways in liver fibrosis. Our findings suggest that sRAGE is dynamic in NAFLD and patterns may vary with severity of disease. Since this pathway is highly targetable, sRAGE may be relevant in the development of novel agents for NAFLD – a disease for which there are no FDA-approved therapies.

INFLUENCE OF GENDER ON LEARNER ASSESSMENT (INGLASS) IN GRADUATE MEDICAL EDUCATION: MULTI-SITE STUDY OF ROLE OF FACULTY GENDER IN RESIDENT ASSESSMENT

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BACKGROUND: The role of faculty gender in gender-based differences in assessment remains unclear. This study aims to assess the influence of faculty gender on gender-based differences in resident assessment in Internal Medicine (IM) residency training.

METHODS: We conducted a retrospective, cross-sectional study at six US IM residency programs of faculty assessments of residents during medicine inpatient rotations from July 2016 to June 2017 using a competency-based assessment framework. Data included 3,600 evaluations by 605 faculty (48% female) for 703 IM residents (45% female). We calculated standardized scores based on rating distribution for the core competencies and milestones per site. We examined interaction of faculty gender, resident gender, and PGY on standardized scores, adjusting for site, time of year, IM ITE percentile rank and faculty rank and specialty.

RESULTS: There were no significant differences in male and female PG1 scores with male and female faculty. With male faculty, there was no significant difference in scores of male and female residents in PGY2 but in PGY3, male faculty rated male residents higher than female residents in all competencies, reaching statistical significance medical knowledge and practice-based learning and improvement. Female faculty rated female PGY2 residents significantly higher than male residents in all competencies except medical knowledge. Female faculty rated male PGY3 residents higher than female residents in all competencies, reaching statistical significance in patient care. While female residents' scores significantly increased in all competencies from PGY1 to PGY2 with both male and female faculty ($p=0.04$ to $p<0.001$), there was no significant change in female residents' scores from PGY2 to PGY3 with either male or female faculty. Male residents' scores significantly increased in all competencies from PGY1 to PGY2 with male faculty ($p=0.04$ to $p<0.001$). Male residents' scores from female faculty significantly increased from PGY2 to PGY3 in all competencies ($p<0.001$) and in four of six competencies with male faculty ($p\leq0.04$). The interaction of resident gender, PGY, and faculty gender was significant in the Patient Care competency ($p=0.04$).

CONCLUSIONS: This is the first study to report faculty gender as a notable factor in gender-based differences in resident assessment. We found that both male and female faculty contribute to the gender-based differences in female residents' scores, specifically the "peak and plateau"

pattern whereby female residents' scores peaked in PGY2 and failed to improve in PGY3. We also noted a trend whereby female faculty rated PGY2 male residents lower than female residents but this reversed in PGY3. Reasons for this are unclear. Evidence suggests male learners may overestimate confidence compared to female peers and traditional male gender role reinforces stoicism, independence, and reluctance to seek help. Future work in implicit gender bias should look into the role of faculty gender.

INFLUENCE OF GENDER ON LEARNER ASSESSMENT (INGLASS) IN GRADUATE MEDICAL EDUCATION: MULTI-SITE STUDY OF ROLE OF RESIDENT GENDER IN ASSESSMENT

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BACKGROUND: Competency-based education relies on valid assessment and bias is a potential threat to the integrity of resident assessment. This study aims to assess the influence of resident gender on resident assessment in Internal Medicine (IM) residency training.

METHODS: We conducted a retrospective, cross-sectional study at six US IM residency programs of faculty assessments of residents during general ward rotations from July 2016 to June 2017 using a competency-based assessment framework. Data included 3,600 evaluations by 605 faculty (48% female) for 703 IM residents (45% female). We calculated standardized scores based on rating distribution for the ACGME's core competencies and IM Milestones at each site and used standardized scores in aggregate for analysis. We examined interaction of gender and post-graduate year (PGY) on standardized scores, adjusting for site, time of year, IM In-Training Exam percentile rank and faculty rank and specialty.

RESULTS: Resident gender significantly influenced assessment scores as residents progressed through training. There was no significant difference in standardized scores for male and female PGY1 residents in across the core competencies. PGY2 female residents outscored male peers in all competencies, reaching statistical significance in Patient Care, Systems-Based Practice, Professionalism and Interpersonal and Communication Skills. Male PGY3 residents significantly outscored female residents in all six competencies, reaching statistical significance in all competences except Interpersonal and Communication Skills. Scores of male and female residents increased from PGY1 to PGY2 in all competencies. While male residents' scores significantly increased in all competencies from PGY2 to PGY3 ($p<0.01$), there was no significant change in female residents' scores from PGY2 to PGY3. The interaction between resident gender and PGY was significant in the six competencies ($p=0.02$ to $p<0.001$) and 12 of 20 reporting Milestones assessed in our study ($p<0.05$).

CONCLUSIONS: This is the first multisite study of implicit gender bias in IM resident assessment using a competency-based framework. We found that resident gender was a significant factor influencing resident assessment and gender-based differences in assessment linked to time in training. A "peak and plateau" pattern was noted whereby female residents' scores peaked in PGY2 and failed to improve in PGY3. Seen in all competencies for female residents, it contrasted to the positive trajectory of male residents' scores. This may represent a "glass ceiling" phenomena or invisible obstacle affecting female residents later in training that limits advancement in the assessment trajectory.

IN HOSPITAL OUTCOMES FOR FAMILY MEDICINE VS. INTERNAL MEDICINE: A COMPARATIVE PROSPECTIVE COHORT STUDY

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BACKGROUND: There is lack of studies comparing hospitalization and post-hospitalization outcomes between internal medicine hospitalists and family medicine hospitalist. In this prospective cohort study, we compare length of stay, cost of hospitalization, 30-day all cause readmission and 30-day mortality in hospitalized patients treated by family medicine versus internal medicine hospitalists services at a single institution.

METHODS: We conducted a classical prospective cohort study. Consecutive patients were recruited dynamically between 2/25/2019 -4/30/2019. Patients included were ≥18 years admitted to IM services for any reason. Excluded patients who did not consent and patients admitted to academic services. We collected following data: age, sex, ethnicity, assistance at home, food security most the year, residence prior to admission, type of insurance, admission diagnosis (16 categories) and co-morbidities (17 categories).

Length of stay, hospital cost, 30-day all cause readmission and 30-day mortality were outcomes of interest. Treatment arms were compared by 2 methods. We compared patients who were seen by family medicine exclusively with patients treated exclusively by internal medicine services during admission. Propensity score was used to balance baseline characteristics between comparative arms. Baseline characteristics were compared using parametric and non-parametric analysis. Difference in length of stay and hospital cost was estimated by multivariable linear regression adjusted to co-variates. Differences in 30-day readmission and 30-day mortality were estimated by multivariable cox proportional hazard regression. In another method, exposure to family medicine and internal medicine was converted to a continuous independent variable (i.e. family medicine percentage). Outcomes were estimated using regression models using family medicine percentage and other covariates.

RESULTS: A total of 747 patients were included in the study with a mean age of 60.5 ± 19 years. Forty, 333 and 374 patients were seen by family medicine, internal medicine and a combination of both services, respectively. Using average treatment on the treated as an estimand, family medicine care provided a shorter adjusted hospital stay by 0.5 days (CI: -0.92- -0.04, p-value=0.026) compared to internal medicine. Adjusted 30-day readmission hazard ratio was 2.2 higher in family medicine (CI: 1.05-4.72, p-value=0.037). No difference was seen in adjusted cost of hospitalization or adjusted cost of hospitalization. Multiple regression models of complete cohort (n=747) did not show any difference in outcomes with increased exposure to family medicine care.

CONCLUSIONS: Compared to internal medicine hospitalist, family medicine hospitalists provide shorter stay with no cost saving, this translated into increased .hospital bed availability. However, 30-day all cause readmission was 2 times higher, this has important economic implications

INITIATION OF LONG-ACTING OPIOIDS FOLLOWING HOSPITAL DISCHARGE AMONG OPIOID-NAïVE PATIENTS

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BACKGROUND: Opioids with a longer duration of effect ("long-acting opioids") are associated with risk of overdose and morbidity compared to short-acting opioids even at equivalent dosing. Guidelines recommend against initiating long-acting opioids during hospitalization. We evaluated prescription of long- acting opioids following hospitalization among opioid-naïve older adults.

METHODS: We used a random sample of fee-for-service Medicare beneficiaries in 2016 who were ≥65 years old, did not have cancer or hospice claims, and had not filled an opioid prescription in the 30d prior to hospitalization. We used multivariable logistic regression to identify characteristics associated with prescription of ≥1 long-acting opioid within 7d of hospital discharge compared to those prescribed only short-acting opioids. Predictors included sociodemographics, chronic conditions and medication claims, markers of medical complexity and functional status, indication for hospitalization, and prior opioid use.

RESULTS: There were 282,369 hospitalizations in our cohort; 200,647 (71.1%) were medical and 81,722 (28.9%) were surgical. 57,156 (20.2%) had a claim for short-acting opioids only and 1,555 (0.6%) for ≥1 long-acting opioid. Compared to patients with a claim for short-acting opioids only, patients with a claim for a long-acting opioid were younger (aOR varied by age) and more likely have certain painful diagnoses/procedures (musculoskeletal injury aOR 1.6, 95% CI 1.4-1.8; spine surgery aOR 3.0, 95% CI 2.3-4.0; arthroplasty aOR 7.1, 95% CI 5.8-8.7), to have had ≥2 prior hospitalizations (aOR 1.4, 1.1-1.7), and been hospitalized for >7d (aOR 1.5, 1.2-1.8). Although patients with a medical DRG were more likely than those with a surgical DRG to have a long-acting opioid claim (aOR 3.8, 3.1-4.7), the majority of patients with a claim for a long-acting opioid had a surgical (989; 63.6%) rather than medical DRG (566; 36.4%). Patients prescribed long-acting opioids were more likely to have opioid use disorder (aOR 2.6, 2.1-3.3) and a concurrent post-discharge claim for benzodiazepines (aOR 1.4, 1.2-1.8). Prior long-term high-dose opioid use had the strongest association with a long-acting opioid claim (aOR 26.7, 20.8-34.1); after excluding such patients (880), the incidence of long-acting opioid prescription (1,376; 0.5%) and associated characteristics were similar.

CONCLUSIONS: The majority of opioid-naïve individuals discharged with long-acting opioids after acute hospitalization are surgical patients, which is particularly concerning as post-operative pain is typically acute and self-limited. Moreover, patients started on long-acting opioids at discharge had higher incidence of known risk factors for opioid-related adverse events, including co-prescription of benzodiazepines, history of prior long-term high-dose opioid use, and opioid use disorder, highlighting the necessity to develop systems- based solutions to improve guideline-concordant prescribing of long-acting opioids.

INPATIENT MANAGEMENT OF CANCER PATIENTS WITH FEBRILE NEUTROPENIA: GUIDELINE CONCORDANT OR INADEQUATE?

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BACKGROUND: The American Society of Clinical Oncology (ASCO) and Infectious Disease Society of America (IDSA) recommend risk stratification of cancer patients on chemotherapy presenting with febrile neutropenia (FN) and timely administration of appropriate empiric antibiotics. We studied the primary outcome of guideline-concordant risk stratification and antibiotic administration, and patient outcomes in FN patients. The secondary outcome was to assess the predictive capacity of the MASCC (Multinational Association of Supportive Care in Cancer) scoring system in identifying patients with high risk.

METHODS: We conducted a retrospective chart review of 154 hospitalized FN patients from the year 2013 to 2019 in 4 community hospitals. Inclusion criteria were adult patients (>/= 18 years), Internal Medicine service, cancer diagnosis, neutropenia (Absolute neutrophil count(ANC) <1000 cells/uL) & fever (temperature >100.4F sustained over 1 hour period or one-time temperature of >/=101 F). We assessed the adherence of our clinicians to the ASCO/ IDSA guidelines. Statistical analysis was performed to determine the predictive capacity of the MASCC scoring system in identifying high-risk patients.

RESULTS: Out of 154, 1 patient (0.64%) had risk stratification with the MASCC score. We calculated the MASCC score for all patients. 95 were classified as low risk (score >/=21) and 59 were high risk (score <21). The first dose of empiric antibiotics was given within 30 minutes of triage in 3 patients (1.95%), between 30minutes to 3 hours in 125 (81.16%), and more than 3hours in 26 (16.88%). 136 (88.31%) patients did receive antipseudomonal coverage. 132 patients had one or more indications for vancomycin use, out of which 117 received vancomycin. 120 (77.92%) patients recovered (77 in low risk and 43 in high-risk group). 26 (16.88%) patients had one or more of the following complications - a level of care upgrade, bacteremia, fungemia, resistant microbial strains in cultures, clostridioides difficile infection, death. A two-sample t-test demonstrated that the mean MASCC score among patients with high-risk parameters on admission was significantly lower than those without (Mean=19.74 vs. 24.80, p<0.0001). For every one-unit increase in the MASCC score, the odds of having high-risk parameters is decreased by 47.5% (odd's ratio OR=0.535, 95% CI=0.373-0.769).

CONCLUSIONS: Our study revealed a good predictive capacity of the MASCC scoring system in identifying the high-risk patients. The use of MASCC, however, remained underused among the clinicians in our community hospitals. The majority of patients did receive IDSA guideline-concordant anti-pseudomonal and vancomycin coverage. However, the timing of antibiotic administration was delayed more than 3 hours in a significant number of patients. Future steps to ensure patient risk stratification, triage and prompt administration of empiric antibiotics can potentially improve patient outcomes and bridge the gap between treatment recommendations and actual practice.

INPATIENT PATIENT SAFETY EVENTS IN VULNERABLE POPULATIONS: A RETROSPECTIVE COHORT STUDY

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BACKGROUND: Patient safety events are an important cause of morbidity and mortality, and vulnerable populations may be at increased risk. Limited prior research has examined the extent to which patient race/ethnicity, English proficiency, or socioeconomic status puts them at higher risk for inpatient patient safety events.

METHODS: We conducted a single center retrospective cohort study of inpatient non-ICU admissions of those ≥ 18 years from January 1, 2014 to

December 31, 2018. We excluded those with a length of stay (LOS) > 15 days or a prior admission within 30 days. The primary exposures of interest were self-identified race/ethnicity (white, African-American, Latino, Asian, and other/unknown), Medicaid insurance /self-pay, and limited English proficiency (LEP), which we identified when patients chose a preferred language other than English at registration. Our primary outcome of interest was any patient safety event, which we defined as any event identified by a modified version of the IHI global trigger tool that uses laboratory and pharmacy data to automatically identify patient safety events ("automated") or by the hospital-wide voluntary provider reporting system ("non-automated"). We also examined each category of events in stratified analyses. We performed bivariate analyses using chi-square and Mann-Whitney tests. To estimate adjusted results, we used negative binomial regression adjusting for demographic factors, primary diagnosis, inpatient service, comorbidities, LOS, and year.

RESULTS: We studied 123,887 hospital stays, of which 8.2% (10,200) had any patient safety event. There were 3063 automated patient safety events (2.5% of admissions) and 7992 non-automated patient safety events (6.5%). In adjusted analyses, there was no increased incidence of any patient safety event among those with Medicaid/self-pay, among those of different race/ethnicities, nor among those with LEP. By contrast, in stratified analyses, African-Americans and Latinos were at increased risk for an automated patient safety event compared to whites (IRR 1.11, 95% CI 1.00, 1.23; IRR 1.22 95% CI 1.00, 1.43) but not non-automated events. Medicaid was associated with increased risk for only non-automated events (IRR 1.08, 95% CI 1.00, 1.16). There was no significant difference in risk by LEP for automated or non-automated patient safety events (IRR 0.96, 95% CI 0.84, 1.13; IRR 0.93, 95% CI 0.86, 1.02).

CONCLUSIONS: In this single institution study, we found no difference in overall risk for patient safety events by insurance, race/ethnicity, or LEP. Medicaid insurance was associated with increased risk for non-automated events suggesting the importance of socioeconomic status in patient safety. Race was a risk factor for automated events but not reported events, possibly due to underreporting. Those with LEP do not appear to be at increased risk for events, but it is unclear if this represents a true null risk or lower rates of reporting for this population.

INTEGRATING STEADI FALLS PREVENTION PROGRAM INTO A BUSY ACADEMIC PRACTICE

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BACKGROUND: In 2016, US residents over age 65 totaled almost 50 million, an increase of over 40% since 2000. Approximately one-third of community-residing adults age 65+, and one-half over 80 fall annually. Falls are dangerous, and fall-related mortality has increased over 30% just between 2007 to 2016. Many falls are preventable, and the Centers for Disease Control and Prevention (CDC) has outlined an evidenced based screening tool, Stopping Elderly Accidents, Deaths & Injuries (STEADI) but penetration into routine clinical practice has been slow.

METHODS: A modified evidenced based screening tool was integrated into a busy academic primary care practice between June and October 2019. Waiting-room materials were created highlighting fall-risk, allowing individual self-selection to screen via a modified STEADI questionnaire, shown to identify 95% of high risk individuals, and uniquely numbered. If positive, further discussion with a provider was implored. Booklets with evidenced-based CDC and community resources, including free and low cost fall prevention exercise programs were generated incase a provider had no time to discuss fall-prevention strategies or the patient was interested in more information, and made available in exam-rooms. Disseminated materials were tallied, and Epic Slicer-Dicer reports were used to compare difference-in-differences of the impact from the same period the year before, and against other clinics within the same academic integration system for ICD-10 codes determined a priori for falls-based screening. These codes were used in a study integrating STEADI; however providers were not told to change their practice or code in any particular way. Generalized linear modeling (SAS 9.4 GENMOD) was utilized to determine significance. No clinical staff were asked to do anything except collect the completed waiting room screens.

RESULTS: In three months, 255 questionnaires were taken; 5 (2%) were returned by for later review. 110 booklets for falls prevention information were removed from exam rooms. Including the same three months from the year before (6 months total), there were 43,284 clinical encounters at all sites for individuals 65+, with an average falls-related ICD-10 coding of 11%. Comparing the clinic with the falls screening program to other clinics within the integrated system, and against the year before, the absolute differential in coding was 0.7% (clinic of interest difference of 0.6%, vs. other clinics -0.14%). Modeling difference-in-differences showed a 4.7% increase in screening-related ICD-10 codes, which was statistically significant (P=<.0001). There was no reported disruption to clinic workflows.

CONCLUSIONS: Selective screening in an academic practice resulted in an increase in falls-related ICD-10 coding. Few screening questionnaires were returned limiting chart review opportunity. Information with evidenced-based falls-prevention strategies, and community-based resources were disseminated. Clinical integration of this program was well received.

INTENSIFICATION OF OLDER ADULTS' DIABETES MEDICATIONS AT HOSPITAL DISCHARGE LEADS TO INCREASED HYPOGLYCEMIA VISITS WITHOUT LONG TERM BENEFIT

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BACKGROUND: Transient elevations of blood glucose are common in hospitalized older adults and may lead clinicians to discharge patients on intensified diabetes medication regimens even when diabetes is not the primary reason for hospitalization. This practice may expose patients to risks of overtreatment and hypoglycemia, particularly those whose diabetes was previously at goal, however the clinical outcomes are unknown.

METHODS: We used national VA and Medicare data to examine veterans age >65 years with diabetes not previously taking insulin who were hospitalized in a VA in 2011-2013 for common medical conditions. Using propensity score matching based on >120 demographic and clinical variables, patients discharged on intensified diabetes medications were compared to those who were not. Competing risk regressions were used to assess co-primary outcomes of severe hyperglycemia and hypoglycemia events (ED visit or hospitalization) at one year. Secondary outcomes included hypoglycemia visits (clinic visit, ED visit, or hospitalization), all-cause readmissions and change in hemoglobin A1c within 1 year of discharge which was assessed using difference-in-differences analyses.

RESULTS: The matched cohort included 3194 patients (mean [SD] age 73 [7] years; 98% male) evenly divided among those who did vs did not receive diabetes medication intensifications with excellent covariate balance (standardized mean differences for all covariates <0.1). Mean (SD) pre-admission hemoglobin A1c was 7.9% (1.6%). At 1 year, patients receiving intensifications had no significant difference in severe hyperglycemia events (hazard ratio (HR) 0.54; 95% CI, 0.28 to 1.03), severe hypoglycemia events (HR 1.23; 95% CI, 0.87 to 1.74), or all-cause readmissions (HR 1.00; 95% CI, 0.91 to 1.10), but did have an increased

risk of overall hypoglycemia visits (HR 1.30; 95% CI, 1.01 to 1.69). There was no difference in change in hemoglobin A1c among those who did vs did not receive intensifications [mean A1c 7.7% vs 7.8%, difference-in-differences -0.1% (-0.3% to 0.1%)].

CONCLUSIONS: Among hospitalized older veterans, those discharged on intensified diabetes medications had no difference in severe hyperglycemia events, severe hypoglycemia events, or hemoglobin A1c control at one year but had an increased risk of hypoglycemia encounters. Our findings indicate that intensifying diabetes regimens at hospital discharge may pose greater risks than benefits and should be reserved for only patients at high short-term risk of severe hyperglycemia.

INTENSIFYING OFFICE-BASED BUPRENORPHINE TREATMENT THROUGH GROUP MEDICAL VISITS

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BACKGROUND: Little evidence exists to guide primary care physicians (PCPs) when their patients continue to use illicit opioids during office-based buprenorphine treatment. Group medical visits allow health care teams to provide group counseling and medical management to multiple patients simultaneously, which may increase psychosocial support and improve treatment outcomes. Observational data regarding group medical visits are promising, but more rigorous evaluation is necessary. Our objective was to pilot test feasibility, acceptability and preliminary effectiveness of group medical visits in primary care for patients with ongoing illicit opioid use.

METHODS: We conducted a pragmatic randomized controlled trial of a novel 8-session buprenorphine group medical visit (GMV) intervention. Patients at an urban community health center were eligible if non- prescribed opioids were present in ≥50% of their urine drug tests after 12 weeks of buprenorphine treatment. We developed a novel intervention manual based on focus groups with buprenorphine patients and an evidence-based cognitive behavioral therapy manual. Participants in the GMV condition received 8 weekly 90-minute group sessions facilitated by a physician and psychologist along with prescriptions for buprenorphine-naloxone (bup-nx). Participants in the treatment as usual (TAU) condition received bup-nx prescriptions from their PCPs. Outcomes were assessed at 2, 4, 6, 8, 12, 16, and 24 weeks following study initiation. *Feasibility* was determined by GMV attendance. *Acceptability* was determined by patient satisfaction (17 items addressed perceived quality of care and helpfulness of different treatment components; 5-point Likert scale: 1 = very unsatisfied; 5 = very satisfied). The primary *effectiveness* outcome was abstinence from illicit opioids at the 8 and 12 week visits based on self-report and urine drug testing. A secondary outcome was *retention in treatment* at 24 weeks, defined as having an active bup-nx prescription 20-28 weeks after study enrollment.

RESULTS: Of 19 participants, most were male, Latinx, and median age was 52. Patient satisfaction was high in both arms (mean = 4.72 out of 5, 95% CI = 4.55 – 4.87) with no significant difference. The 10 GMV participants attended an average of 4.5 of 8 visits with 3 participants attending 1 or no visits. Abstinence was low (0% in GMV vs. 11% in TAU) with no significant difference. Retention in treatment at 24 weeks was high (70% in GMV vs. 77% in TAU) with no significant difference.

CONCLUSIONS: An office-based 8-session buprenorphine group medical visit intervention was feasible and acceptable to participants. Though few participants achieved abstinence from illicit opioid use during the intervention, the higher intensity group medical visits did allow for delivery of group counseling and psychosocial support without harming treatment retention. Next, we will study GMVs over a longer intervention period with broader treatment outcomes (e.g., quality of life) in a fully powered RCT.

INTENSITY OF BLOOD PRESSURE DRUG DOSING FOR HYPERTENSION TREATMENT IN VETERANS

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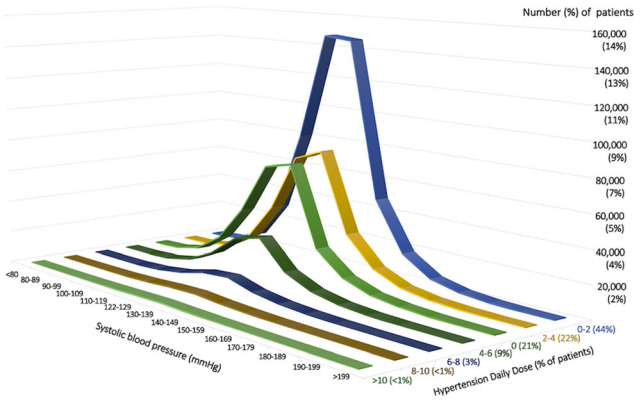
BACKGROUND: Hypertension affects >80% of older Americans. To date, healthcare systems have focused mostly on blood pressure (BP). However, we lack understanding of the intensity of BP drugs prescribed to achieve varying levels of BP control. For older patients, multiple drugs and high doses may have adverse consequences. Therefore, we developed a method to capture the intensity of BP drugs dispensed by healthcare systems to older outpatients. This measure captures multiple BP drug classes and is standardized meaningfully to doses tested in clinical trials. In this study, we applied the method to the national VA healthcare system and described the resulting BP control achieved in older Veterans.

METHODS: We included patients aged ≥65 years with hypertension (ICD-9 401.x) and VA primary care (07/2011- 06/2013), excluding managed care enrollees. We linked VA pharmacy with Medicare Part D fills. A patient was on a BP drug based on fills within 180 days of primary care visits. We adjusted the dose downward for delayed refills. Doses were converted to Hypertension Daily Dose (HDD) units. For each BP drug, one HDD unit is the closest available dose to half the maximum beneficial dose demonstrated in trials. We aggregated the HDDs for each patient's BP regimen. For example, a patient on lisinopril 20mg (1 HDD, or half maximal dose of 40mg) and hydrochlorothiazide 25mg (1 HDD, or half maximal dose of 50mg) was assigned a total of 2 HDDs. For each patient, the BP and drugs were measured on the last primary care visit of the first available quarter of 2011-2013. The BP was the average of that visit plus the prior 2 primary care BPs within 6 months.

RESULTS: In 1,113,549 patients, most (82%) had systolic BP (SBP) <140mmHg (Figure). More than half of patients (59%) had SBP 120-139mmHg, while 22% had SBP <120mmHg and 6.7% ≥150mmHg. The majority (44%) received up to 2 HDDs (corresponding to the maximal dose of a single BP drug), followed by 2-4 HDDs (22%). One-fifth (21%) didn't fill any drug, despite SBP ≥150mmHg in 1.4% of all patients. One percent filled BP drugs despite SBP <100 mmHg.

CONCLUSIONS: Most outpatient older Veterans met BP targets by filling modest intensity BP drug regimens. A small proportion of patients were receiving BP drugs despite very low SBP.



INTENSIVE MEDITATION FOR MIGRAINES: EFFECTS OF VIPASSANA MEDITATION AT ONE YEAR

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BACKGROUND: Many who suffer from migraines do not respond to prophylactic medication or do not tolerate side effects. Systematic reviews of preventive agents document reductions of 0.4 to 1.5 headaches per month in episodic migraine, above the reduction of about 1 per month seen with placebo. Since only 20-40% of patients are classified as treatment responders (reduction > 50%), there remains a significant unmet need. Behavioral approaches are recommended for the treatment of migraine, as stress and pain catastrophizing can contribute to both frequency and severity of headaches. Vipassana meditation is taught at a silent 10 day retreat and remains one of the most intensive forms of standardized meditation training in the world. A focus of the training is how to reduce one's tendency to react to stimuli. Due to the nature of the training, we hypothesized that Vipassana meditation would reduce migraine frequency and severity and improve quality of life.

METHODS: Prospective interventional study including patients with both Chronic Daily Headache (CDH; > 15 headaches days/ month of which > 8 were migraines) and Episodic Migraine (EM; > 4 migraines/ month). Patients completed at least 1 month of electronic daily headache diaries prior to the meditation retreat and then for 12 months following the retreat. They also completed surveys at baseline, 3, 6, 12 months assessing catastrophizing, stress, and quality of life.

Patients naive to Vipassana meditation were recruited from local headache/neurology clinics and community/web advertisements. Exclusion criteria included anything that may interfere with ability to participate in a 10 day course. Participants continued to use their prophylactic or acute medications throughout the study.

Generalized estimating equations evaluated the impact of the retreat on headache and migraine frequency, headache intensity and duration, medication use, and days of work missed due to headaches.

RESULTS: 300 were screened and 58 attended the retreat. 36 CDH and 9 EM completed the retreat (78%). Among completers, at 12 months, migraine frequency was reduced by 2.7 per 28 days (95%CI -4.3, -1.3) and headaches by 3.4 per 28 days (-4.9, -1.9) relative to baseline. 29% reported a 50% reduction in headache frequency. Acute medication use dropped by 2.2 days (-3.9, -0.5) per 28 days. Migraine specific quality of life, pain catastrophizing and perceived stress all improved significantly from baseline. One adverse event occurred.

CONCLUSIONS: While it is not possible to conclude if the reductions in reported headaches are due to expectation effects, for patients and clinicians the important results may be that the absolute reductions and 50% responder rates are still similar to what patients would achieve using popular medications. Training in a 10 day Vipassana meditation retreat may supplement pharmacotherapy to reduce the burden of chronic or episodic migraines for those who find this intervention an acceptable approach.

INTERNAL MEDICINE PROVIDERS' COLORECTAL CANCER SCREENING RECOMMENDATIONS AND PRACTICES

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BACKGROUND: Despite well-established effectiveness of colorectal cancer (CRC) screening in its prevention and early detection, only two thirds of eligible adults undergo screening in the United States. Unfortunately, CRC continues to cause significant morbidity and mortality as the third-leading cause of cancer-related deaths despite the ability to detect it early. A physician's recommendation is the greatest predictor of successful completion of preventive care. This study assessed the beliefs of providers in an internal medicine clinic at the University of Florida (UF) about the effectiveness of CRC screening, their recommendations for screening, and how they conduct CRC screening in their clinical practices.

METHODS: An anonymous, 34 item, questionnaire was administered to forty-five practicing providers at the clinic.

RESULTS: Twenty-nine (64.4%) responded, representing 10 (100%) faculty, 4 (100%) nurse practitioners, and 15 (46.9%) internal medicine residents. All respondents strongly agreed that CRC screening is very important, 18 (62.1%) strongly agreed that colonoscopy is the best screening test, and 10 (24.4%) strongly agreed that colonoscopy is readily available to their patients.

Colonoscopy and fecal immunochemical testing (FIT) were the two most common modalities recommended for screening, with every participant reporting use at least some of the time. While 22 participants (75.7%) reported never ordering flexible sigmoidoscopy and 19 (65.5%) did not use fecal occult blood testing (FOBT) or stool DNA testing for screening, four participants (13.8%) reported screening by a single FOBT/FIT from a rectal exam in the office.

Fifteen providers (51.7%) reported recommending only one specific test for screening, with 100% typically recommending a colonoscopy first and a FIT, only if the patient is unwilling or unable to undergo colonoscopy. All 14 participants (48.3%) who reported discussing more than one screening test, included both FIT and colonoscopy in the discussion. Four (13.8%) also reported discussing stool DNA testing and 2 (6.9%) CT colonography.

The most frequently cited barriers to CRC screening were lack of enough time to discuss screening with patients and difficulty of the bowel preparation required for colonoscopy.

CONCLUSIONS: Awareness of CRC screening among primary care providers in this study was high.

However, knowledge gaps about CRC recommendations, including modalities for screening, were evident. Targeted educational programs and consistency in practice patterns are being developed.

INTERNAL MEDICINE RESIDENT KNOWLEDGE, ATTITUDES, AND PRESCRIBING PRACTICES RELATED TO HIV PRE-EXPOSURE PROPHYLAXIS (PREP)

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BACKGROUND: Clinical trials show that HIV Pre-exposure Prophylaxis (PrEP) is an effective tool in reducing HIV transmission among high-risk populations. In June 2019, the US Preventive Services Task Force gave PrEP an "A" grade (high certainty that the net benefit is substantial) in individuals at high risk of HIV acquisition. Nevertheless, providers often are not comfortable prescribing PrEP in part due to a lack of knowledge about current prescribing guidelines.

METHODS: We gave an anonymous survey to 67 PGY-1 and PGY-3 internal medicine residents at a large, urban academic medical center before and immediately after a 30-minute lecture about PrEP. The endpoints assessed were 1) knowledge about PrEP, 2) attitudes toward PrEP, and 3) PrEP prescribing practices. We administered an identical survey six months after the initial lecture to assess retention of knowledge and changes in residents' PrEP prescribing habits.

RESULTS: 67 of 67 (100%) residents at the lecture took the pre-lecture survey while 66 of 67 (99%) residents completed the survey immediately after the lecture. The quiz scores measuring PrEP knowledge before and immediately after the lecture were 46% and 81%, respectively ($p < 0.001$). Before the lecture, 22 of 67 (33%) of residents were extremely likely to prescribe PrEP to high risk patients compared to 38 of 66 (58%) of residents immediately following the lecture ($p=0.001$). Prior to the lecture, 54 of 67 (81%) of residents felt that knowledge about PrEP was a barrier to prescribing the drug in at-risk patients; however, immediately after the lecture, 38 of 66 (58%) of residents felt that knowledge was a barrier ($p=0.007$).

34 of 67 (51%) of the original respondents participated in the follow-up survey at six months. Quiz scores reflecting PrEP knowledge before and six months after the lecture were 46% and 58%, respectively ($p=0.002$). Before the quiz, 25 of 67 (38%) residents reported managing patients already on PrEP, but in the follow up period, 23 of 34 (68%) residents reported managing patients already on PrEP ($p=0.009$). There was no difference in the number of residents who reported initiating patients on PrEP nor having a discussion with them about using PrEP as an HIV prevention tool.

CONCLUSIONS: An educational intervention about PrEP to internal medicine residents improves knowledge of guideline-based prescribing practices; this knowledge appears to be retained six months after the initial lecture. Residents were more likely to report managing patients already on PrEP six months after the educational intervention. Collectively, these data suggest a greater fluency and comfort with PrEP following the educational intervention. However, follow up surveys at six months did not demonstrate that residents were initiating therapy in PrEP-naive patients nor counseling them on the benefits of PrEP as an HIV prevention tool. These events may not have been captured due to the short interval follow up or the low frequency of clinical opportunity to prescribe PrEP in our practice.

INTERNET CLAIMS ON THE HEALTH BENEFITS OF CANNABIS USE

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BACKGROUND: As cannabis is legalized in the United States, people are likely turning to the internet for information about its potential health benefits. In this study, we characterize internet claims about the health benefits of cannabis use in the lay press and evaluate the evidence base supporting claims.

METHODS: We performed a cross-sectional study of a sample of internet claims regarding the health benefits of cannabis use. We extracted information on claims from two different sources on June 15, 2019: (1) We searched Google for "marijuana benefits," "weed benefits," and "marijuana health." Our sample includes the top ten lay webpages from each Google search. Internet links to the scientific literature were not included as the focus of this analysis was to characterize information available in the lay press. (2) We searched Buzzsumo, a social media analyzer tool that calculates online engagement with news articles, which measures an article's engagement by its number of likes, shares, and comments on social media sites. We used the terms: "marijuana benefits OR cannabis benefits OR weed benefits," and "marijuana health," restricting our search to articles published in the previous two years. We excluded articles irrelevant to cannabis use, and only included high-impact articles (over 10,000 engagements) because they had the most reach with an online audience. Two reviewers independently reviewed webpages and articles to extract and categorize claims about the health benefits of cannabis use. Two experts (SK, DK) reviewed the literature to determine the validity of each claim based on available trial evidence. Disagreements were resolved by discussion. The evidence was categorized as not true, partly true, true, and unable to assess.

RESULTS: We found 467 individual claims regarding the health benefits of cannabis use and defined 81 categories. Of the 81 claim categories in our sample, we identified 80.2% as not true, 8.6% as partly true, and 4.9% as true based on trial evidence; 6.2% were unable to be assessed. Among the 10 most common claims, not true claims related to the efficacy of cannabis for general pain, cancer, anxiety, post-traumatic stress disorder, neuroprotection, and Alzheimer's disease. The remainder of claims among the 10 most common were true (related to chemotherapy-induced nausea/vomiting and to spasticity from multiple sclerosis) and partly true (related to seizures and sleep).

CONCLUSIONS: Most internet claims about the health benefits of cannabis use are not true based on available evidence. More clinical trials on cannabis use health outcomes are necessary for patients and clinicians to make informed decisions.

IS BURNOUT BEST UNDERSTOOD AT THE LEVEL OF THE INDIVIDUAL, PRACTICE, OR SYSTEM?

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BACKGROUND: Burnout is prevalent among clinicians and staff in primary care and is associated with negative consequences. However, burnout is often treated as a problem of individuals, not of the practices or systems in which they work. In this study, we analyzed the multilevel

factors associated with burnout by comparing practices with unusually high and low levels of burnout.

METHODS: We conducted a survey of clinicians and staff in a sample of small to medium-sized primary care practices participating in a national initiative focused on improving the delivery of cardiovascular preventive services. We limited our sample to practices with at least three responses across multiple roles and with response rate>50%. Our primary outcome was a single item, five-level self-report measure of burnout. We also collected information on practice structural characteristics, Adaptive Reserve (a measure of practice capacity for organizational learning and development), use of quality improvement strategies, and practice- level satisfaction with their electronic health record (EHR) system.

RESULTS: 7,740 clinicians and staff from 715 primary care practices responded, an 86% response rate. The intraclass correlation (ICC)-1, the proportion of total variation that can be explained by practice membership, was 0.104 (95% CI = 0.085-0.123), suggesting a moderate practice level effect. In 30% of practices (n=214), no practice members reported burnout ("no-burnout"), while in 13% of practices (n=94) over 40% of their practice members reported burnout ("high-burnout"). Compared to high-burnout practices, no-burnout practices were more commonly solo practices (e.g. 6-10 clinicians vs. solo, adjusted odds ratio [aOR] of high practice burnout 5.55, p<0.01), clinician owned (hospital or health system owned vs. clinician owned, aOR of high practice burnout 3.37, p<0.01) and less commonly participated in accountable care organizations (ACOs; aOR of high practice burnout 2.06, p=0.04). Mean Adaptive Reserve was higher for no-burnout (0.76) compared to high-burnout practices (0.58, p <0.01); select subscales, including facilitative leadership, communication, sense-making and psychological safety, were each significantly higher. No-burnout practices reported using more quality improvement (QI) strategies (Change Process Capability Questionnaire Strategy Score mean=10.8) than high-burnout (mean=7.0) practices (p=0.02) and reported less dissatisfaction with electronic health records (p=0.01).

CONCLUSIONS: Understanding burnout at the level of individuals, practices and systems has potential to lead to multilevel solutions. Specific factors associated with practice-level burnout suggest that the current approach to system consolidation may increase burnout, reduce practice capacity for organizational learning, and reduce engagement in quality improvement. Future improvement efforts should focus on supporting smaller practice arrangements and increasing practice capacity.

ISOLATION IN THE ENCLAVE: A QUALITATIVE STUDY OF SOCIAL ISOLATION AMONG CHINESE AND HISPANIC/ LATINO IMMIGRANTS IN CHICAGO

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BACKGROUND: Social isolation is shown to have adverse consequences for psychosocial health, physical outcomes and mortality. While previous studies have documented that immigration may be associated with higher risk for social isolation, few studies have examined potential mechanisms of this relationship. This qualitative study explores narratives of social isolation among Chinese and Hispanic/Latino immigrants who live in ethnic enclaves, identifying mechanisms of social isolation in participants' lives and downstream effects on their health and healthcare.

METHODS: In 2019 we conducted 14 in-depth, semi-structured focus groups with 80 immigrant adults living in the United States. Participants were recruited from four community sites in Chinese- and Spanish-speaking enclaves. Interviews were conducted in participants' native languages. Focus groups were audio- recorded and transcribed verbatim. Codes were generated from transcripts using grounded theory and the constant comparison method. For internal consistency, a codebook was iteratively developed by 4 reviewers, including 1 reviewer who coded all Chinese transcripts, and 1 reviewer who coded all Spanish transcripts. Discrepancies were resolved using a standard of intercoder agreement.

RESULTS: The mean age of participants was 61.4±13.1 years; 61% were Chinese-speaking and 39% were Spanish-speaking. Participants were largely female (62%), unemployed (68%), and attained less than a high school graduation (53%); approximately one-third were uninsured (34%). The most commonly reported reasons for immigration were to move closer to family (36%) and improve quality of life (26%). The mean duration of residence in the U.S. was 17.7±14.0 years. Participants identified several key mechanisms of isolation. Among them, many described language barriers as isolating: "Since I didn't know how to speak English…I still mainly go to places in Chinatown. I seldom go to other places." Participants also described challenges related to forming social networks: "I don't have as many friends and relatives here…I stay in the senior apartment and can't talk to anyone." Many Spanish-speaking participants described fear of police and immigration enforcement as isolating: "Well, you can't go out because the police are also there going after you." Both personal- and community-level experiences of social isolation had downstream impacts on healthcare: "We can only find Chinese speaking doctors. That is why the line is long." Participants also noted negative health consequences: "Health has been jeopardized for immigrants, because of being far away from their country…and because of the little guidance there is for people who get sick."

CONCLUSIONS: Despite many benefits of ethnic enclaves for the U.S. immigrant population, participants described narratives of social isolation on both a personal and community level. Various mechanisms of social isolation often led to downstream impacts on health and healthcare, which can potentially exacerbate health disparities.

IS SERVING AS A PEER COACH HELPFUL OR HARMFUL? FINDINGS FROM A TRIAL FOR PATIENTS WITH CHRONIC PAIN

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BACKGROUND: Peer support has been shown to be effective in helping patients to self-manage chronic conditions. While a few qualitative studies suggest that peer coaching benefits coaches, such effects have not been systematically evaluated. This is a notable gap, because it is imperative to understand whether coaching helps peer coaches or places additional burdens on them that negatively affect their own health. Our objective was to better understand potential effects of peer coaching on coaches by exploring outcomes of coaches in a peer-led self-management intervention for chronic pain.

METHODS: Evaluation of a Peer Coach-Led Intervention to Improve Pain Symptoms (ECLIPSE) was a clinical trial testing peer-led pain self-management. Coaches either had prior pain self-management training or were referred by their providers. After coach training, coaches were paired with a patient with chronic pain for 6 months. Outcomes were administered to both patients and coaches and included total pain (Brief Pain Inventory), pain catastrophizing, depression, and anxiety. For each outcome, a linear mixed model with fixed effect of time as categorical, was fit

to all time points (baseline, 6 and 9 months). The Šidák method was used to adjust for multiple comparisons.

RESULTS: At baseline, coaches (N=55) had significantly lower total pain, depression, and catastrophizing than patients; no significant differences were observed for anxiety. Relative to baseline, coaches' anxiety (GAD-7) increased from 4.7 to 5.4 at 6 months (p=.036, ES=.16) and 5.5 at 9 months (p=.019, ES=.18). Catastrophizing increased significantly from 12.6 at baseline to 16.5 at 6 months (p=.005, ES=.34), then dropped to 15.7 at 9 months. After adjusting for multiple comparisons, no changes remained significant.

CONCLUSIONS: This study does not support the notion that peer coaching benefits coaches. Before adjustment, anxiety and pain catastrophizing increased. Anxiety increases could be a result of shifting from a patient to a "provider" role as a coach. Talking with patients about their pain might have led to higher catastrophizing by increasing coaches' awareness of their own pain. However, no increases were clinically significant, and even at higher levels, coaches' anxiety and catastrophizing were lower than those of the patients whom they coached. Although this study was exploratory and limited by lack of a control group for the coaches, results suggest that peer coaching may not be inherently beneficial, that coaches should be monitored, and procedures should be in place if they experience worsening of symptoms. Peer coaching remains a promising model, with high potential for implementation, for a number of chronic conditions requiring self-management. However, to maximize benefits of coaching, it is essential to ensure that coaches do not experience adverse effects.

IS WEIGHT LOSS ASSOCIATED WITH REMISSION OF TYPE 2 DIABETES IN MEDICALLY UNDERSERVED AREAS IN THE AMERICAN SOUTH?

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BACKGROUND: Type 2 diabetes (T2DM) is a chronic disease, resulting in high morbidity, mortality and healthcare expenditure, especially among individuals residing in medically underserved areas. Obesity affects 39.6% of the United States adults and is highly associated with T2DM. Prior studies have demonstrated that approximately 5% of T2DM patients in community settings achieve complete remission according to HbA1c levels, but the reasons are unclear. Recent clinical trials suggest intensive weight loss may lead to diabetes remission. Therefore, this study aims to examine if weight loss and/or primary care exposure are associated with diabetes remission in community settings.

METHODS: A retrospective cohort study using 2015-2018 Diabetes Wellness and Prevention Coalition Registry data was conducted. We included adult patients (age > 18) with T2DM who had an index visit with HbA1c test ≥ 6.5 between 2016 and 2017, without prior diagnosis of type 1 diabetes [ICD-9-CM: 250.x1, 250.x3; ICD-10-CM E10.x]) in the 12 months before index visit, and with one or more follow-up HbA1c tests after index visit. The primary outcome was diabetes remission (any, partial, and complete remission) identified by a modified algorithm based on the American Diabetes Association. The primary independent variable was change in body mass index (BMI), defined as the difference between BMI at baseline and follow-up. Eligible patients were followed for one year from the index visit to diabetes remission. Chi- squared tests for categorical variables and Mann-Whitney U tests for continuous variables were used to examine differences in characteristics between patients who achieved remission(any, partial, or complete) versus patients without remission.

RESULTS: Of 9518 patients with T2DM, 17.9% (N=1708) achieved any diabetes remission, 15.9% (N=1512) achieved partial remission and 2.1% (N=196) achieved complete remission. Change in BMI was -1.47 ± 3.21 in those with any remission vs. -0.48 ± 2.68 in those without ($p < 0.0001$), -1.24 ± 2.40 in those with partial remission vs. -0.54 ± 2.83 ($p < 0.0001$), and -2.60 ± 6.32 in those with complete remission vs. -0.59 ± 2.69 ($p < 0.0001$). Patients who achieved diabetes remission (any, partial, or complete) had more primary care visits (all $p < 0.05$) and lower Charlson Comorbidity Index (all $p < 0.05$). More males achieved complete remission ($p < 0.0001$), while the effect of gender on remission was not significant in the cohort with partial remission only (p=0.418).

CONCLUSIONS: Patients in medically underserved areas of the American South frequently achieve partial remission and occasionally achieve complete remission of diabetes. Weight loss is strongly associated with an increased likelihood of remission, and primary care utilization increases the incidence of diabetes remission. Further investigations are warranted to understand how primary care is effective (primarily through increased use of diabetic pharmacotherapy or through care support for healthy eating and weight loss).

JOB SATISFACTION AND CAREER PRIORITIES OF EARLY-CAREER ACADEMIC HOSPITALISTS

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BACKGROUND: Academic hospitalists engage in multiple and varied career directions, including medical education, quality improvement, leadership, and research. In 2009, the Society of Hospital Medicine (SHM), the Society of General Internal Medicine (SGIM), and the Association of Chiefs and Leaders of General Internal Medicine (ACLGIM) launched the Academic Hospitalist Academy (AHA), an annual conference that aims to provide hospitalists with educational, scholarly, and professional development skills. Our study describes the demographics and career priorities of academic hospitalists who participated in the AHA.

METHODS: As part of AHA enrollment, all attendees are asked to complete an anonymized, voluntary survey prior to the start of the conference. The survey includes questions about participant demographics, academic rank, job satisfaction, and career priorities. We collected the survey responses from all 11 years of the AHA (2009 to 2019) and described trends in participant demographics and responses.

RESULTS: A total of 812 of 817 AHA participants who viewed the survey completed it (99% completion rate). The number of survey respondents in a given year ranged from 48 to 89. The mean age of participants was 34 years (95% confidence interval [CI] 25 – 44 years), and the mean years of hospitalist clinical experience was 3.2 [0 – 9.4 years]. The proportion of participants that were female increased from 42.2% in 2009 to 60% in 2018 and 2019 (p-value for linear test for trend is 0.001). Most hospitalists were somewhat or very satisfied with their job. Hospitalists consistently identified teaching and clinical care as the best parts of their job (56.0% and 31.1%, respectively). Improving teaching skills was the most common primary conference goal listed by attendees (48.9%), followed by networking, promotion, scholarship, and quality improvement.

CONCLUSIONS: Over the 11 years of the Academic Hospitalist Academy, increasing proportions of women enrolled. Teaching was the leading contributor to job satisfaction, followed by clinical care. Attendees considered improving teaching skills as their primary conference goal. With these data, AHA and other groups engaged in hospitalist career development can better tailor their training to the needs and priorities of academic hospitalists.

LANGUAGE DISCORDANCE IS ASSOCIATED WITH SUBOPTIMAL PATIENT-PROVIDER COMMUNICATION IN THE EMERGENCY DEPARTMENT

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BACKGROUND: Over 64 million U.S. residents speak a non-English language (NEL) at home. NEL, limited English proficiency (LEP), and patient-provider language discordance may adversely influence communication, care outcomes, and health disparities. This effect can be heightened in the emergency department (ED) where there is a need to collect an accurate and efficient history with acutely ill patients from diverse backgrounds. In this study, we sought to determine the associations of primary NEL, LEP, and language discordance with communication among patients presenting to the ED with suspected acute coronary syndrome (sACS). We hypothesized that language discordance would be most strongly associated with patient perceptions of poor patient-provider communication.

METHODS: This was a secondary analysis of an ongoing observational cohort of English or Spanish- speaking patients with sACS presenting to an urban ED. Primary language, degree of English fluency, and patient-provider primary language discordance were assessed by patient self-report in the ED. Patient- reported communication was concurrently assessed using the Interpersonal Processes of Care survey (IPC), a validated 18-item tool for assessing the psychosocial aspects of communication among diverse populations in the domains of patient-physician communication, shared-decision making, and interpersonal style. Patient-reported communication was categorized as suboptimal if mean IPC score ≤4. The associations between primary NEL, LEP, and language discordance with patient-reported communication were concurrently assessed using logistic regression, with and without adjusting for sociodemographic characteristics (age, gender, ethnicity, education, and health insurance status), presence of a companion in the ED, and depression (PHQ-8 score ≥10).

RESULTS: Between 2014-2017, 933 sACS ED patients (46% female; 56% Hispanic; mean age 60.7 years) completed the IPC. Overall, 48.0% reported primary NEL, 29.6% LEP, and 42.6% language discordance. In bivariate analyses, primary NEL (OR 1.38, 95% CI 1.04-1.82), LEP (OR 1.45, 95% CI 1.06-1.98), and language discordance (OR 1.64, 95% CI 1.23-2.18) were associated with suboptimal communication. In the fully adjusted model, language discordance remained significantly associated with suboptimal communication (aOR 1.57, 95% CI 1.05-2.33), while primary NEL (aOR 1.06, 95% CI 0.55-2.04) and LEP (aOR 0.90, 95% CI 0.48-1.68) did not.

CONCLUSIONS: Patients presenting to the ED with sACS who reported language discordance had greater odds of suboptimal patient-provider communication. Language discordance may be the most important factor linking NEL with poor communication. Future studies should evaluate the impact of language discordance on other health outcomes in sACS patients undergoing evaluation in the ED, and should consider interventions that improve communication when language discordance exists.

LARGEST NATIONAL ONCOLOGY PAY-FOR-PERFORMANCE PROGRAM INCREASES EVIDENCE-BASED CANCER DRUG PRESCRIBING, BUT DOES NOT LOWER SPENDING

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BACKGROUND: Cancer drug prescribing by medical oncologists accounts for the greatest variation in practice and largest portion of spending on cancer care. Consequently, efforts to standardize quality and control cost growth of the estimated $173 billion spent on cancer care in the US in 2020 have focused heavily on promoting evidence-based cancer drug prescribing. Our objective was to evaluate the association between a national commercial insurer's ongoing pay-for-performance (P4P) program for oncology and changes in prescribing of evidence-based cancer drugs and spending.

METHODS:

Retrospective difference-in-differences study utilizing administrative claims data for 6.7% of US adults covered by the insurer. Our sample included patients 18 years of age or older with breast, colon, or lung cancer who were prescribed cancer drug regimens by 1,867 participating oncology physicians between 2013 and 2017. We leveraged the geographically staggered, time-varying rollout of the P4P program to simulate a stepped-wedge study design. Specifically, we estimated a patient-level model clustered by physician and used physician fixed-effects to examine pre/post changes in evidence-based prescribing and spending for patients of participating physicians eligible earlier versus later in the period of P4P program rollout. The exposure was a time-varying dichotomous variable equal to 1 for patients prescribed a cancer drug regimen by a participating oncologist after the P4P program was offered. Only participating physicians and their patients were included in this study to mitigate selection effects. The primary outcome was whether a patient's drug regimen was an evidence-based regimen. We evaluated four categories of spending over a 183 day (6 month) episode period: cancer drug spending; other (non-cancer drug) health care spending; total episode spending; and patient out-of-pocket spending.

RESULTS: The P4P program was associated with an increase in evidence-based regimen prescribing from 57.1% of patients in the pre-intervention period to 62.2% in the intervention period for a difference of +5.1 percentage points (95% CI 3.0 percentage points to 7.2 percentage points, $P<0.001$). The P4P program was also associated with a differential $3,235 (95% CI $1,004 to $5,466, $P=0.005$) increase in cancer drug spending, a differential $253 (95% CI $101 to $406, $P=0.001$) increase in patient out-of-pocket spending, but no significant changes in other health care spending ($-564, 95% CI -$2,545 to $1,416, $P=0.58$) or total health care spending ($2,651, 95% CI -$319 to $5,621, $P=0.08$) over the 6-month episode period.

CONCLUSIONS: Our findings suggest that P4P programs may be effective in increasing evidence-based cancer drug prescribing at national scale – enhancing cancer care quality. However, they may increase out-

of-pocket expenses and may not lead to savings in total health care spending at 6 months.

LEADERSHIP EXPERIENCES OF SECOND-YEAR INTERNAL MEDICINE RESIDENTS: A NEEDS ASSESSMENT FOR LEADERSHIP CURRICULA

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BACKGROUND: Physicians routinely assume leadership roles and the need for leadership education and training is increasingly recognized. Despite this growing emphasis, formal leadership curricula within residency training programs are few. Given the urgent need to develop evidence-based leadership curricula, we conducted a multi-institution qualitative study exploring residents' leadership experiences and beliefs to serve as a needs assessment for future curricular development.

METHODS: Voluntary, anonymous, structured telephone interviews were conducted with second-year categorical internal medicine residents at 4 institutions. An experienced interviewer conducted 20-minute interviews which were audio-recorded, de-identified, and transcribed verbatim. A codebook was developed and refined iteratively. Two coders independently applied the codes to transcripts. Discrepancies in coding were adjudicated with the full research team until agreement was achieved.

RESULTS: 14 residents were interviewed (7 males, 7 females, most 28-32 years old). Few endorsed formal leadership training or experience prior to residency. Residents generally defined leadership as the capacity to 1) supervise or manage others, 2) act in a decision-making role, and 3) facilitate a conducive work environment. All residents viewed themselves as leaders within the context of clinical rotations. Residents identified several characteristics of effective leadership including clinical expertise (necessary but not sufficient), effective delegation, strong interpersonal skills, coaching and developing others, and effective communication. Residents identified several characteristics of ineffective leadership, in addition to absence of aforementioned skills of effective leaders: disengagement, unwillingness to pitch in, and lack of clear expectations or feedback. With respect to existing formal leadership training within their programs, some identified training in communication skills, providing feedback, and setting expectations. Many had difficulty identifying or labeling existing leadership training. The majority desired further leadership training, with variety in the modes of delivery and areas of focus deemed to be important and/or necessary.

CONCLUSIONS: This qualitative study provides insight into residents' leadership experiences. Resident physicians view themselves as leaders within a clinical context yet desire additional leadership development. Informal, experiential leadership experiences during residency may not obviate the need for additional formal training. Areas of potential focus (identified by residents as important) might include nonclinical skills necessary to effectively lead clinical teams, including principles of delegation, fostering effective team dynamics and environment, and resident-as-coach. Given that residents struggled to identify existing development opportunities, programs might also consider more clearly labeling existing leadership development efforts (e.g., feedback, communication) as such.

LEARNING FROM SUCCESS: HOW MEDICAL CENTERS KEEP VETERANS WITH SERIOUS MENTAL ILLNESS ENGAGED IN PRIMARY CARE

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BACKGROUND: People with serious mental illness (SMI) are at substantial risk for premature mortality, dying on average 10-20 years earlier than the general population, primarily due to high rates of medical comorbidities. Engagement in primary care (PC) can be life-saving for this population, but many with SMI become disengaged from PC. Therefore, the Veterans Health Administration (VA) measures PC engagement among Veterans with SMI, and has identified it as a priority target for quality improvement. To inform improvement efforts at our local VA medical center, we sought to identify promising practices for supporting engagement in PC among Veterans with SMI.

METHODS: We conducted semi-structured telephone interviews with 15 key informants across a national sample of 11 VA medical centers with above-median performance on engagement of patients with SMI in PC, and with substantial homeless populations (>1,000 Veterans). Interviewees were selected based on their involvement in engaging SMI patients in care, and included leaders of behavioral/mental health (MH) services or PC services tailored for Veterans with SMI. Interviews were conducted in May-July 2019 and audio-recorded. Using detailed notes from interview recordings, we prepared structured summaries of each interview to highlight key points in a template based on the interview guide. We organized summaries into matrices for analysis, grouping summarized points by topic to facilitate comparison across interviews. Our interdisciplinary team reviewed and discussed these tables, and iteratively developed and refined themes.

RESULTS: Interviewees reported substantial and diverse efforts aimed at engaging Veterans with SMI in PC. While details differ across sites, strategies can be classified as using 1) targeted outreach, 2) routine practices, or 3) both. Targeted outreach strategies entail deliberate, systematic approaches for identifying and contacting patients with SMI at risk of disengaging from care, and facilitating their return to PC or other needed services. In contrast, routine practices embedded in normal clinical activities were also frequently described as important strategies for maintaining engagement in PC among Veterans with SMI. These routine practices include cultural norms and/or structured care pathways through which MH professionals attend to and facilitate engagement in PC, and PC staff actively monitor and manage patients' primary care provider (PCP) assignments and visit intervals.

CONCLUSIONS: VA facilities with high levels of PC engagement among Veterans with SMI use extensive engagement strategies, including a diverse array of targeted outreach and routine practices. Further characterization and evaluation of the effectiveness and implementation of these strategies is needed to identify and promote practices that improve engagement and outcomes for people with SMI.

LENGTH OF STAY AND HOSPITAL COST OUTCOMES IN LOCUM HOSPITALISTS VERSUS NON-LOCUM HOSPITALISTS: A PROSPECTIVE COHORT STUDY

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BACKGROUND: Locums are used for short term coverage or when hospitals face difficulties in recruitment. Due to increasing and unmet medical needs worldwide, the utilization of locum physicians continues to increase. One quarter of healthcare managers used locum hospitalists in the last 12 months, making hospitalists as the second most common service in demand for locum physicians.

METHODS: We conducted a classical prospective cohort study. Consecutive patients were recruited dynamically between 2/25/2019 -4/30/2019. Patients included were ≥18 years admitted to IM services for any reason. Excluded patients who did not consent and patients admitted to academic services. We collected following data: age, sex, ethnicity, assistance at home, food security most the year, residence prior to admission, type of insurance, admission diagnosis (16 categories) and comorbidities (17 categories).

Length of stay and hospital cost were outcomes of interest. Propensity score was calculated and matching was performed using inverse probability of treatment weighting. Subsequently, we fitted weighted multiple linear regression models for length of stay and hospital cost to compare locum and non-locum services. Baseline characteristics were compared using parametric and non-parametric analysis. Diagnostics were used to assess propensity score model and multiple regression models. We matched patients seen solely by locum (n=49) to patients seen solely by non-locum (n=296) and subsequently obtained average treatment on the treated. To account for cross over, complete cohort (n=747) was standardized to obtain "locum-percentage" exposure. Locum-percentage was calculated by diving locum physician-days by the sum or locum-days and non-locum-days for each patient. Locum-percentage ranged from 0% when patient was entirely cared by non- locum physicians up to 100% when patient was entirely treated by locum hospitalist. Locum percentage was used as independent variable to fit regression models to estimate the average treatment effect.

RESULTS: A total of 747 patients were admitted in study period. The mean age was 60.5 ± 19 years and females were 52%. Baseline characteristics were well balanced with standardized biases less <0.1 post propensity matching (figure 1). Adjusted length of stay was 1.3 days shorter in locum compared to non-locum (CI: -1.96- -0.68, p-value <0.001). Adjusted hospital cost was 1822 dollars less in locums compared to non-locums (CI: -2608- -1036, p-value <0.001). Using locum percentage as independent predictor for length of stay, an increment from 0% to 100% in locum involvement in patient care is associated with an average 0.9 decrease in hospital stay (CI: -0.14- -1.7, p-value= 0.017). Similarly, hospital cost was lower by 800 dollars using locum-percentage as a predictor but this was not statistically significant (p-value =0.07)

CONCLUSIONS: In contrary to the "expected", locum physicians provided hospital cost saving and shorter hospital stay in comparison to non-locums.

LEVEL, TRAJECTORY, OR RATE: PREDICTING MORTALITY WITH THE LACTATE TREND IN SEVERE SEPSIS

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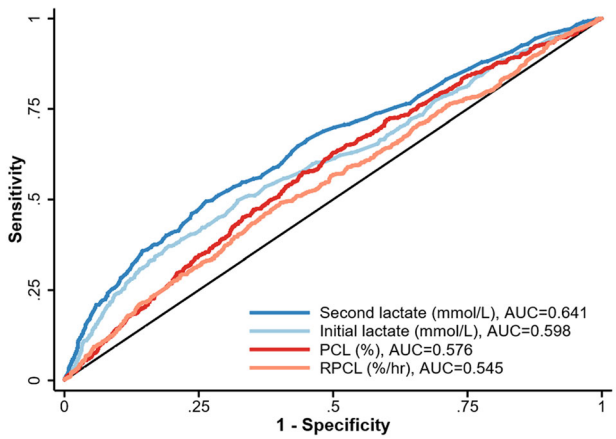
BACKGROUND: Change in lactate, often expressed as Proportional Change in the initial Lactate (PCL, or "lactate clearance"), has prognostic value in severe sepsis and septic shock. Prior studies have calculated PCL after fixed delays (e.g., second lactate always drawn six hours after the first), but in clinical practice, lactate is not re-measured at fixed delays. Whether second lactate timing affects the prognostic value of PCL is unclear. We evaluated whether expressing PCL as per-hour Rate of PCL (RPCL) improves predictive utility for in- hospital mortality in critically ill septic patients, and evaluated PCL and RPCL in comparison to absolute lactate levels.

METHODS: Electronic health record (EHR) data were extracted for all adult emergency department presentations at an academic medical center from 2012–2018 that met validated Sepsis-III EHR criteria, had at least two lactates, and had initial lactate of at least 4 mmol/L or required vasopressors. PCL was calculated as $(lactate^{T2}–lactate^{T1})/lactate^{T1}\times100\%$, and RPCL as $PCL/hours^{T2\text{-}T1}$. Receiver-operator-characteristic (ROC) curves for in-hospital mortality were used to compare first lactate, second lactate, PCL, and RPCL.

RESULTS: In 2,594 patients, median time to second lactate was 3.6 hours (IQR 2.3–5.8). Lactates decreased from a median of 4.4 (IQR 2.6–6.3) to 2.6 mmol/L (IQR 1.6–4.3) for median RPCL of -7.7 %/hour (IQR -15.2 – -1.4). All lactate parameters were associated with mortality (P<0.001). PCL had larger area under the curve (AUC) than RPCL (AUC=0.576 vs. 0.545, P<0.001). The second lactate level (AUC=0.641) had larger AUC than first lactate, PCL, and RPCL (Figure, three comparisons, all P<0.001).

CONCLUSIONS: PCL marginally outperforms RPCL to predict in-hospital mortality in patients with severe sepsis or shock, despite variable delay length. The prognostic values of RPCL and PCL are limited compared to absolute lactate levels. When two lactates are measured, the second may carry the most prognostic value.

Figure. ROC curves depicting ability of various lactate-derived measures to predict in-hospital mortality in 2,594 patients with sepsis



Nonparametric ROC curves from 2,594 patients with initial lactates of at least 4 mmol/L or shock defined as requiring vasopressors. PCL is the percent change from the initial to second lactate levels. RPCL is PCL adjusted for time to the second lactate level (i.e., percent change from the initial to second lactate levels per hour). The black reference line represents a measure with no predictive value.

LEVERAGING HIV CARE TO CONTROL HYPERTENSION IN EASTERN UGANDA: A FIDELITY EVALUATION BY DIRECT OBSERVATION

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BACKGROUND: Hypertension (HTN) is the leading risk factor for human mortality worldwide. In Uganda, adult HTN prevalence is more than 27%, with under 10% aware of their diagnosis - of which under half achieve blood pressure control.

The SEARCH study (NCT01864603), a cluster-randomized trial of the impact of universal HIV screening and treatment on HIV incidence in Uganda and Kenya, also offers screening and treatment for hypertension. Our previous work indicates that SEARCH achieved over 90% sensitivity and specificity in identifying persons with potential HTN, but only 42% of these persons linked to follow-up care. It remains unclear whether SEARCH's patient screening counseling protocols for persons with HTN are consistently followed – or whether their educational messages are reaching this population.

METHODS: We used structured interviews and observation checklists to evaluate fidelity and consistency of HTN screening and treatment protocols within 10 communities in Eastern Uganda associated with the SEARCH study. We observed providers' assessment of patients' blood pressure – relative to the results they recorded – as well as the teaching they provided persons with suspected HTN regarding lifestyle change. We then interviewed those counseled, to gauge their knowledge retention.

RESULTS: Between September 2015 and February 2016, we observed 161 provider interactions (36 at community health campaigns (CHCs) and 125 at health clinics (HCs), and interviewed 142 patients with HTN (43 at campaigns and 99 at clinics). Providers at CHCs recorded patients' HTN status in 100% of cases, but only recorded it correctly in 78%; they counseled 96% of patients regarding lifestyle change for HTN, but only 42% regarding HTN as an underlying concept. At HCs, 97% of providers counseled on medication adherence, but only 68% on alcohol moderation; 62% and 40% of participants, respectively, recalled these messages. At CHCs, patients most commonly cited salt use (91%) alcohol use (65%), and other factors (77%) as causes of HTN; they cited obesity (10%) and old age (12%) least commonly. 88% of participants felt they understood HTN counseling well; 84% felt change in their behavior was likely. At HCs, 87% felt they understood counseling well, and 88% felt behavior change was likely.

CONCLUSIONS: SEARCH HTN providers largely adhered to blood pressure screening and medication treatment protocols, but were less consistent in providing behavior change counseling. Participants, in turn, showed incomplete knowledge of HTN prevention and treatment strategies, but were motivated to act on the knowledge they received. This result aligns with qualitative data from interviews among persons with HTN in Uganda. SEARCH has revised its HTN counseling protocols (through education booklets and provider checklists) based on these data – evaluation of this intervention is pending. Similar tools to promote behavior change could improve HTN control in other contexts in East Africa.

LIFE DESIGN IN MEDICINE: PERCEPTIONS OF SENIOR RESIDENTS

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BACKGROUND: Deciding what is to come after training is an essential task during residency. Myriad factors such as family considerations, debt level, and mentoring impact career choices. However, less is known about the individual and program-level strategies utilized by trainees to help clarify these decisions. The application of design thinking principles to life/ career planning has been termed "life design" and may have relevance for trainees as they anticipate life after residency. Internal Medicine-Pediatrics (MP) residents have perhaps the most career options available to them upon completing residency. The aims of this study were to: i) characterize the career exploration strategies employed by MP residents, and ii) assess if any strategies were associated with higher confidence with their career plans.

METHODS: We reviewed websites for all 78 ACGME-accredited MP program to identify 4th year resident names and emails. When emails were not available, we contacted program directors for this information. Surveys were sent to the residents electronically in May 2019 and included items on intended career, helpfulness of strategies used to inform career decision (22 items, 1-4 Likert-type scale), and confidence in intended career plan (1-4 Likert-type scale). We examined the relationship between career exploration strategies and confidence in intended career.

RESULTS: Surveys were sent to 145 residents at 45 programs. Eighty-six residents (59%) across 31 programs (69%) responded. Twenty respondents (23%) would be pursuing a career in a subspecialty area, 31 (36%) were going into primary care, and 21 (24%) were to work as hospitalists; a majority of respondents indicated they would see both adult and pediatric patients. Concern about pursuit of the wrong career was endorsed by 19.8% of respondents. The most helpful career exploration strategies included - exposure to desired career during residency [M 3.5 (SD 0.7)], reflection on how career fits with views of life and work [3.4 (0.7)], identification of times or experiences when one felt most engaged/ energized in work [3.3 (0.9)], and seeking mentorship [3.2 (0.8)]. Exposure to one's anticipated career during residency ($p=0.003$) and seeking mentorship ($p=0.001$) were significantly associated with higher confidence in career plans.

CONCLUSIONS: MP residents utilize a variety of strategies to determine their career plans including a combination of experiential and reflective practices. Intentional utilization of specific life design strategies during residency training may help boost trainees' confidence in their career choices.

LIMITED ENGLISH PROFICIENT PATIENTS AND EMERGENCY ROOM ADMISSION RATES FOR AMBULATORY CARE SENSITIVE CONDITIONS IN CALIFORNIA

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BACKGROUND: Prior research has demonstrated that racial and ethnic minorities and those with public insurance may be at increased risk for admission for Ambulatory Care Sensitive Conditions (ACSCs), a measure of potentially avoidable hospitalizations. Less is known about the risk for admission for those with Limited English Proficiency (LEP) and how hospital factors impact this risk. The purpose of this study was to examine differences in hospital admission rates following ED visits generally and for ACSCs comparing those with and without LEP.

METHODS: Using California's inpatient and ED administrative data, we identified all ED visits in 2017. We included ED visits for community dwelling individuals ≥18 years for whom the primary diagnosis was not pregnancy or childbirth. LEP patients were identified as those with a language other than English as the principal language for communication with providers. We compared admission rates for LEP vs. English

proficient (EP) patients overall and by ACSC using a series of linear probability models with incremental sets of covariates, including age, sex, self-identified race/ethnicity, insurance type, median income of patient's zip code, primary diagnosis, and Elixhauser co-morbidities. To examine if the LEP vs. EP difference in admission rate varied by the hospital volume of LEP patients served we created and included a dichotomous indicator of high (70th percentile and above) vs. low LEP serving hospital as a (interaction) covariate. We estimated models with and without hospital-level random effects. In all models, we estimated standard errors clustered at the hospital level. Sub-analyses were performed by specific ACSCs and languages.

RESULTS: There were 9,641,689 ED visits included in our sample of which 14.7% were for patients with LEP. In fully adjusted analyses, LEP visits were at higher risk for any admission and admissions for chronic ACSCS compared to EP visits, but the difference did not reach statistical significance (17.8%, 95% CI 14.5%, 19.2% vs. 16.9%, 95% CI 15.4%, 20.2%; 35.4%, 95% CI 31.6%, 35.5% vs. 33.6%, 95% CI 33.4%, 37.5%). However, for chronic pulmonary obstructive disease (COPD) ED visits the corresponding difference was significant (36.8%, 95% CI 35.0%, 38.6% vs. 33.3%, 95% CI 31.7%, 34.9%). There was no significant difference in admissions for other ACSCs between LEP and EP. The difference in admission rate for LEP vs. EP visits in a low-LEP serving hospital was 1.3% (95% CI 1.0%, 1.7%) compared to 0.74% for those seen in a high-LEP serving hospitals (95% CI 0.33%, 1.2%).

CONCLUSIONS: LEP is a risk factor for admission to the hospital overall and for some ACSCs but much of this effects seems due to hospital factors. The proportion of LEP patients served at a hospital does not seem to impact admission rate difference between LEP and EP patients. Further research is needed to understand why these disparities exist and if they are represent inefficiencies in care.

LINGUISTIC BIAS IN LANGUAGE USED BY PHYSICIANS IN MEDICAL RECORDS OF AFRICAN AMERICAN AND WHITE PATIENTS

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BACKGROUND: Studies have found that African Americans and women report having their medical issues ignored or downplayed by health professionals. Because language used by clinicians in patient medical records may reveal their unconscious biases, our study sought to find examples of language specifically suggesting disbelief of patients, and then to explore racial/ethnic and gender differences in use of such language within medical records.

METHODS: In a previous content analysis of 600 randomly selected internal medicine ambulatory encounter notes from 2017, we identified 3 linguistic features that may cast doubt on the truthfulness of the patient: (1) quotes (e.g. *pt reports she had a "reaction" to the medication*); (2) specific negatively charged words (e.g. 'claims,', 'insists,' 'adamant'); and (3) clausal complements, a sentence construction in which the source of information is conveyed by providing the facts as a clause preceded by a word such as 'that' (e.g. *pt reports that the headache started yesterday* vs. *the headache started yesterday*). Although clausal complements are common in medical records and do not cast explicit doubt on the truth of the information, the field of linguistics has shown that the choice of that construction reflects an effort not to endorse the information as first-hand knowledge. We therefore hypothesized that the overall number of sentences constructed with that format may reflect greater doubt. We used natural language processing methods to evaluate the prevalence of these features in all notes written in 2017 at an ambulatory internal medicine clinic and then tested for differences by race and gender, using mixed-effects Poisson regression models accounting for clustering of notes within patients and providers.

RESULTS: Our study sample included 7,986 notes written by 164 clinicians about 1890 patients (801 Black women, 630 Black men, 254 white women, and 205 white men). There were significant differences by race in the prevalence of all three linguistic features: notes written about Black patients had a greater number of quotes (p=0.039), negative language (p=0.006) and clausal complements (p<0.001). Analyses by gender were mixed: notes about female vs. male patients did not differ in terms of negative language but had a greater number of quotes (p=0.002) and fewer clausal complements (p<0.001). There were no significant interactions between race and gender.

CONCLUSIONS: Our data suggest that African American patients may be subject to systematic bias in physicians' perceptions of their credibility, a form of testimonial injustice. Further studies are needed to understand these phenomena.

LIVING AT THE MARGIN: ACA INCOME-CUTOFFS AND STABILITY OF COVERAGE

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BACKGROUND: Disruptions in health insurance coverage are associated with adverse health outcomes. The Affordable Care Act's (ACA) major insurance provisions, Medicaid expansion and the Marketplaces, carry built-in coverage disruptions through income cutoffs for eligibility. In Medicaid expansion states, 138% of the federal poverty level (FPL) is the cutoff for Medicaid eligibility and is a lower-bound cutoff for subsidized Marketplace insurance. Pre-ACA studies predicted that these cutoffs would result in frequent switching between Medicaid and Marketplace coverage. The objective of this study was to assess whether the ACA increased coverage disruptions among those with incomes near 138% cutoff.

METHODS: We employed a difference-in-differences framework comparing insurance disruptions and loss among those with incomes within 30 percentage points (pp) of the Medicaid cutoff (108-168% FPL), to those with incomes above or below the threshold (0-107% and 169-300% of FPL), before and after the ACA was implemented in 2014 (n=45,094; 10,583 in "near-cutoff" group). We used the two-year, longitudinal datasets available in the Medical Expenditure Panel Survey for the years 2009-2017. We defined our study groups (near-cuff vs. control) based on income data from year 1 of the survey. We then assessed whether the near-cutoff group was more likely to experience coverage disruptions or loss in year 2 of the survey. We also examined the direction of the health insurance transition. Subgroup analyses included restricting to Medicaid expansion states and restricting our exposure group to those with incomes just below (108-138%) versus just above (138-168%) the cutoff.

RESULTS: Coverage disruptions increased by 2.7 percentage points (pp) (p=0.01) and insurance loss increased by 2.8 pp (p<0.01) in the near-cutoff group compared to the control group in the post-ACA period. Among those living in Medicaid expansion states, coverage disruptions increased 5.2 pp (p=0.04) and coverage loss increased 4.8 pp (p=0.03). Individuals with incomes just below the cutoff (108-138% FPL) experienced rates of insurance disruptions and loss 4.6 pp (p=0.01) and 4 pp higher (p<0.01) respectively relative to controls. The subgroup with incomes just above the cutoff (138-168% FPL) experienced no change in either outcome. Less than one percent of the near-cutoff group moved from Medicaid to Marketplace or from Marketplace to Medicaid in the post-ACA period.

CONCLUSIONS: Adults with household incomes near the cutoff for Medicaid were at higher risk of insurance disruptions and loss after the ACA compared to low and middle income adults. The effect was driven by individuals moving from Medicaid coverage to being uninsured, particularly among those with incomes just below the cutoff. Our findings demonstrate that upper-bound income cutoffs create instability for Medicaid enrollees close to the threshold. Policy solutions include bridging insurance programs such as a Basic Health Plan or transitioning to a single-payer health system.

LONGITUDINAL COHORT STUDY OF THE ASSOCIATION BETWEEN GRIT AND BURNOUT AMONG FIRST YEAR INTERNAL MEDICINE RESIDENTS

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BACKGROUND: Grit is a personal characteristic defined as passion and perseverance for long-term goals. It has been associated with success and avoidance of burnout in a number of fields, including surgery and emergency medicine trainees. We aimed to evaluate the association between grit and burnout among our first- year internal medicine (IM) residents.

METHODS: We conducted a prospective cohort study of the 2018-2019 PGY1 IM residents at a major academic institution. All PGY1 residents were eligible to participate and were sent the validated Short Grit Scale and Maslach Burnout Inventory (MBI) at the start of training and at 6 and 12 months. An additional background survey was administered to collect information on potential confounders. Our primary outcome was the association between initial grit score and MBI score within the domains of emotional exhaustion (EE) and/or cynicism (CYN) at 6 and 12 months while controlling for initial burnout score. The primary analysis was conducted using a linear mixed effects model with an alpha level of 0.05. Our secondary outcomes included the association between grit and dichotomous high/low burnout in each domain at 6 or 12 months, grit and persistent burnout defined as high EE or CYN at 6 and 12 months, and the association of initial high MBI domain scores with high MBI scores in the same domain at 6 and 12 months using logistic regression. Additionally, we assessed whether Grit remained stable across time points using repeated- measures ANOVA.

RESULTS: A total of 81 participants completed at least one of our surveys from June 2018 to June 2019, 53 of whom were eligible for inclusion in the primary analysis, having completed the burnout and grit surveys at time 0, at least one other time point and having demographic data. There was no association between Grit and EE (p=0.501) or CYN (p=0.714) burnout domain scores adjusting for age, gender, race, program, and home country. Grit was not associated with high EE (OR 0.59, 95% CI 0.31-1.14; p=0.118) or high CYN (OR 0.87, 95% CI 0.45-1.68; p=0.683) at 6 or 12 months or with persistent high EE (OR 0.62, 95% CI 0.29-1.62; p=0.215) or persistent high CYN (OR 1.00, 95% CI 0.47-2.11; p=0.998) at 6 and 12 months. High initial EE or CYN (OR 8.86, 95% CI 1.05-74.93; p=0.045) was found to significantly predict later high burnout scores in EE or CYN. Grit scores and self-efficacy (SE) scores remained stable throughout intern year (p=0.145 and 0.464, respectively), while EE and CYN significantly increased (both p<0.001).

CONCLUSIONS: In our single-center study of PGY1 Internal Medicine residents, Grit was not associated with burnout. However, our analysis shows that higher burnout scores early in the year are associated with higher burnout scores at 6 and 12 months. While further research is needed, our results should empower program leadership to feel confident using early burnout scores to help identify residents at high risk for progressive and persistent burnout.

LONGITUDINAL TRENDS IN ENROLLEES' EMPLOYMENT AND STUDENT STATUS AFTER MEDICAID EXPANSION

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BACKGROUND: Medicaid "community engagement" requirement (work, school, job training, job searching, or volunteering) waivers have received CMS approval in nine states, but there is little data on current trends in Medicaid enrollees' engagement in these activities. Our objective was to assess longitudinal changes in enrollees' employment and student status after implementation of Michigan's Medicaid expansion, which expanded coverage in 2014 and now covers ~664,000 individuals.

METHODS: We conducted a longitudinal telephone survey with a cohort of Medicaid expansion enrollees age 19-64, with incomes up to 133% of the federal poverty level (FPL), at 3 time points in 2016 (N=4,090, RR=53.7%), 2017 (N=3,104; RR=83.4%), and 2018 (N=2,608, RR=89.4%). Survey items measured employment status and student status; demographic characteristics were obtained from Medicaid program files. We used mixed models with year as a fixed effect to assess changes in the proportion of enrollees who were employed or students, incorporating weights adjusting for sample design and nonresponse.

RESULTS: Most respondents had incomes under 100% FPL (61.7% with 0-35% FPL, 22.9% with 36-99% FPL, and 15.4% with 100-133% FPL), 89.3% had at least a high school diploma/GED, and respondents ranged in age (39.6% age 19-34, 34.5% age 35-50, 25.9% age 51-64). From 2016 to 2018, the proportion of enrollees who were employed or students increased from 54.5% to 61.4% ($p<0.001$). Increases were observed in subgroups with lower baseline rates of employment or student status, including those with a chronic condition (47.8% to 53.8%, $p<0.001$) and those with a mental health or substance use disorder (48.5% to 56.0% $p<0.001$). Employed enrollees worked 34.7 mean hours per week on all paid jobs in 2018. Among enrollees who were in school, 57.7% were full-time and 42.3% were part-time students. Enrollees who were not employed or students in 2018 (38.6%) reported being unable to work (47.3%), out of work (40.4%) or retired (12.3%). Among enrollees who reported being unable to work, primary reasons included poor health/disability (91.4%) and caregiving responsibilities (7.1%). Among all enrollees who were not employed in 2018, 36.8% were searching for a job and 9.1% had completed or were enrolled in job training.

CONCLUSIONS: From 2016 to 2018, employment or student status increased among Michigan Medicaid expansion enrollees, including among subgroups with comorbidities. Federal courts are currently weighing whether community engagement requirements will promote the Medicaid program's goals of improved coverage and health, as well as associated improvements in employment and related activities. Our

findings suggest that Medicaid expansion itself was associated with the desired outcome of employment and related activities. The value of Medicaid community engagement requirements should be considered along with the additional administrative burden on individuals and states.

LONGITUDINAL WELLNESS THROUGHOUT AN ACADEMIC YEAR: DESCRIBING DEMOGRAPHIC CHARACTERISTICS IN A LARGE INTERNAL MEDICINE (IM) RESIDENCY

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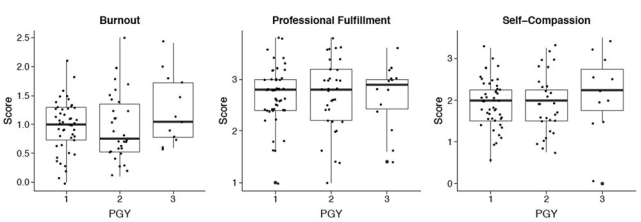
BACKGROUND: Burnout is prevalent in residency programs throughout the country and has been shown to have a negative impact on healthcare. We sought to quantify changes in resident wellness over the course of an academic year.

METHODS: As part of a longitudinal educational study from 2018-2019, 192 IM residents at an academic center completed an online survey early in the academic year and again 10 months later. The survey included the Professional Fulfillment Index (PFI), a 16-item validated assessment scored on a 5-point Likert scale (0-4) across 2 scales: professional fulfillment (PF; higher scores indicate greater well-being) and burnout (BO; higher scores indicate greater burnout), and a 4-item self-compassion (SC) measure (higher scores indicate less self-compassion). Mixed effect models were used for data analysis.

RESULTS: Of the 192 residents, 98 (51%) completed baseline PFI surveys. Of these, 55% were male and 52% were PGY-1. There existed no difference in baseline BO or PF scores by gender though SC was significantly higher amongst females (1.82 vs 2.15; p=0.03). Post-graduate year one (PGY-1) residents also had greater SC (m=1.92) than PGY-3 residents (m=2.40; p=0.03), and while PF was not statistically different between those groups (p=0.78), PGY-3 had a near significant increase in BO (m=1.32) compared with PGY-1 (m=0.97; p=0.05). Twenty-two residents completed PFI surveys at the end of the academic year, with notable absence of PGY-3's. Across PGY-1's, there was an increase in BO (0.97 to 1.31; p=0.01) which was not observed in PGY-2's (0.98 to 1.00; p=0.93). This was similar in PF; however, the opposite was true for SC, with no change across PGY-1's (1.92 to 1.87; p=0.75) and an increase in PGY-2's (1.91 to 1.08; p<0.01).

CONCLUSIONS: In this IM residency, initial average PFI and SC scores identify a higher SC in female compared with male residents, though PFI scores statistically lacked a significant difference. Interestingly, PGY-3 residents had less SC at baseline than PGY-1 residents and trended toward a higher degree of burnout which may speak to a cumulative effect of 3 years of training without a "reset" at the beginning of each year. The lack of improvement across any of the PFI scales in an era of intense focus on resident wellness indicates ongoing efforts are needed to change the status quo.



LONG-TERM MORTALITY AND FUNCTIONAL STATUS IN OLDER ADULTS WITH ATRIAL FIBRILLATION AFTER STROKE

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BACKGROUND: Atrial fibrillation (AF) disproportionately affects older, multimorbid adults and increases risk of stroke. Short-term consequences of stroke are well-described, but less is known about how stroke affects long-term outcomes in AF patients who have other risk factors for death and functional decline. Understanding long-term effects of stroke is important to guide shared decision-making on anticoagulation. Our goal was to determine if, and to what degree, stroke affects mortality and functional disability over time in older AF patients.

METHODS: We used data from 1992-2014 from the Health and Retirement Study, a longitudinal, nationally representative survey of Americans ≥ 50 years old that is linked to Medicare claims. We identified subjects ≥ 65 years diagnosed with AF who did not need help from another person completing any of 6 activities of daily living (ADLs) (walking across a room, dressing, bathing, eating, toileting, getting out of bed). Using incidence density sampling, we identified patients who had an incident stroke and matched them using time from AF diagnosis with 5 comparator nonstroke patients. Outcomes were time to death and to dependence in any of 6 ADLs assessed at 2-year intervals. We used a survival analysis framework accounting for competing risks.

RESULTS: We identified 184 subjects with AF and incident stroke and 935 controls. Two years after stroke, 52% (95% CI 45-60%) of stroke patients had died versus 24% (95% CI 21-26%) of controls. By 4 years, 72% (95% CI 64-79%) of stroke patients had died versus 40% (95% CI 37-44%) of controls, and by 8 years, 91% (95% CI 85-96%) versus 64% (95% CI 60-67%) had died. The cumulative incidence of ADL dependence at 2 years was 52% (95% CI 45-59%) for stroke patients versus 23% (95% CI 21-27%) for controls, at 4 years was 66% (95% CI 59-73%) versus 40% (95% CI 36-43%), and at 8 years was 78% (95% CI 71-83%) versus 59% (95% CI 56-63%).

CONCLUSIONS: In a nationally representative sample of older AF patients, by 2 years after stroke, half of patients with stroke had died, more than double the risk of those without stroke. Stroke was associated with significantly greater loss of functional independence over time. These results inform decision-making and patient counseling on anticoagulation and preventive interventions, as well as advance care planning.

LOUISIANA DISREGARDS THE CHA2DS2VASC FOR PATIENTS WITH LOW SCORES

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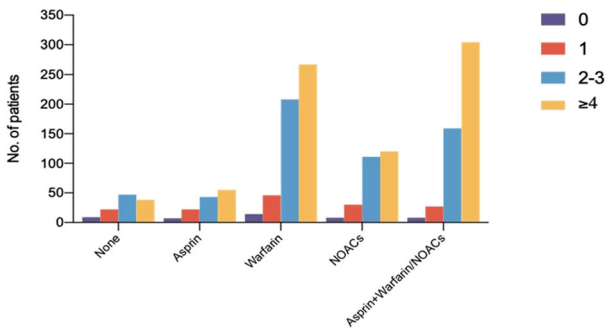
BACKGROUND: Anticoagulation is not indicated for atrial fibrillation (AF) patients with low risk CHA2DS2VASC scores, yet discrepancies from guidelines are seen in Louisiana prescribing patterns. The objective is to investigate adherence to guideline-directed antithrombotic management in patients with AF stratified based on CHA2DS2VASC scores.

METHODS: Analysis included Tulane Medical Center outpatient clinic data over the past ten years to identify characteristics of 1,129 AF patients and their management. AF patients prescribed Aspirin (ASA), Warfarin, non-vitamin K oral anticoagulants (NOACs), or no therapy and their corresponding CHA2DS2VASC scores were identified.

RESULTS: In patients with a CHA2DS2VASC score of zero, 27% received no ASA or anticoagulation, 21% ASA, 3% Warfarin, and 24% NOACs ($p < 0.001$). In AF patients with a CHA2DS2VASC score of one, 20% received no therapy, 20% ASA, 9% Warfarin, and 27% NOACs ($p < 0.001$). Among those with a score of two to three, 22% were not prescribed NOAC or Warfarin and 16% of patients with a score of greater than or equal to four were not prescribed NOAC or Warfarin ($p<0.001$). Most patients with a CHA2DS2VASC of greater than or equal to two were prescribed anticoagulation, in line with guidelines. Conversely, the management of patients with a CHA2DS2VASC score of zero and one is highly variable.

CONCLUSIONS: Evidence that only 27% of AF patients with a score of zero received no ASA or anticoagulation prescriptions indicates guidelines are mostly not being followed for low risk AF patients. Patients are receiving NOACs across the board, regardless of their score. More guidance is needed on how to manage AF patients with a low CHA2DS2VASC score. Further investigation of more ways to risk stratify AF patients ultimately for the prevention of stroke is warranted.

Figure 1: AF Patients on Type of Medical Therapy Organized by CHA_2DS_2VASC Score



LOWER LEVELS OF SOCIAL SUPPORT ARE NOT ASSOCIATED WITH POORER OUTCOMES FOR PATIENTS RECEIVING HOSPITAL-AT-HOME CARE

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BACKGROUND: Higher levels of social support have been associated with improved clinical outcomes during and after acute illness and may play an important role in patients receiving hospital-level care at home. We examine the association of social support on outcomes for patients receiving acute hospital-level care at home versus traditional inpatient hospitalization for acute illnesses.

METHODS: We performed a secondary analysis of a prospective cohort evaluation of a hospital at home (HaH) program of the Mount Sinai Hospital System, involving 295 participants receiving HaH care and 212 patients undergoing traditional hospitalization from November of 2014 to August of 2017. Informational and Instrumental social support were assessed at baseline using two 4-item measures from the Patient-Reported Outcomes Measurement Information System and dichotomized to high and lower social support (SS). To account for data missing at random, we used multiple imputation. We used linear or logistic regression with inverse probability of treatment weighting to examine the confounding and moderating effects of social support upon 4 clinical outcomes. Outcomes included length of stay (LOS) for acute care and any hospitalization, emergency department (ED) visit, or referral to a skilled nursing facility (SNF) in the 30-day post-acute period.

RESULTS: The study population (N=295) was predominantly ≥75 years of age (57%) and female (79%), had high school or higher education (79%), had fee-for-service Medicare insurance (61%), and were admitted for pneumonia (18.9%), urinary tract infection (18.7%), or heart failure (14.9%). Fewer patients receiving HaH compared to traditional hospitalization reported high informational SS (HaH 41% vs. Control 51%, $p=0.012$) and high instrumental SS (HaH 31% vs. Control 37%; $p=0.062$). The effects of HaH upon most outcomes remained significant and unchanged: LOS (base model: -1.89 days; 95% CI -2.48, -1.29; $p<0.001$; controlling for SS: -1.95 days; 95% CI -2.55, -1.34; $p<0.001$), hospitalization (base model: OR 0.63; 95% CI 0.42, 0.96; $p=0.031$; controlling for SS: OR 0.62; 95% CI 0.40, 0.95; $p=0.030$), and referral to SNF (base model: OR 0.14; 95% CI 0.07, 0.28; $p<0.001$; controlling for SS: OR 0.16; 95% CI 0.07, 0.33; $p<0.001$). The association of HaH with any ED visit was attenuated by instrumental SS (base model: OR 0.61, 95% CI 0.39-0.97, $p=0.037$; controlling for SS: OR 0.71, 95% CI 0.44-1.14, $p=0.15$). There were no significant interactions between HaH and high informational or instrumental SS for any of the 4 outcomes.

CONCLUSIONS: Lack of high-levels of SS had little effect on the association of HaH with positive outcomes of care, suggesting similar benefits of HaH services for patients with lower levels of SS. The specific acute and post-acute services of this HaH program may uniquely fill gaps of inadequate SS. Ongoing evaluation of SS in the context of other HaH programs is warranted.

MACHINE LEARNING-BASED AND RULE-BASED SEPSIS RISK PREDICTION TOOLS: A QUALITATIVE STUDY OF IMPLEMENTATION CHALLENGES AND APPROACHES

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BACKGROUND: Mandated reporting of sepsis outcomes have led many institutions to implement surveillance software to improve sepsis outcomes. Commercial EMRs, external vendors, and home grown risk prediction tools offer a variety of approaches. Traditional rule-based models draw on the Systemic Inflammatory Response Syndrome (SIRS) criteria while newer predictive models utilize machine-learning (ML) based algorithms to predict sepsis risk. The purpose of this study is to identify challenges and approaches for successful implementation of sepsis surveillance tools.

METHODS: Semi-structured interviews were conducted with hospital leaders overseeing sepsis clinical decision support implementation at U.S. medical centers (n=14). Participants were recruited via purposive sampling. Interviews probed implementation process, challenges faced, and recommended approaches. Responses were independently coded by two coders with consensus approach and inductively analyzed for themes.

RESULTS: Challenges shared by institutions with both SIRS and ML models categorize to technical build, optimization of alerts, workflow integration, tool validation, implementation time, and working with external vendors. Institutions using ML models reported greater difficulty with clinician acceptance of these tools due to user expectation

management, limited tool intuitiveness, distrust in the technology, and confusion. Successful institutions report multiple approaches to improving acceptance including user education, expert support, and practitioner-led efforts.

CONCLUSIONS: In this small but diverse set of hospitals, we found that in addition to the known socio- technical challenges of implementing clinical decision support, less clinically intuitive ML models may require additional attention to user education, support, and expectation management.

MAINTAINING MOBILITY: PREDICTING MOBILITY LOSS DURING HOSPITALIZATION ON HOSPITAL DAY ONE

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BACKGROUND: Older adults commonly lose mobility during hospitalization. Loss of mobility may be preventable if it is identified and addressed early in a patient's hospital course. However, currently, there is no systematic method to identify at-risk patients early. To address this gap, we created a model to predict, on the first hospital day, patients' likelihood of losing mobility during their hospitalization.

METHODS: We conducted a retrospective cohort study of patients discharged from the inpatient medicine service of an urban academic medical center. We included patients discharge from 1/1 to 12/31/2019, who were ≥65 years old and charted as ambulatory on admission by the bedside RN. We extracted demographic, clinical, and functional data from the medical record. We only included predictors available on the first hospital day. We determined mobility status using the mobility sub-scale of the Braden Score, which is recorded twice daily by bedside nurses.

Using an 80/20 split, we created derivation and validation cohorts. We employed ensemble machine learning methods to develop the prediction model. We used a weighted combination of model fit methods, including gradient boosted trees, linear regression, and random forest. The final model was applied to the validation set to assess discrimination and estimates of variable importance were calculated for each predictor.

RESULTS: 2215 patients met inclusion criteria; at discharge 172 patients (7.8%) had lost mobility. We observed no difference in baseline characteristics between the derivation and validation groups. The mean age was 77 years, most patients were female (51%), and most were admitted through the Emergency Department (85%) to a floor bed (71%).

The final model predictors included patient sex, age, admit source, level of care, payer class, foley status, gastric tube status, NPO status, number of medications administered, number of peripheral IVs inserted, Glasgow Coma Scale, and admission diagnosis. The final model discriminated relatively well, with a c-statistic of 0.73 in the validation set. Medication count and age explained the greatest variance in outcomes, 28% and 27%, respectively.

CONCLUSIONS: It is possible to predict those at risk of losing mobility using data only from hospital day one. Such a tool allows physicians, nurses, and therapists to intervene early in the care of patients at the greatest risk of mobility loss.

MANAGING ANXIETY IN PRIMARY CARE WITH THE NEW ANXIETY MANAGEMENT ALGORITHM STANDARDIZING TREATMENT EXPERIENCE (NAMASTE): A LONGITUDINAL COHORT ANALYSIS

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BACKGROUND: Generalized Anxiety Disorder (GAD) is persistent and excessive worry, fear, and/or stress that exists outside of developmentally normative fear and anxiety. GAD is common and contributes to disability and adverse health outcomes, including increased suicide risk. GAD care particularly concerns primary providers given the relative shortage of psychiatric care.

The UNC Internal Medicine Clinic (IMC) staff developed the New Anxiety Management Algorithm Standardizing Treatment Experience (NAMASTE) to help providers identify and manage anxiety disorders.

NAMASTE standardizes anxiety disorder treatment including identification, medication management and counseling, and uses the GAD-7, a validated 7-item measure of GAD symptoms, to monitor treatment response.

We sought to determine whether the NAMASTE program was associated with greater reductions in GAD-7 scores than seen in usual care.

METHODS: We conducted a retrospective cohort study of IMC primary care patients older than 18 years from 1/1/2016 to 7/5/2019. Patients were included if they had at least 4 GAD-7 assessments in the medical record and their first GAD-7 was at least 10, indicating at least moderate anxiety. All GAD-7s in the record were abstracted.

We also collected data on the following covariates: age, gender, counseling use, use of augmenter medications like buspirone, and other mental health diagnoses.

We categorized whether participants were managed as part of the NAMASTE program or outside of the program.

The primary outcome was GAD-7 score. For analysis, we used longitudinal linear models with the GAD-7 measurement occasion as the unit of analysis and generalized estimating equations (GEE) to account for repeated measurements within individuals.

RESULTS: Two hundred fourteen individuals met inclusion criteria (NAMASTE n = 96, Non-NAMASTE n = 118). Overall, there were no significant differences between the groups' covariates at baseline, except mean baseline GAD-7 (NAMASTE mean = 16, SD 3.5; Non-NAMASTE mean = 14, SD 3.2). In unadjusted analyses, mean follow-up GAD-7 score was 10 (SD 5.1) in NAMASTE and 11 (SD 4.8) in non-NAMASTE. In GEE models adjusted for baseline GAD-7 and the above covariates, NAMASTE participants had larger decreases in GAD-7 scores than non-NAMASTE participants (-0.15, 95%CI -0.26 to -0.04, p = 0.004).

CONCLUSIONS: NAMASTE participation was associated with larger decreases in GAD-7 scores than usual care. Limitations of this study include non-random assignment to the intervention. Though we adjusted for potential confounders, we may not have had data on all factors that influenced receipt of treatment and treatment response. An important direction for future research would be testing the NAMASTE program in a randomized trial. Until then, noting the burden of anxiety and other mental health disorders in our population, NAMASTE can still provide structured care within the bounds of our primary care clinic that is associated with symptomatic improvement.

MEANINGFUL IMPROVEMENT 24 WEEKS AFTER INITIATING SUBCUTANEOUS TANEZUMAB FOR OSTEOARTHRITIS OF THE HIP OR KNEE IN PATIENTS FROM EUROPE AND JAPAN

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BACKGROUND: Tanezumab is a monoclonal antibody that inhibits nerve growth factor, and has early and sustained efficacy following subcutaneous administration in patients with osteoarthritis (OA). This analysis from a randomized study (NCT02709486) conducted in Europe and Japan assessed the proportion of patients with moderate (≥30%) or substantial (≥50%) clinically important improvements in Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) Pain score, and corresponding changes in WOMAC Physical Function score, at Week 24.

METHODS: The patients had radiographically confirmed OA (hip or knee); WOMAC Pain (Screening and Baseline) and Physical Function (Baseline) scores ≥5 on 11-point scales; Baseline Patient's Global Assessment of OA 'fair', 'poor', or 'very poor '; and a history of insufficient pain relief from acetaminophen, and inadequate pain relief from, intolerance to, or contraindication to nonsteroidal anti-inflammatory drugs and either tramadol or opioids (or unwillingness to take opioids). Patients received three subcutaneous doses of placebo, tanezumab 2.5 mg, or tanezumab 5 mg (Baseline, Week 8, Week 16). The proportions of patients with ≥30%, ≥50%, ≥70%, or ≥90% reduction from Baseline at Week 24 in WOMAC Pain and WOMAC Physical Function were assessed. Since tanezumab 2.5 mg did not meet all three co-primary endpoints, these secondary responder endpoints were unadjusted for multiplicity.

RESULTS: A total of 849 patients were analyzed. At Week 24, a significantly greater proportion of patients treated with tanezumab than placebo had ≥30% (56.6%, 65.6%, and 68.7% in the placebo, tanezumab 2.5 mg, and tanezumab 5 mg groups, respectively) or ≥50% (33.8%, 45.4%, and 47.9%, respectively) improvement from Baseline in WOMAC Pain (both groups, unadjusted, $P<0.05$ versus placebo); the proportion of tanezumab-treated patients achieving ≥70% (17.8%, 21.3%, and 23.2%, respectively) or ≥90% (3.2%, 5.3%, and 6.0%, respectively) improvement was not significantly different from placebo. At Week 24, a significantly greater proportion of patients treated with tanezumab than placebo had ≥30% (51.2%, 64.9%, and 68.7%, respectively) or ≥50% (32.4%, 41.5%, and 44.7%, respectively) improvement from Baseline in WOMAC Physical Function (both groups, unadjusted, $P<0.05$ versus placebo); the proportion of tanezumab- treated patients achieving ≥70% improvement was not significantly different from placebo (14.6%, 19.1%, and 17.3%, respectively), but significantly more tanezumab-treated patients than placebo had a ≥90% improvement in Physical Function (1.8%, 5.3%, and 5.3%, respectively, both groups, unadjusted, $P<0.05$ versus placebo).

CONCLUSIONS: Significantly more patients in each tanezumab treatment group (2.5 mg and 5 mg) had a moderate or substantial clinically important improvement in pain at Week 24, compared with placebo. Similar improvements in function were observed. There were few differences between the tanezumab treatment groups.

MEANINGFUL IMPROVEMENT IN WOMAC PAIN SUBSCALE SCORE AT 16 WEEKS AFTER INITIATING SUBCUTANEOUS TANEZUMAB VERSUS PLACEBO IN PATIENTS WITH OSTEOARTHRITIS IN NORTH AMERICA

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BACKGROUND: Tanezumab is a monoclonal antibody that inhibits nerve growth factor and is under investigation for the treatment of osteoarthritis (OA), showing early and sustained efficacy with subcutaneous administration. This analysis assessed the proportion of treated patients attaining moderate (≥30%) or substantial (≥50%) clinically important improvements in Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) Pain score, and corresponding changes in WOMAC Physical Function score, at Week 16.

METHODS: This randomized, multi-center, dose titration study (NCT02697773) was conducted in North America. Patients had radiographically confirmed OA (hip or knee); WOMAC Pain score ≥5 at screening and baseline and Physical Function score ≥5 at baseline (both 11-point scales); Patient's Global Assessment of OA 'fair', 'poor', or 'very poor' at baseline; and a documented history that acetaminophen was insufficient, and nonsteroidal anti-inflammatory drugs, and either tramadol or opioids, were inadequate or unsuitable. Patients received placebo at baseline and Week 8, tanezumab 2.5 mg at baseline and Week 8 (tanezumab 2.5 mg group) or tanezumab 2.5 mg at baseline and tanezumab 5 mg at Week 8 (tanezumab 2.5/5 mg group). The proportions of patients with ≥30%, ≥50%, ≥70%, or ≥90% reduction from baseline at Week 16 in WOMAC Pain or Physical Function were assessed.

RESULTS: The analysis included 696 patients. Significantly more tanezumab-treated patients than placebo- treated patients had ≥30% (54.7%, 68.0%, and 70.4% in the placebo, tanezumab 2.5 mg, and tanezumab 2.5/5 mg groups, respectively) or ≥50% (37.9%, 54.5%, and 57.1%, respectively) improvement from baseline in WOMAC Pain at Week 16 (both groups $P<0.05$ versus placebo); ≥70% improvement in WOMAC Pain was also achieved by significantly more patients in each tanezumab group than placebo (25.0%, 34.6%, and 36.5%, respectively, both groups $P<0.05$), but the proportion with ≥90% improvement was not significantly different from placebo in the tanezumab groups (9.5%, 14.7%, and 14.2%, respectively). Significantly more tanezumab-treated patients than placebo-treated patients had ≥30% (54.3%, 65.8%, and 71.7%, respectively), ≥50% (36.6%, 54.1%, and 57.1%, respectively), or ≥70% (22.8%, 34.2%, and 36.1%, respectively) improvement from baseline in WOMAC Physical Function at Week 16 (both groups $P<0.05$); but the proportion with ≥90% improvement was not significantly different from placebo in the tanezumab groups (10.3%, 14.3%, and 14.6%, respectively).

CONCLUSIONS: Significantly more patients treated with tanezumab (both treatment groups) than placebo had a moderate or substantial clinically important improvement in pain at Week 16. A similar pattern was seen for function. There were few differences between the two tanezumab treatment groups.

MEASLES IMMUNITY SCREENING IN A NYC MEDICAL STUDENT-RUN FREE CLINIC

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BACKGROUND: The New York City Department of Health reported 390 cases of measles between October 2018 and April 24, 2019. In light of this outbreak, local healthcare providers were urged to ensure adult patients' immunity to measles. The Weill Cornell Community Clinic, a

student-run free clinic providing primary care to uninsured, low-income New Yorkers ages 18 and up, implemented measles immunity screening beginning April 25, 2019. This study aims to report the outcomes of this measles immunity screening protocol and the prevalence of measles non-immunity and associated demographic characteristics among uninsured, low-income adult patients of a New York City medical student-run free clinic.

METHODS: Patients underwent serological measles immunity testing during their regularly scheduled clinic visit if 1) they did not have an accessible measles vaccination record or serological-proven immunity 2) they were having blood drawn for other tests during the visit and 3) they consented to the test. Serological testing was performed via anti-measles IgG antibody assay which yields results of immune, non-immune or equivocal immune status. All patients found to be non-immune were offered two doses of MMR vaccine at least 28 days apart. Results of measles screening protocol, including serum anti-measles antibody results when performed, as well as demographic information were collected from the medical record for patients seen between April 25, 2019 and November 11, 2019. Data were analyzed using descriptive statistics, T tests and Fisher's Exact tests.

RESULTS: There were 83 unique patients seen during the screening period, at least 73.5% of whom were born outside of the United States. Only three patients (3.6%) had accessible measles vaccination records. Nine patients (10.8%) had serological immunity checked prior to the screening period. Of the remaining 71 patients, 18 (21.7%) did not have serological measles immunity testing performed for the following reasons: no bloodwork drawn at the appointment (n=11), missed (n=1), refused (n=2). Of the 56 patients who underwent serological measles immunity testing during the screening period, eight were found to be non- immune (14.3%). Seven of eight patients found to be non-immune went on to receive at least one MMR vaccine (87.5%). Compared to immune patients, measles non-immune patients were younger (mean 36.8 ± SD 8.5 years vs. 51.0 ± 12.6 years, p=0.003) and less likely to be black (OR 0.0 95% CI 0.0-0.77, p=0.033). There were no differences between measles non-immune and immune patients in sex, primary language or borough of residence.

CONCLUSIONS: Uninsured, low-income adult patients of a New York City student-run free clinic between April 25, 2019 and November 11, 2019 rarely had accessible, documented measles vaccination records. We found 14.3% of patients who underwent serological measles immunity testing to be non-immune, with most non-immune patients going on to receive the MMR vaccine. The non-immune patients tended to be younger and non-black.

MEASUREMENTS OF RESILIENCE AND GRIT AMONG INTERNAL MEDICINE RESIDENTS: VALIDITY AND ASSOCIATIONS WITH MEDICAL KNOWLEDGE, PROFESSIONALISM, AND CLINICAL PERFORMANCE

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BACKGROUND: Resident physician burnout, which has been widely studied, is a complex phenomenon with systems and individual components. Resilience and grit may represent modifiable, individual factors that counter burnout. However, there is lack of validity evidence regarding measures of resilience and grit among physicians-in-training.

METHODS: We evaluated CD-RISC 10 and GRIT-S instrument scores among IM residents at the Mayo Clinic Rochester, Minnesota between July 2017 and June 2019. For both instruments, we analyzed dimensionality, internal consistency reliability, and criterion validity in terms of relationships between resilience and grit, with standardized measures of residents' medical knowledge (in-training examination [ITE]), clinical performance (faculty and peer evaluations and mini-clinical evaluation exercises [mini- CEX]), and professionalism/dutifulness (conference attendance and evaluation completion).

RESULTS: A total of 213 out of 253 (84.2%) survey-eligible IM residents provided both CD-RISC 10 and GRIT-S survey responses. Internal consistency reliability (Cronbach alpha) was excellent for CD-RISC 10 (0.93) and GRIT-S (0.82) overall, and for the GRIT subscales of consistency of interest (0.84) and perseverance of effort (0.71). Regarding criterion validity, CD-RISC 10 scores were negatively associated with ITE percentile (β = -3.4, 95% CI: -6.2 to -0.5, P=0.02) and mini-CEX (β = -0.2, 95% CI: -0.5 to -0.02, P=0.03). GRIT-S scores were positively associated with evaluation completion percentage (β = 3.1, 95% CI: 0.4 to 5.8, P=0.02) and conference attendance (β = 3.4, 95% CI: 0.1 to 6.6, P=0.04).

CONCLUSIONS: This study revealed favorable validity evidence for CD-RISC 10 and GRIT-S among internal medicine residents. The negative relationship between CD-RISC 10 and both ITE and mini-CEX scores may suggest residents' abilities to demonstrate resilience within a competitive training environment, despite performing less favorably on standardized assessments of medical knowledge and clinical performance. As hypothesized, we identified positive associations between grit and behaviors related to the dutifulness aspect of professionalism, namely evaluation completion and conference attendance. This initial validity study provides a foundation for further research on resiliency and grit among physicians-in-training.

MEASURING FLOURISHING AMONG INTERNAL MEDICINE AND PSYCHIATRY RESIDENTS

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BACKGROUND: Many residents experience burnout, which has prompted national attention on trainee well-being. Well-being goes beyond the absence of burnout, and exploration of well-being in graduate medical education is relatively lacking. A recently developed measure of flourishing – defined by VanderWeele in 2017 as a broad conception of well-being including six domains: (1) happiness and life satisfaction, (2) mental and physical health, (3) meaning and purpose, (4) character and virtue, (5) close social relationships, and (6) financial and material stability - may provide insight into this important topic. To date, the flourishing measure has not been studied in medical trainees. The purpose of this study was to investigate flourishing and its correlates in a sample of medical residents. We hypothesized that higher flourishing scores in trainees would correlate with higher quality of life, satisfaction with work-life balance, and empathic concern, as well as lower burnout.

METHODS: Internal medicine residents and psychiatry residents at two residency programs responded to a cross-sectional, online survey (December 2017-February 2018) which focused on the flourishing measure, producing two scores: the Flourish Index (FI) and Secure Flourish Index (SFI); these were our primary and secondary outcomes respectively. The SFI includes the items contained in the FI, plus additional assessment of

material and financial stability. Participants were queried about other data, using mostly validated measures, including: quality of life, burnout, work-life balance, empathic concern, and sociodemographic characteristics. Simple and multiple linear regressions were performed to examine the relationship between FI/SFI and other variables.

RESULTS: The response rate was 92% (n=92/101). Participants reported a mean FI score of 6.8 (SD=1.6) and mean SFI score of 6.9 (SD=1.6). In the best multivariate model for FI, low quality of life, low work-life balance satisfaction, high emotional exhaustion, lower empathic concern, and having a pet were all significantly associated with lower FI scores (R^2=0.59, F[14,69]=7.10, p<.0001) indicating lesser flourishing, controlling for other variables. Similarly, low quality of life, high emotional exhaustion, lower empathic concern, and having a pet were all significantly associated with lower SFI scores (R^2=.55, F[14,69]=6.06, p<.0001), controlling for other variables.

CONCLUSIONS: The associations between flourishing indices and well-being metrics, as well as burnout, suggest the flourishing measure may be useful for assessing trainee well-being and growth.

MEDICAID SECTION 1115 WAIVER DEMONSTRATION PROGRAMS: TRANSPARENCY AND ACCOUNTABILITY UNDER THE AFFORDABLE CARE ACT

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BACKGROUND: Under Section 1115 of the Social Security Act, the Secretary of Health and Human Services may waive Medicaid requirements and permit states to pilot experimental models of healthcare delivery, provided these still advance Medicaid objectives. To promote transparency and accountability, the ACA introduced two additional reporting requirements for states with waivers. Starting in 2012, states with Section 1115 waivers must publish annual progress reports describing demonstration program implementation and also conduct and report on periodic demonstration program evaluations. Both the annual progress reports and period evaluations must be reported publicly. We sought to examine states' compliance with ACA demonstration program annual reporting and program evaluation requirements.

METHODS: We conducted a a two-part cross-sectional study of of the Medicaid 1115 waiver demonstration programs' annual reports and periodic program evaluations. Using the publicly available Centers for Medicare and Medicare Services' (CMS) administrative record, we identified all active demonstration programs and determined the percentage making annual reports publicly available, comparing 2011-2013 (pre-ACA) and 2016-2018 (post-ACA). Next, we determined adherence to CMS reporting guidelines for all publicly available demonstration program evaluations from 2016-2018, using a binary scoring system characterizing the following eight evaluation components: Executive Summary; Background; Hypothesis; Methods; Results; Conclusions; Interpretations and Policy Implications; and Lessons Learned.

RESULTS: From 2011-2013 (pre-ACA), there were 126 anticipated annual reports from CMS administrative records, 6 (4.8%) of which were publicly available. In contrast, from 2016-2018 (post-ACA), there were 93 anticipated annual reports, 54 (58%) of which were publicly available (p<0.001). From 2016-2018 (post- ACA), there were 20 publicly available demonstration program evaluations. The median number of program evaluation components reported was 5 (IQR, 2-6). The most commonly reported program evaluation component was Results (n=18; 90%) and General Background Information (n=15; 75%), whereas Interpretations and Policy Implications, and Lessons Learned and Recommendations were least commonly reported (n=4 for both; 20%). Notably, eleven evaluations that were submitted to CMS for consideration for demonstration program renewal failed to document Interpretations and Policy Implications.

CONCLUSIONS: Despite an increase in public annual reporting on Section 1115 demonstration programs after passage of the ACA, over 40% of annual reports required under the ACA have not been published publicly, and they consistently fail to adhere to CMS reporting guidelines reporting guidelines of key evaluation components. Given the importance of Medicaid Section 1115 waivers to pilot innovative, health- delivery systems, enforcement of existing CMS rules to ensure transparency and accountability is needed, particularly for program renewals.

MEDICAL CONDITIONS MANAGED BY SPECIALISTS USING TELEMEDICINE AMONG RURAL MEDICARE BENEFICIARIES

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BACKGROUND: Rural Americans, relative to suburban and urban counterparts, are older, have a greater burden of chronic medical conditions (e.g., dementia, diabetes), and have less access to specialty care. Given telemedicine's ability to improve access to specialty care, policies at the state and federal level are changing to support telemedicine's expansion. The traditional Medicare program has historically reimbursed telemedicine visits, primarily focusing on older, rural Americans. While telemedicine for the treatment of mental health disorders has been described among Medicare beneficiaries, how telemedicine is being used by specialists to manage medical conditions is understudied, and so is its potential to help rural populations with chronic medical conditions and limited access. To fill this gap, we describe how telemedicine has been used by specialists to manage or co-manage medical conditions among rural Medicare beneficiaries.

METHODS: Using a 100% sample of traditional rural Medicare beneficiaries in 2017, we identified telemedicine visits using relevant modifiers, place of service, or CPT codes. Visits were categorized using the primary diagnosis code and provider specialty. After excluding visits for mental health conditions, we described common conditions treated, provider type, location of the encounter (e.g., inpatient, outpatient, or skilled nursing facility), and utilization by the beneficiary's state of residence, reported as telemedicine visits per 1000 rural beneficiaries by state.

RESULTS: In 2017, there were 87,738 telemedicine visits for medical conditions (30% of all telemedicine visits) provided to 50,437 (0.9%) rural beneficiaries. The majority (56%) of these visits were for five conditions: cognitive disorders (e.g., dementia and delirium) (23.3%), cardiovascular diseases (9.9%), sleep disorders (8.1%), neurologic diseases (e.g., post-stroke care and epilepsy) (7.6%), and hematologic disorders (e.g., anemias and anticoagulation monitoring) (7.3%). The majority of visits occurred with a physician (73%) vs. non-physician providers (27%) such as nurse practitioners. Over 95% of visits originated from an outpatient setting. The per-rural-beneficiary volume of telemedicine visits ranged from 0 per 1000 visits in New Jersey to 45 per 1000 in South Dakota. The Western region of the U.S. had the highest per-rural- beneficiary volume of telemedicine visits.

CONCLUSIONS: Telemedicine in the Medicare program has been modestly used for conditions important to aging adults, and with a wide geographic variation. While policies at the state and federal level are changing to create legislation favorable for telemedicine's expansion

(e.g., payment parity laws and expanding broadband access), how best to focus public resources requires understanding how telemedicine is used before assessing whether its use has improved the health of under-resourced populations. Our study provides a critical first step and may guide policymakers and practitioners as they shape telemedicine's future.

MEDICALLY UNDERSERVED PATIENT PERSPECTIVES REGARDING BEST PRIMARY CARE APPROACHES TO SUPPORT HEALTHY EATING AND WEIGHT LOSS FOR PATIENTS WITH OBESITY

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BACKGROUND: Obesity and obesity-related chronic conditions place major health and financial burdens on people in the United States. Multicomponent intensive behavioral weight loss programs focused on plant-based whole foods have been successful in achieving remission of diabetes and other obesity-related chronic conditions. However, it is unclear which intervention components are likely to be most effective for low-income and minority patients struggling with obesity. This study seeks to determine whether primary care multi-component plant-based healthy eating and weight loss programs would be of interest and what component interventions would be most appreciated from the perspective of patients in medically underserved areas.

METHODS: We identified patients with obesity and at least one obesity-related chronic condition being seen in a Federally Qualified Health Center (FQHC) using a regional Diabetes, Prevention, and Wellness Coalition practice-based research network. Patients were recruited by phone. We conducted concurrent surveys and focus groups to understand patients' experiences with healthy eating and weight loss, as well as their perceptions about specific primary care and community-based resources that aid healthy eating and weight loss. Focus groups were recorded and transcribed using Dragon Professional software. NVivo qualitative data analysis software was used to identify common discussion themes.

RESULTS: Participants (N=17) were mostly African American (94%), with an average age of 49.3 years. 47.1% of participants listed cost as a major barrier to plant-based healthy eating. Cost of healthy food was referenced 18 times in the group discussion, knowledge gaps were referenced 15 times, and insufficient motivation was also frequently referenced as a barrier to healthy eating and weight loss. Patient interest in primary care clinic-based healthy eating and weight loss interventions was high, with 100% reporting that health coaches would be a strong support for healthy eating and weight loss, 100% reporting interest in recipe ideas, 82% in support groups, 94% in healthy food boxes for diet replacement, and 77% in cooking classes. Only 6% had ever met with a dietician or nutritionist, but 47% reported interest in doing so. Of the 94% of patients taking medication (N=16), 100% reported interest in trying a plant-based diet in order to reduce their number of medications.

CONCLUSIONS: These findings suggest that medically underserved patients are highly interested in multi-component plant-based healthy eating and weight loss programs based in primary care. Furthermore, this study provides important information on the components that are of most interest to these patients. The most popular supports and resources (i.e. health coaches, healthy food boxes, support groups, and meal plans) addressed commonly identified barriers to plant-based healthy eating including high food costs, knowledge gaps, and insufficient motivation.

MEDICAL STUDENT KNOWLEDGE OF AND ATTITUDES TOWARD US DRUG PRICING

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BACKGROUND: High US drug costs have garnered increasing national attention from policymakers and the public, with multiple proposed approaches to reform. While doctors/prescribers are key stakeholders regarding drug prices, poor knowledge of the complex forces that shape drug pricing may be a barrier to effectively addressing and advocating for patients' needs. Medical schools offer opportunity for early professional education about drug pricing, but student knowledge of drug pricing and its determinants and attitudes toward learning about drug pricing are not well understood. We assessed student knowledge of drug pricing and experiences of and attitudes toward education about drug pricing.

METHODS: We surveyed a national sample of students from US medical schools. The survey was accessed online through a link from an article posted on the Student Doctor Network (SDN), an on-line student forum; survey completers could enter a lottery to win $100 gift cards. Survey items included questions about demographics, attitudes toward drug pricing and its teaching (e.g. quantity/quality of instruction, importance, interest in learning more), and knowledge of drug pricing and its determinants. We used descriptive statistics and chi-square tests to assess associations of knowledge with class year and self-reported quality/quantity of drug pricing instruction. The study was reviewed by our institutional IRB and deemed exempt.

RESULTS: Among 815 viewers of the SDN article, 361 visited the survey and 240 (66%) students completed it. 53% were female; most were white (62%) or Asian (28%) and in MD (82%) or DO (13%) programs: 33% in year 1 and 22%, 24%, and 21% in years 2, 3, and 4. Clinical/non-primary care was the most common anticipated field (61%). Nearly all participants (>99%) said it was somewhat or very important to understand factors that influence drug pricing. Among year 3-4 students (n=108), 64(59%) reported receiving medical school instruction on drug pricing, among whom few rated the quantity as adequate (7%) or the quality as excellent (3%) or good (8%). Among 10 knowledge questions related to drug costs, reimbursement and pricing, the median correct score was 6; many responded "don't know" to questions about rates of brand name prescribing (54%) and physician reimbursement for intravenous drugs (51%). Fewer than half (44%) knew that drug prices are uncorrelated with research/development costs. Knowledge was associated with year in school (p=0.011) but not with reported instructional quality or quantity. Over 90% of participants were interested in learning more about drug pricing.

CONCLUSIONS: Medical students report interest in factors influencing drug prices but inadequate instruction, and knowledge is incomplete. To equip future doctors to effectively participate in the debate around drug prices, educators should discuss drug prescribing and reimbursement and teach about determinants of drug pricing.

MEDICARE PATIENTS ARE LESS LIKELY THAN YOUNGER PATIENTS TO BE REFERRED FOR WEIGHT MANAGEMENT AND ARE LESS LIKELY TO ATTEND

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BACKGROUND: Medicare only covers limited weight management services within the health system (e.g. behavioral therapy in primary care). Knowing whether Medicare patients have a reduced likelihood of attending a weight management program can inform whether insurance access is a barrier to care after receiving a referral. The objective of this study is to identify the likelihood of Medicare patients to receive a referral to a weight management program and attend after that referral.

METHODS: This retrospective cohort study included adults between 18 and 90 years who had a primary care visit between 2015 and 2018 in a large integrated health system. We excluded patients diagnosed with cancer or pregnancy due to expected weight change and patients with a body mass index (BMI) <30. We identified whether a patient had a consult to a weight management program and whether there was a visit to any weight management program within 365 days of the consult. Demographics and health characteristics were collected from the electronic health record. Patients ≥65 years were identified as Medicare patients. Logistic regression models adjusted for age (as a continuous variable), sex, race, marriage status, BMI and age-adjusted Charlson comorbidity score were used to identify the odds of receiving a consult and attending a weight management program for patients in the Medicare group vs non-Medicare group.

RESULTS: Our study included 167,792 adults of which 17% of patients received a consult. In the adjusted regression model Medicare patients had 26% reduced odds (AOR:0.74) of receiving a consult vs non- Medicare patients ($p<0.01$). The adjusted odds of receiving a consult increased 34% (AOR 1.34) for each additional point on the Charlson comorbidity score and 43% for every 5 points on the BMI (AOR 1.43). The adjusted odds decreased 2% for every additional year of age (AOR:0.98)($p<0.01$).

Of patients who received a consult, 26% had a subsequent weight management visit. Patients who attended a weight management program averaged one less consult than patients who did not (2.5 vs 3.5 consults, $p<0.01$). On average there was 40 days between the last consult and first weight management visit. The adjusted odds of attending a visit was 34% lower (AOR: 0.66) for patients in the Medicare group compared to patients in the non-Medicare group ($p<0.01$). Neither BMI nor Charlson comorbidity score was associated with attending a weight management program among patients who received a referral ($p>0.05$). Increased age continued to be associated with decreased odds of attending a visit (AOR:0.99 for every additional year, $p<0.01$).

CONCLUSIONS: Medicare age, weight and number of comorbidities impacted the likelihood of a clinician referring a patient to a weight management program, but only age affected the likelihood of attending. In addition to age, Medicare insurance may be a barrier to attending weight management services in a health system after referral.

MEDICATION ERRORS IN TRANSITIONS OF CARE FROM HOSPITAL TO SKILLED NURSING FACILITIES: A GERIATRIC TEAM'S NEEDS ASSESSMENT TO INCREASE AWARENESS AND SPUR INSTITUTIONAL CHANGE

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BACKGROUND: Providers who care for elderly and disabled patients in post-acute care venues are all too familiar with medication administration errors that occur with patient transitions from the hospital to Skilled Nursing Facilities (SNFs). These errors, if ever discovered, are often not identified and corrected for several days, which places the patient at risk for serious complications, hospital bounce backs and even death. In order to increase institutional awareness about these issues, a needs assessment was performed to characterize the prevalence of two types of errors at hospital discharge: errors contained within the discharge summary (internal discordance), and errors in the medications ordered at the SNF (transcription errors). The primary objective of this work was to characterize and share the prevalence of such errors in order to increase awareness and motivate practice and culture change within both the discharging health system and the receiving SNFs.

METHODS: A needs assessment was conducted to characterize the prevalence of medication errors occurring with transitions from the inpatient medicine service at the University of Virginia to fifteen SNFs in Virginia over a four week period (52 discharges total). Discharge audits were performed by a small team with members who specialize in inpatient and post-acute geriatric medicine. Discharge summaries were reviewed for internal consistency and whether the final medication list reflected the correct and intended therapies. MARs (Medication Administration Records) were obtained from each SNF within 24 hours of each patients' discharge and were compared with the medication list in the final discharge summary.

RESULTS: Over a four week audit of 52 discharges, 57% of discharge summaries contained a clinically significant mismatch between the discharge summary text and the final medication list in the discharge summary. In 69% of discharges, there were discrepancies between the final discharge summary medication list and the medications that were ordered at the SNF. Serious errors included excessive insulin dosing, omission of anticoagulant therapy for acute DVT, omitted IV antibiotics, and errors in doses of critical anti- arrhythmic medications.

CONCLUSIONS: A four week, intensive review of UVA discharge summaries and receiving SNF MARs revealed significant rates of discharge summary internal discordance and SNF transcription errors. These findings were shared with Directors of Nursing (DONs) at a number of SNFs leading to increased awareness and broader internal audit processes aimed at reducing transcription errors. Findings were also presented to hospital leadership leading to both immediate corrective actions and additional QI projects aimed at identifying and correcting contributing systemic factors. We anticipate performing additional targeted needs assessments for other hospital service lines to further increase understanding and awareness, and to encourage corrective actions throughout the health system.

METABOLIC ACIDOSIS: A NEW REASON FOR INTERNISTS TO COUNSEL OBESE PATIENTS ABOUT CHRONIC KIDNEY DISEASE

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BACKGROUND: Obesity is highly prevalent in the United States; and is projected to increase by 2030. In counseling obese patients, internists commonly emphasize the consequences of obesity including diabetes, hypertension, and cardiovascular disease. However, the increased risk for chronic kidney disease (CKD) is infrequently discussed. This deserves greater emphasis given the impact of end stage kidney disease and dialysis on quality of life and mortality. Prior research has shown that obese patients have more acidic urine, suggesting a state of metabolic acidosis – a known risk factor for CKD and mortality. Using a retrospective cohort study design, we explored this association further by 1) examining the association between body mass index (BMI) and serum bicarbonate, and 2) assessing incidence of clinical metabolic acidosis based on BMI.

METHODS: We assembled a large, racially and ethnically diverse cohort (n = 96,147) using data from the electronic health record of a large, urban healthcare system between January 2010 and December 2015. Inclusion

criteria were age > 18 years, and valid demographic, BMI, and outpatient laboratory data. Exclusion criteria were the presence of medical conditions and/or use of medications affecting serum bicarbonate. We ran multivariable linear regression and multilevel mixed effects modelling to examine the association between BMI and serum bicarbonate. Next, we used cox proportional hazards modelling to evaluate the risk of incident metabolic acidosis by BMI groups.

RESULTS: There was a progressive and highly significant association between higher BMI and lower bicarbonate. The association was J-shaped, attenuating but remaining highly significant at the highest BMI values. This association was greatest among white patients without baseline diabetes at a BMI of 40 – 42.9. Cox proportional hazards analysis revealed a progressively increased risk of incident metabolic acidosis at higher BMIs. The maximum hazard ratio was 1.20 (95% CI 1.14 – 1.26, $p < 0.001$) at a BMI of 35 – 39.9, declining to 1.15 (95% CI 1.09 – 1.22, $p < 0.001$) at a BMI > 40, reinforcing a J-shaped relationship between a higher BMI and metabolic acidosis.

CONCLUSIONS: A higher BMI contributes a significant risk for lower serum bicarbonate, and for incident clinical metabolic acidosis, a known risk factor for kidney functional decline and mortality. Our results imply that metabolic acidosis may be a new pathophysiological mechanism linking obesity to CKD; and future research is warranted to investigate such a relationship. Internists should also incorporate in their counseling of obese patients a discussion of the increased risk for kidney disease attributable to excess weight.

MISSED DRUG USE AMONG INFECTIVE ENDOCARDITIS CASES IS ASSOCIATED WITH FRAGMENTED CARE: EVIDENCE FROM SIX STATES

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BACKGROUND: Infective endocarditis (IE) is a highly morbid complication related to injection drug use. Studies using national administrative data suggest that hospitalizations for drug use-associated infective endocarditis (DUA-IE) have increased over the last ten years, now accounting for 10-12% of IE cases. However, drug use as a contributing factor to IE hospitalizations is often missed or not included in coding documentation, resulting in undercount of DUA-IE. When substance use is missed during an IE-related hospitalization, care may become fragmented because of early discharge, untreated substance use, or resulting complications that necessitate care at a different hospital. We assessed whether missed drug use during IE hospitalizations was associated with higher levels of fragmented care and underestimation of DUA- IE burden.

METHODS: We analyzed data from State Inpatient Databases and State Emergency Department Databases from six states (FL, GA, IA, NY, UT, VT) from 2011-2015 where patients could be tracked across hospitals. Patients older than 16 with ICD-9/10 codes for admissions with IE were included. IE was categorized as DUA using ICD-9/10 codes for drugs/conditions associated with injection drug use (heroin, methamphetamine, cocaine, and hepatitis C). We labeled IE cases as a "missed" DUA-IE case if they had no diagnosis of drug use during their index hospitalization but received a drug use diagnosis during an ED visit or inpatient stay in the calendar year of their index IE hospitalization. We compared "missed" DUA-IE cases to DUA-IE cases where drug use was identified in the index hospitalization and non-DUE-IE cases with respect to demographics, length of stay (LOS) and total charges. To assess care fragmentation, we stratified IE groups by whether the patient was admitted to 1 or >1 hospital within 90-days of the index IE admission.

RESULTS: There were 52147 non-DUA-IE cases, 6872 DUA-IE cases, and 2676 "missed" DUA-IE cases identified by linking drug use across multiple encounters. Missed cases represented a 39% increase in total DUA-IE cases. Compared to DUA-IE cases identified at index hospitalizations, missed cases were more likely to be older, Black, insured by Medicare, and from rural areas. They also had higher 30-day readmission rate (23.2% vs 14.5%$p<0.001$) and higher charges ($p<0.001$), with similar LOS. Fragmented care was most common among patients with missed DUA-IE (33.3%), followed by DUA-IE cases identified during index hospitalization (20.5%) and non-DUA-IE cases (13.7%). When accounting for fragmentation, we found DUA-IE accounted for 18.2% of IE hospital days in 2011 which rose to 25.5% in 2015.

CONCLUSIONS: Missed diagnoses and fragmented care are common features of patients with DUA-IE. This results in underestimation of both DUA-IE prevalence and hospital utilization due to DUA-IE.

MODIFIABLE FACTORS ASSOCIATED WITH DIABETES ADHERENCE IN RURAL PRIMARY CARE CLINICS

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BACKGROUND: Proper diabetes medication adherence requires patients to maintain consistent and accurate medication taking behaviors. Using data from an ongoing, pragmatic multi-site trial evaluating a diabetes self-management intervention in patients with type 2 diabetes in Arkansas, we aim to identify potentially modifiable barriers and risks to poor diabetes medication adherence.

METHODS: The study consists of a 2-arm, patient-randomized, pragmatic trial among 756 patients with type 2 diabetes in 6 rural PCMH clinics in Arkansas. Baseline data is collected through structured in-person interviews tied to a clinic visit. Diabetes adherence is measured by the Adherence to Refills and Medication Scale – Diabetes (ARMS-D), consisting of 11 Likert-scale items with scores ranging from 11-44 where higher scores denote decreased diabetes medication adherence. The ARMS-D consists of a 7-item medication taking subscale and a 4-item medication refill subscale. Potential factors associated with poorer diabetes medication adherence include patient activation, health literacy, and diabetes distress measured by the Consumer Health Activation Index (CHAI), the Newest Vital Sign (NVS), and the Diabetes Distress Scale (DDS), respectively. Multivariate linear regression models tested the independent effects of patient activation, healthy literacy, and diabetes distress on 1) ARMS-D total score, 2) ARMS-D medication taking subscale, and 3) ARMS-D medication refill subscale.

RESULTS: Patients in our sample on average were 55.8 (SD=11.7) years old, 67% female, 54 %African American, 63% with a household income of less than $20,000, and 56% with less than a college education. Mean scores for the overall ARMS-D, medication taking subscale, and medication filling subscale were 15.3 (SD=3.6), 9.1 (SD=2.7), and 6.1 (SD=1.8) respectively. Patient activation (β=-0.04; p=0.03) and diabetes distress (β=0.06; $p<0.0001$) were significantly associated with lower diabetes medication adherence, measured by the full scale. In the medication

taking subscale, health literacy (β=-0.11; p=0.03), patient activation (β=-0.04; p=0.002) and diabetes distress (β=0.05; p<0.0001) were significantly associated with lower adherence. Health literacy, activation, and diabetes distress were not associated with the medication refill subscale. All models were controlled for age, income, education, and sex.

CONCLUSIONS: Preliminary analyses show that higher patient activation and health literacy, and lower diabetes distress may improve diabetes medication adherence. Interventions should focus on engaging, educating, and providing support for patients in managing their medications in order to improve adherence and diabetes-related outcomes.

MORAL DISTRESS AMONG PHYSICIAN TRAINEES: CONTEXTS, CONFLICTS, AND COPING MECHANISMS IN THE TRAINING ENVIRONMENT

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BACKGROUND: Moral distress is defined as a situation in which an individual believes they know the ethically appropriate action to take but are unable to take that action. The concept of moral distress is increasingly recognized as an important mediator of occupational stress and burnout in healthcare, particularly in the nursing literature. However, there is a dearth of literature focusing on moral distress among physician trainees, particularly as regards the clinical training environment. This study explores the phenomenon of moral distress among internal medicine trainees, with an emphasis on the contexts of clinical training and professional role development.

METHODS: We report qualitative data from a mixed methods prospective observational cohort study of internal medicine (IM) residents and associated faculty at a large, urban, academic medical institution. Five focus groups were conducted with 15 internal medicine residents (PGY1-3), between January and October 2019. In each focus group trained facilitators conducted semi-structured interviews using prompts which focused on definitions of, experiences with, and consequences of moral distress. Transcripts were independently coded by investigators, and analyzed by major themes and sub-themes. Discrepant themes and codes were reviewed by the full research team to establish clarity and consensus. Data were analyzed using Dedoose® software.

RESULTS: Focus group participants were equally distributed by gender (7 women, 8 men) and across training year (30% PGY1, 20% PGY2 40% PGY3). Experience with moral distress was universal among participants. Trainees identified several drivers of moral distress that were unique to their professional development as clinicians and their role as trainees/learners within clinical teams, including: feelings of inadequacy in clinical or procedural skills, being asked to perform duties outside of their scope of practice, discomfort with the idea of 'practicing' skills on patients, poor team communication, disagreements with senior team members, experiences of disempowerment as junior team members, and overwhelming or inappropriate administrative or non-clinical burdens. Participants also identified unique, place-based moral distress across different clinical environments, including intensive care units, wards, and outpatient environments, as well as between private, public, and government-run hospital facilities.

CONCLUSIONS: Physician trainees experience considerable moral distress in the context of their professional development, with unique drivers of moral distress identified in the training and clinical team context. This improved understanding of factors unique to the trainees' experience has implications for tailoring educational experiences as professional development activities, as well as potential wellness- and resilience-building among physician trainees. It may also inform the training of physician leaders and seniors clinicians who engage with trainees in learning and clinical environments.

MORAL DISTRESS AMONG PHYSICIAN TRAINEES: DRIVERS, CONTEXTS, AND ADAPTIVE STRATEGIES

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BACKGROUND: Moral distress is defined as a situation in which an individual believes they know the ethically appropriate action to take but are unable to take that action. The concept of moral distress is increasingly recognized as an important mediator of occupational stress and burnout in medicine, particularly in the nursing profession. However, there is a dearth of literature on moral distress among physician trainees, with the majority focused on dilemmas in end-of-life care. This study explores the phenomenon of moral distress among internal medicine trainees, with particular focus on drivers, situational contexts, and adaptive strategies such as coping mechanisms.

METHODS: We report qualitative data from a mixed methods prospective observational cohort study of internal medicine (IM) residents and associated faculty at a large, urban, academic medical institution. Five focus groups were conducted with 15 internal medicine residents (PGY1-3), between January and October 2019. In each focus group trained facilitators conducted semi-structured interviews using prompts which focused on definitions of, experiences with, and consequences of moral distress. Transcripts were independently coded by investigators, and analyzed by major themes and sub-themes. Discrepant themes and codes were reviewed by the full research team to establish clarity and consensus. Data were analyzed using Dedoose® software.

RESULTS: Focus group participants were equally distributed by gender (7 women, 8 men) and across training year (30% PGY1, 20% PGY2 40% PGY3). Experience with moral distress was universal among participants, and was identified across four major domains: personal values and morals, professional competency and training challenges, interpersonal relationships and conflicts, and systems/structural issues. Participants identified unique, place-based moral distress across different clinical environments, including intensive care units, wards, and outpatient environments, as well as between private, public, and government- run hospital facilities. Participants described a number of adaptive mechanisms for managing moral distress, including social support and connectivity, humor, and disassociation.

CONCLUSIONS: Physician trainees experience considerable moral distress across multiple domains during the course of their training. They also develop unique adaptive strategies and coping mechanisms to manage and learn from distressing experiences. This improved understanding of moral distress among physician trainees, particularly drivers and protective factors, has important implications for the training of physicians, and may have a role in promoting wellness and resilience among physicians across the training and professional pipeline.

MORE FECAL IMMUNOCHEMICAL TESTS ARE NEEDED TO MATCH THE CLINICAL BENEFIT OF EQUIVALENT NUMBERS OF MULTITARGET STOOL DNA TESTS: CRC-AIM MICROSIMULATION MODEL RESULTS

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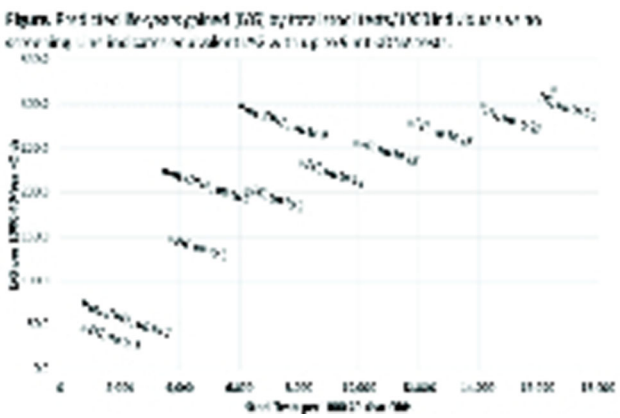
BACKGROUND: In clinical settings, adherence to colorectal cancer (CRC) screening guideline recommendations is variable. If fully adherent, individuals screened between ages 50–75 would undergo 9 triennial multitarget stool DNA (mt-sDNA) tests or 26 annual fecal immunochemical tests (FIT), which may be unrealistic. The microsimulation model CRC-AIM was used to compare the impact of varying numbers of completed tests on predicted CRC outcomes of triennial mt-sDNA or annual FIT screening.

METHODS: Sensitivity and specificity from DeeP-C trial data were used for screening inputs. Outcomes of mt-sDNA and FIT screening strategies were simulated for individuals free of diagnosed CRC at age 40 and screened from ages 50–75. Simulated individuals were randomly assigned to up to 1, 5, or 9 (9=100% adherence) mt-sDNA tests and up to 1, 5, or 9 to 26 (26=100% adherence) FIT tests during the screening window. Simulated individuals may complete fewer than their assigned tests if they die or have a positive stool test. Predicted outcomes are per 1000 individuals vs no screening.

RESULTS: Life-years gained (LYG)/1000 individuals was greater with up to 1, 5, or 9 mt-sDNA tests (74, 224, and 298, respectively) vs equivalent numbers of FIT tests (44, 147, and 202). The LYG/1000 individuals was 303 for triennial mt-sDNA and 316 for annual FIT when adherence was 100%. An individual would have to take up to 22 FIT tests to reach approximately the same LYG as an individual who took up to 9 mt- sDNA tests (Figure). For each scenario, the incremental ratios of COL/LYG (≤7.9) were favorable for mt- sDNA vs FIT and are below the CISNET-accepted ratios of 39–65.

Reductions in CRC-related incidence and mortality were greater with up to 1, 5, or 9 mt-sDNA tests vs equivalent numbers of FIT tests. The number of total stool tests/1000 individuals was similar between mt-sDNA and FIT when individuals were randomly assigned up to 1, 5, or 9 tests and was lower for triennial mt- sDNA vs annual FIT when adherence was 100%.

CONCLUSIONS: At least twice as many FIT tests are needed to match the same clinical benefit as mt- sDNA (22 vs 9) with the guideline recommended screening window. Real world adherence to stool-based testing is imperfect and should be simulated using realistic inputs in comparative effectiveness modelling.



MORPHINE-HYDROMORPHONE METABOLISM IN CHRONIC PAIN MANAGEMENT

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BACKGROUND: The nation-wide opioid epidemic has emphasized the importance of provider tools to ensure safe opioid prescribing and improved patient monitoring. Interpreting urine toxicology screens (UTS) and urine opioid confirmations (UOCs) have become critical components to monitor medication adherence with opioids in chronic pain management. Hydromorphone is an oftentimes overlooked metabolite resulting from long-term morphine therapy, introducing a quandary for providers monitoring opioid regimens. Studies have explored this trend in the past, but research describing this pathway has been limited in regards to how kidney and liver function impacts metabolism. This study explores a relationship between UOC hydromorphone levels with kidney and liver function values. The results will ultimately help clinicians assess patient adherence to morphine therapy and reduce the risk of opioid misuse in the general population.

METHODS: The study is a retrospective analysis. 46 patients seen by the UNC Internal Medicine Pain Service (IMPS) from April 4th, 2014 through July 30th, 2018 who were prescribed morphine at any dose and had a UOC screen at any subsequent appointment were included in this study. 225 opiate confirmations were analyzed. Patients were excluded if they had known opioid therapy agreement violations, particularly for inconsistent opioid use, if no subsequent UOC was performed after morphine was prescribed, if a patient was concomitantly prescribed hydrocodone, hydromorphone, or codeine, or if a patient's UOC discovered metabolites of hydrocodone or codeine even without a corresponding prescription. Patient age, gender, ethnicity, BMI, MME of last morphine prescription, and time of last morphine administration were collected for each patient. Lab values collected for each patient were within 6 months of UOC. Kidney and liver function lab values included serum creatinine (SCr), blood urea nitrogen (BUN), aspartate aminotransferase (AST), alanine aminotransferase (ALT), and alkaline phosphatase (ALP). A univariate and multivariate analysis using linear regression and censored regression models were completed.

RESULTS: In the univariate analysis, morphine concentration ($p<0.0001$), race ($p=0.076$), BMI ($p=0.002$), MME of last dose ($p=0.010$), and BUN ($p=0.047$) were found to be associated with UOC hydromorphone levels. In the multivariable analysis, morphine concentration and BUN were able to predict hydromorphone concentration with statistical significance. When censored values were excluded, UOC morphine concentration still predicted UOC hydromorphone with significance ($p<0.0001$) and MME of last dose trended towards significance ($p=0.080$).

CONCLUSIONS: Clinicians treating patients with opioids, specifically morphine, for chronic pain can utilize UOC morphine concentration and BUN levels to predict the expected UOC hydromorphone concentration in an effort to reduce the potential for opioid misuse and confidently assess patient adherence to the prescribed regimen.

MULTIDISCIPLINARY ROLES AND RESPONSIBILITIES AROUND DISCHARGE COMMUNICATION: A MULTI-INSTITUTIONAL SURVEY OF INTERNAL MEDICINE RESIDENTS

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BACKGROUND: Safely and effectively discharging a patient from the hospital requires working within a multidisciplinary team. However, with multiple stakeholders responsible for the discharge and competing clinical duties, diffusion of responsibility may result in relinquished ownership, particularly as mandated administrative discharge tasks are often prioritized over taking the time to communicate discharge plans with patients. Residents are uniquely positioned to offer insight on the workings of multidisciplinary teams at discharge, since residents play a central role in the transitions of care process within academic hospital systems. Learning from residents' perspectives on discharge roles and responsibilities can shed light on gaps in order to improve accountability to the patient and increase communication efficacy among team members.

METHODS: Internal Medicine residents at 7 academic institutions completed a cross-sectional survey that asked them who they felt was primarily responsible to perform discharge education with patients, and at what frequency they themselves completed six key discharge communication practices with patients. Using multiple linear regression, we examined the relationship between who residents report is primarily responsible for discharge education and their own reported proportion of communication practice domains done frequently (>60% of time). We used content analysis to assess free response comments on ways in which discharge multidisciplinary team communication could be improved.

RESULTS: Among the 613/966 resident responses (62% response rate), 35% reported they were not sure which member of the multidisciplinary team is primarily responsible for discharge education with patients If residents believed educating patients at discharge was the primary responsibility of the intern, that resident had a 19.5% (95% CI 13.2%, 25.9%) higher proportion of reported discharge communication domains addressed frequently versus those that were not sure who was responsible. To improve multidisciplinary discharge communication, residents called for explicit expectations among team members: 1) What should be communicated to the patient and by whom? 2) How do we communicate discharge plans effectively to each other? 3) What kind of discharge culture allows the patient and care team to thrive?

CONCLUSIONS: Residents report lack of clarity on who is responsible for key patient communication practices at discharge. This diffusion of ownership impacts how much residents invest in patient education, with more perceived responsibility associated with more key discharge communication practices reportedly done on a regular basis. Our results suggest we need to create and explicitly operate under a shared mental model of each team player's responsibility for communication to the patient, to each other and examine the hospital system's priorities and incentives and its impact of the discharge culture.

MULTIDISCIPLINARY TEAM INTERVENTION FOR ELDERLY ORTHOPEDIC INPATIENTS AND ITS IMPACT ON POLYPHARMACY AND POTENTIALLY INAPPROPRIATE MEDICATIONS

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BACKGROUND: Polypharmacy and potentially inappropriate medications (PIMs) are commonly observed in elderly orthopedic inpatients. Polypharmacy is associated with an increased risk of falls, delirium and other adverse events, but may continue during and after hospitalization. Deprescribing has been proposed as a means of reducing polypharmacy in frail, older people. Meanwhile, its effectiveness against polypharmacy in elderly orthopedic inpatients has not been widely studied. We evaluate the effectiveness of intervention to reduce polypharmacy and PIMs in elderly patients admitted to our orthopedic department.

METHODS: We compare the outcomes of patients receiving intervention vs. patients not receiving intervention in this single-center retrospective observational study. Included were all orthopedic patients aged ≥ 75 years who had been prescribed ≥ 6 different medications at hospital admission between May 2017 and April 2019. Intervention comprised polypharmacy screening and deprescription of any unnecessary medications during hospital stays. Our multidisciplinary team included general internal medicine physicians, nurses and pharmacists. Primary outcome was change in the mean number of regular medicines and reduction in PIMs. Secondary outcomes included falls, delirium, and any adverse events during hospitalization, and emergency department (ED) visits and unplanned hospital admissions for any reason within six months after discharge. Comparisons between the intervention and usual care groups were analyzed using propensity score matching.

RESULTS: This study included 164 patients (intervention group, n = 82; control group, n = 82). Mean patient age was 83.6 years in the intervention group and 83.8 years in the control group. Mean numbers of prescribed medications and at admission were 9.77 in the intervention group, 9.46 in the control group. Mean PIMs were 1.57 in the intervention group, 1.67 in the control group. Mean change in number of regular medicines at discharge was -1.34 ± 2.49 in the intervention group and $+0.18 \pm 1.70$ in the control group ($p < 0.001$). In the intervention, discontinuation of PIMs occurred in 30 patients (36.6%), in the control group it was 14patients (17.1%) (Odds ratio (OR) 2.78, 95% CI 1.28 to 6.30; p = 0.008). Adverse events were significantly reduced in the intervention group compared with the control group (OR 0.34, 95% CI 0.12 to 0.87; p = 0.021). No significant differences were found between the intervention and usual care groups in falls (OR 1.00, 95% CI 0.18 to 5.57; p = 1.00), delirium (OR 1.12, 95% CI 0.54 to 2.33; p = 0.864), ED visit (OR 0.72, 95% CI 0.25 to 2.00; p = 0.641) or unplanned hospital admission (OR 1.42, 95% CI 0.49 to 4.35; p = 0.627).

CONCLUSIONS: Multidisciplinary team polypharmacy screening and deprescribing intervention effectively reduced the number of prescribed medicines and PIMS in elderly orthopedic inpatients. Adverse events were significantly reduced.

MULTIMORBIDITY AND PRIMARY CARE OFFICE VISIT FREQUENCY

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BACKGROUND: Primary care office visits provide the foundation for disease prevention and management, and are crucial for coordinated, holistic care for patients with multimorbidity (multiple chronic conditions). However, they are a limited resource. Despite this, there is limited evidence to guide decision making for how frequently patients should be seen. The strongest predictor of office visit frequency is provider discretion, not patient medical complexity. We aimed to identify predictors of office visits and quantify the variance explained by multimorbidity, functional status, and other patient characteristics.

METHODS: We queried the electronic health record database for living adults >18 years-old with general medicine and geriatric medicine outpatient encounters at a large academic institution between January 1, 2015 and October 15, 2019. Multimorbidity was measured using a validated ICD-coded multimorbidity- weighted index (MWI-ICD) that weights chronic conditions by their impact on physical functioning. We examined the kernel density and correlation between predictors and office visits. The exposure MWI-ICD included ICD-9 coded conditions through October 2015 examined continuously (linear and quadratic) and categorically. The outcome was outpatient visits through October 2019. To determine the association between MWI-ICD with office visits, we used multiple linear regression (yielded consistent results with a generalized linear model with gamma link for count data) adjusted for available demographics including age (linear and quadratic), sex, race/ethnicity, and marital status.

RESULTS: We included 20,547 patients who generated 91,318 outpatient visits between 2015-2019. Patients were 57% female, 73% Caucasian, with a mean age of 59.3±17.3 years, MWI-ICD of 7.59±9.3 (range 0-117), and 7.80±7.2 (range 1-126) office visits over 5 years. MWI-ICD was moderately correlated with office visits (Spearman's rho=0.38). Multimorbidity was positively associated with more office visits: each point increase in MWI-ICD was associated with 0.20 (95%CI: 0.17-0.22, $p<0.001$) more visits in adjusted models. Older age and being female, married, Asian or African American were also associated with significantly more office visits. The coefficient of determination was 0.18, suggesting MWI-ICD (multimorbidity with physical functioning embedded) explained only a modest proportion of variance in office visits.

CONCLUSIONS: Adults who were older, female, Asian or African American, with worse multimorbidity were more likely to be seen for general and geriatric medicine outpatient visits. Multimorbidity using a validated MWI-ICD that embeds physical functioning explained only 18% of the variation in office visit encounters. After adjusting for patient characteristics, office visit frequency varied widely, regardless of medical complexity. Given the ever-growing demand for primary care and shortage of PCPs, multimorbidity and functional status may be used to guide decision support for office visit frequency.

MY HIP FRACTURE (MY HF): A MIXED METHODS EVALUATION OF A NOVEL EDUCATIONAL TOOL TO COMMUNICATE INDIVIDUALIZED HIP FRACTURE PROGNOSTIC INFORMATION TO PATIENTS AND SURROGATES

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BACKGROUND: Despite improvements in hip fracture (HF) care over the past 20-years, mortality after HF for older adults is extremely high and survivors commonly have long term functional impairment. While healthcare professionals generally understand that HF constitutes an inflection point in the health of older adults, data suggest that patients and surrogate decision makers (SDMs) are typically unaware of the seriousness. Our multi-disciplinary team developed, iteratively refined, and pilot tested a novel educational tool (My-HF) to provide patients and SDMs with personalized estimates of HF prognosis. Our long-term goal is to examine whether My-HF can improve HF patient and SDM knowledge and understanding and reduce regret and surprise. We report results from our mixed-methods pilot testing of My-HF.

METHODS: We developed a paper-based HF educational tool designed to communicate individualized treatment and prognosis information to patients and SDMs. Design was informed by input from orthopaedic surgeons, internists, geriatricians, and methodologists with expertise in risk communication. The My-HF tool provides information about: 1) type of surgery performed; 2) predicted risk of death and major complications within 30-days, derived from a validated risk model; 3) anticipated post-HF discharge trajectory. We conducted a mixed-methods study to assess usability of My-HF using a convenience sample of patients hospitalized with acute HF at a major Toronto teaching hospital between May and December 2019. SDMs were interviewed for patients who were incapable. Patients (or SDMs) were approached post-operatively, prior to hospital discharge. We used semi-structured interviews to solicit input and preferences regarding the My-HF tool. Thematic analysis was used to identify themes and concepts.

RESULTS: We conducted 16 interviews: 8 patient interviews, 8 SDM interviews (mean age of patients 79.31, 75% female). My-HR was generally well received and provision of personalized risk estimates was not felt to create undue concern, though some were surprised by the range of possible adverse outcomes including mortality and need for long term care. While many interviewees liked the information about type of surgical repair that was performed, others found this to be of little value. My-HF was updated based upon feedback and suggestions and will now be converted into a web-based app to allow for further evaluation.

CONCLUSIONS: Patients with HF and SDMs are accepting of My-HF and find that personalized HF information is useful. Further study is needed to assess the impact of My-HF on patient and surrogate understanding of HF knowledge and other patient reported outcomes.

NAMES AND SPACES: IMPROVING RESIDENT COMMUNICATION PATHWAYS AND INTERPROFESSIONAL RELATIONSHIPS THROUGH GEOGRAPHIC COHORTING

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BACKGROUND: Geographic cohorting (GCh) of physicians to a single hospital unit is increasingly common. GCh is associated with improved teamwork and efficiency, but leads to increased face-to-face workflow interruptions for physicians. Interruptions are associated with errors and physician frustration, leading to concerns that GCh may contribute to physician burnout. Our study aimed to explore the impact of GCh on resident physician perceptions of communication.

METHODS: We conducted a qualitative study of medical and transitional-year residents in a community teaching hospital who rotated on GCh units between July 2017 and March 2018. Residents teams had >80% patients on the same unit. GCh units also had daily bedside interdisciplinary rounds (IDR) and interprofessional (IP) co-leadership. We conducted five semi-structured interviews and 12 focus groups. These were audio-recorded and professionally transcribed. Interview topics included experiences with GCh, bedside IDR, and teamwork on GCh units. We used thematic analysis to inductively analyze data and identify key themes.

RESULTS: We interviewed 25 interns and 16 senior residents (n=41). Resident participants were predominantly male (63%) and Caucasian (64%). Key discovered themes were that GCh: 1) positively affects relationship dynamics on teams and increases familiarity with IP colleagues, 2) creates pathways for communication, 3) helps efficiency and fluidity in communication across teams, and 4) encourages face-to- face talk. Residents identified that on GCh wards, "*We get to know the nurses and case managers and pharmacists that are taking care of the patients. That makes it a lot easier to get work done when you can just walk over and talk to them."* Residents described how familiarity with IP teammates

helps facilitate opportunities for communication; one said: *"I'm more likely to reach out to the nurses in person, since I know from [bedside IDR] who is taking care of the patient. I have a face- I can recognize them. It feels better to know them by name."* Residents also identified how geographic proximity invited more timely and interconnected communication by creating opportunities to communicate with teammates throughout the day. Part of the ability to communicate efficiently was bypassing technology-led communication in favor of highly valued, face-to-face communication. One resident said: *"The geographic thing is really undervalued. Using pagers and telephone communication is accepted, but not an ideal way to communicate within the healthcare setting."*

CONCLUSIONS: From the resident point of view, GCh fosters IP relationships and communication. Residents describe that GCh creates communication pathways, and increases face-to-face communication, which residents perceive as superior to technology-based communication. These resident perspectives suggest that the increased face-to-face interruptions previously observed in GCh studies may ultimately represent interactions that lead to improved IP communication and relationships.

NARRATIVE WRITING IN PRE-CLERKSHIP MEDICAL EDUCATION AS A TOOL FOR DEVELOPING EMPATHY AND PROFESSIONAL IDENTITY FORMATION

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BACKGROUND: Narrative medicine is integral to medical schools for developing students' empathy and professional identity. University of Central Florida College of Medicine (UCFCOM) provides longitudinal clinical experience during the first two (pre-clerkship) years of medical school, at the end of which students write a narrative reflection. Our study sought to understand narrative writing as a tool for pre-clerkship medical students to process these early clinical experiences. We hypothesized that narrative writing allows medical students to develop empathy skills and build narrative foundations, prior to and independent of ultimate career choice.

METHODS: We performed a retrospective thematic analysis (NVivo®) of 40 de-identified narratives written by medical students at the UCFCOM during pre-clerkship clinical experiences from 2015-2017. Central narrative themes were identified and converted into quantitative data using the amount of narrative coded at each theme for each author (percent coverage). We then correlated these themes to categorical measures of career choice using residency match data. Categories included primary care (i.e. IM, pediatrics, and EM) and non-primary care (i.e. all other fields). Narrative themes (i.e. percent coverage) were compared to career choice (i.e. match data) using one-way ANOVA.

RESULTS: Thematic analysis of student narratives highlighted three central themes: (1) Anticipating future career as a physician *["It takes a special doctor to step outside of the science and into the psychosocial aspect to treat the patient as a whole…I hope that I never lose sight of the human behind the diagnosis…"],* (2) Emotion toward the patient *["She is my role model of caring and kindness, and I will try to be thoughtful and caring during interactions with others, and attempt to live up to her"*], and (3) Expectations vs. reality [*"Patients are not clinical vignettes on exams. They are not problems to solve. They are real and living and their stories matter"].* Quantitative analysis comparing narrative themes and career choice found no significant differences in themes between groups.

CONCLUSIONS: Narrative reflection allows students to foster a sense of empathy for their patients, as well as a sense of purpose in their chosen profession. Furthermore, these themes appear in narratives written by UCFCOM pre-clerkship medical students with almost equal frequency regardless of match specialty, suggesting that narrative reflection is a powerful tool for all medical students to learn empathy skills and develop their narrative foundation. As medical students become residents and ultimately practicing physicians, a strong foundation of humanity is essential.

NATIONAL PROFILE OF THE GROWING POPULATION OF OLDER ADULTS WHO ACCESS COMMUNITY HEALTH CENTERS

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BACKGROUND: Community health centers (CHCs) are federally funded safety-net clinics that provide care to low income and medically underserved persons. The proportion of CHC patients age ≥65 doubled in the last ten years, yet little is known about older adults who access CHCs. We aim to describe the demographic and clinical characteristics of the older adult CHC population, including healthcare utilization, receipt of supportive services, and differences in these factors by age.

METHODS: In this cross sectional analysis, we used data from the 2014 Health Center Patient Survey, a national survey of CHC patients. We limited our analyses to those age ≥55. We used ≥55 instead of ≥65 years because of the higher prevalence of chronic disease and lower life expectancy in the population that typically uses CHCs and to assess differences in those under versus over 65. We used descriptive statistics to characterize older adults across demographic and clinical variables. To determine differences by age, we stratified older adults into three age groups (55-64, 65-74, 75+). We used t-tests and chi-squared to calculate p values and survey weights to make national estimates.

RESULTS: We included 1875 older adults, representing a population of over 4.2 million. Sixty percent were age 55-64, 51% were female, and 60% were white. The majority (73%) had Medicare or Medicaid and 47% reported fair or poor health. Older adults in all groups had an average of 3 chronic conditions and 0.6 impairments in activities of daily living (ADL). Most (69%) had ≥3 chronic conditions and/or ADL impairment, meeting a common definition of "serious illness." Psychiatric disease was significantly more common in younger age groups (38% v 32% v 19%, p=0.007) and cancer was significantly more common in older age groups (8% v 15% v 25%, p=0.006). Regardless of age, most older adults reported taking ≥5 prescription medications (54%) and one in five reported ≥2 emergency department visits or ≥1 hospitalization in the last year. Approximately one-quarter of older adults received CHC help with affording medications (28%), while 73% received counseling on lifestyle changes for blood pressure control. Despite this, 10% were unable to get needed medical care and 16% were unable to get a needed prescription. Those in the older age groups (65-74, 75+) were significantly less likely to receive help affording medication or counseling on lifestyle changes for blood pressure.

CONCLUSIONS: Older adults who access CHCs have significant disease burden. Adults age 55-64 who access CHCs face a similar number of chronic diseases and ADL impairments as adults over 65 and thus may have a similar life expectancy; however, adults aged 55-64 were significantly more likely to be counseled on lifestyle changes. These findings highlight that additional focus on complex health needs for older adults who access CHCs may need to include adults who are <65, and that CHCs are serving a population that is seriously ill.

NATIONAL SURVEY OF WELLNESS PROGRAMS IN U.S. AND CANADIAN MEDICAL SCHOOLS

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BACKGROUND: Over the past decade, studies have found a high prevalence of mental illness and suicidal ideation among medical students. While many medical schools have developed student wellness programs to address these troubling trends, little is known about the scope and content of these programs and more research is needed on the impact of wellness programming to guide interventions and resource allocation. To address this gap, we conducted a national survey on the prevalence, content, evaluation strategies, and barriers of existing wellness programs at LCME accredited medical schools.

METHODS: In July 2019, 159 US and Canadian medical schools were surveyed about the structure, resources and evaluation strategies of their wellness programs. Based on the literature review, the authors developed a framework to describe the components of wellness programs and structured the survey around four focus areas: 1) preventative programming, 2) reactive programming, 3) structural and curricular initiatives and 4) culture of wellness. Additional questions focused on general characteristics of each school's wellness program, mental health resources, screening offered to students, barriers, and evaluation practices.

RESULTS: Response rate was 65% (104 schools). Ninety (93%,90/97) had a formal wellness program and the mean FTE support for leadership was 0.77. Wellness budget did not correlate with school type or size ($p>0.05$). Most schools reported adequate programming on preventative (62%, 53/85), reactive (86%, 73/85) and cultural initiatives (52%, 44/85), but too little focus on structural initiatives (56%, 48/85). Barriers included lack of financial (52%, 45/86), administrative (35%, 30/86), and faculty support (20%, 17/86). Most (65%, 55/84) schools reported in-house mental health professionals, with dedicated time to see medical students with mean FTE of 1.62 (SD 1.41). Most (62%, 52/84) responding schools evaluated wellness programming, most commonly using the AAMC Graduation Questionnaire (83%, 43/52), annual student surveys (62%, 32/52), and surveys of individual wellness events (50%, 26/52). Barriers to evaluation included lack of time (54%, 45/84), administrative (43%, 36/84), financial support (24%, 20/84), and expertise (23%, 19/84).

CONCLUSIONS: This is the first large national study to describe the state of wellness programs at LCME accredited medical schools in the U.S. and Canada. Wellness programs are widely established at US and Canadian medical schools and most focus on preventative and reactive initiatives as opposed to structural. Rigorous evaluation of the impact of programs on student well-being is needed to inform resource allocation and program development. Schools should ensure adequate financial and administrative investments to support the success of their wellness programs.

NATIONAL TRENDS IN EPIDEMIOLOGY AND COSTS OF HOSPITALIZATIONS FOR PATIENTS WITH DEMENTIA

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BACKGROUND: Dementia is associated with higher Medicare expenditures in large part due to increased hospitalization rates relative to patients without dementia. Data on contemporary trends in reasons for hospitalization, potentially preventable hospitalizations, and costs of care for patients with dementia are lacking.

METHODS: We used the Healthcare Cost and Utilization Project (HCUP) National Inpatient Sample from 2010 to 2016 to identify all acute unplanned hospitalizations of adults >=65 with dementia (defined by established discharge diagnosis codes). We grouped discharge diagnoses into clinically meaningful categories using HCUP Clinical Classification Software. We identified hospitalizations for ambulatory care sensitive conditions (ACSCs) using AHRQ prevention quality indicators. ACSCs include both acute and chronic conditions for which high quality outpatient care may prevent the need for hospitalization. We examined trends in hospitalization rates, discharge disposition, and costs (estimated using HCUP cost-to-charge ratios) across years. Discharge weights were applied to generate nationally representative estimates.

RESULTS: Among all unplanned hospitalizations of older adults, 17.1% were for patients with dementia. The annual incidence of hospitalizations of older adults with dementia rose from 1.64 million in 2010 to 1.70 million in 2016. The most common discharge diagnoses were infections (26.4%), circulatory conditions (19.8%), and injuries (12.2%). During the study period, hospitalization rates for infections rose 20.6%, genitourinary conditions rose 33.9%, injuries rose 16.2%, and nervous system conditions rose 15.5%. Hospitalizations for hematologic conditions decreased 19.2%. ACSCs accounted for 24.0% of hospitalizations of older adults with dementia in 2010 declining to 21.8% in 2016. Though only 10.1% of patients were admitted from skilled nursing facilities, 55.8% were discharged to skilled nursing facilities. The proportion of patients discharged home increased from 36.5% in 2010 to 38.0% in 2016, accompanied by an increased use in home health services from 16.0% to 18.8%. Mean inflation-adjusted costs of hospitalization increased from $9,554 in 2010 to $10,446 in 2016. Total inflation-adjusted hospitalization costs for patients with dementia increased from $14.7 billion in 2010 to $17.5 billion in 2016 ($19.3 billion unadjusted). In 2016, $6.3 billion was spent on potentially preventable hospitalizations including $3.2 billion for ACSCs and $3.1 billion for injuries.

CONCLUSIONS: Patients with dementia accounted for one in six hospitalizations of older adults in the United States with rising incidence and costs. Despite modest reductions in hospitalizations for care sensitive conditions, one-third of hospitalizations of patients with dementia remain potentially preventable, including 22% for ambulatory care sensitive conditions and 12% potentially modifiable with injury prevention efforts.

NATIONAL TRENDS IN MEDICARE OPIATE PRESCRIPTIONS: THE ROLE OF PHYSICIANS AND NON-PHYSICIAN PROVIDERS

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BACKGROUND: The opiate epidemic remains a major public health crisis with approximately 50,000 overdose deaths annually. This epidemic stems in part from over prescription of opiates and is therefore linked to physician prescribing habits. In recent years, non-physician providers such as physician assistants and nurse practitioners have become increasingly vital in the provision of care, supplying up to 25% of primary care in certain areas. In this study, we used the Medicare Provider Utilization and Payment Data: Part D Prescriber Public Use File (PDPPUF) to evaluate changes in opioid prescribing habits of physician specialties and non-physician providers.

METHODS: We searched the Medicare PDPPUF for opiate prescriptions reimbursed from 2013 to 2017. Opiates queried included codeine, fentanyl, methadone, morphine, oxycodone, and tramadol. Prescribing

trends evaluated included Medicare claims by specialty and total number of Medicare claims. Chi-squared goodness-of-fit tests were used to calculate differences in prescribing trends between years.

RESULTS: The majority of reimbursement requests for opiates were filed by internal medicine/primary care providers, accounting for 61.6% of all prescriptions in 2013. From 2013 to 2017, the number of opiates prescribed by internal medicine/primary care physicians decreased by 14.5% ($P < .001$). Non-internal medicine physicians similarly decreased prescriptions by 12.2% ($P < .001$). However, non-physician providers increased prescriptions by 30.8% ($P < .001$). By 2017, non-physician providers grew to account for 25.1% of all Medicare opiate prescriptions. Overall number of opiate prescriptions decreased 6% ($P < .001$), with significant increases noted between 2013 and 2015 for codeine, fentanyl, morphine, oxycodone, and tramadol ($P < .001$).

CONCLUSIONS: The number of opiate reimbursement requests by internal medicine/primary care and non- internal medicine physicians significantly decreased between 2013 and 2017 while the overall number of opiate prescriptions decreased only slightly. This disconnect appears to be driven by increasing opiate prescription by non-physician providers. Recent data has shown that targeting specific providers with education-based interventions can decrease opiate prescription by greater than 50%. Non-physician providers are vital for expanding the provision of primary care; however, the observed trends suggest that interventions targeting the prescribing habits of these providers may be effective in decreasing total opiate prescriptions and overdose deaths.

NEIGHBORHOOD RACIAL DIVERSITY IS ASSOCIATED WITH WHITE MEDICAL STUDENTS' LEVELS OF ANTI-BLACK IMPLICIT BIAS

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BACKGROUND: One of the most effective ways to reduce antiblack implicit racial bias over the long-term is through intergroup contact. Research shows that living in environments in which interracial contact is generally more frequent can reduce bias, independent of and beyond personal contact, in part because that experience establishes positive intergroup orientations as normative and valued. This study examines the relationship between neighborhood racial diversity and change in antiblack implicit racial bias over time among a nationally representative cohort of medical students.

METHODS: We used data from the Cognitive Habits and Growth Evaluation (CHANGE) Study (changestudy.org), a longitudinal examination of medical students at 49 US medical schools. Participants completed questionnaires and tests of implicit racial biases during their first semester of medical school (Y1, baseline, fall 2010) and final semester of medical school (Y4, follow-up, spring 2014). Our primary dependent variable was the change in the black-white implicit association test (IAT) score from Y1 to Y4. Our primary independent variable was whether or not the respondent reported growing up in a minority neighborhood, defined as ≥ 50% minority. To assess the relationship between neighborhood racial diversity and change in IAT score we used structural equation models (SEMs) in order to perform multivariate mixed- effects modeling while accounting for the correlated nature of the key variables and to examine the simultaneous influence of neighborhood on baseline (Y1) and final (Y4) outcomes. Analyses adjusted for age, gender, parent income, school factors (having taken an implicit association test, favorability of interaction with Black faculty, and exposure to negative comments by physicians about Black patients) and individual difference characteristics hypothesized to be related to levels of implicit bias including external and internal motivation to respond without prejudice, interracial anxiety, and explicit attitudes towards Blacks, as measured by the feeling thermometer.

RESULTS: At baseline, the mean IAT for White medical students who grew up in racially diverse neighborhoods (WRDN) was 0.45. The mean IAT for White medical students who grew up in predominantly White neighborhoods (WPWN) was 0.49. Over the course of medical school, implicit racial bias decreased for both groups. WRDN had a greater decrease in implicit racial bias than WPWN ($\beta = -0.06$, $p=0.035$), after adjusting for school factors and a variety of relevant individual difference characteristics.

CONCLUSIONS: This study of medical students is consistent with other research that shows that neighborhood racial diversity is associated with future implicit racial bias. If implicit bias is as stubborn as the literature suggests, to reduce bias in the physician workforce, it may be important to assess prospective medical students' substantive experiences with racial minorities prior to matriculation, rather than attempting to modify beliefs after admission.

NEIGHBORHOOD SOCIOECONOMIC STATUS AND RISK OF HOSPITALIZATION IN PATIENTS WITH CHRONIC KIDNEY DISEASE

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BACKGROUND: In the U.S., 30% of health care expenditures are due to hospitalizations. Patients with chronic kidney disease (CKD) experience significantly greater morbidity than the general population, and have a significantly higher hospitalization rate. The extent to which neighborhood-level socioeconomic status (SES) is associated with hospitalization has been less explored, both in the general population and among those with CKD. We sought to examine whether the risk for hospitalization for those with CKD increases with lower neighborhood SES after accounting for individual-level characteristics.

METHODS: We evaluated the relationship between neighborhood SES and hospitalizations for adults with CKD participating in the Chronic Renal Insufficiency Cohort Study. Neighborhood SES quartiles were created utilizing a validated neighborhood-level SES summary measure expressed as z-scores for six census- derived variables. The relationship between neighborhood SES and hospitalizations was examined using Poisson regression models after adjusting for demographic characteristics,

individual SES, lifestyle and clinical factors while taking into account clustering within clinical centers and census block groups.

RESULTS: Among 3,291 participants with neighborhood SES data, mean age was 58 years, 55% were male, 41% non-Hispanic white, 49% had diabetes, and mean eGFR was 44 ml/min/1.73 m^2. In the fully-adjusted model (Table 1), compared to individuals in the highest SES neighborhood quartile, individuals in the lowest SES neighborhood quartile had higher risk for all-cause hospitalization (Rate Ratio [RR], 1.28, 95% CI, 1.09 to 1.51) and non-cardiovascular hospitalization (RR 1.30, 95% CI, 1.10 to 1.55). The association with cardiovascular hospitalization was in the same direction but not statistically significant (RR 1.21, 95% CI, 0.97 to 1.52).

CONCLUSIONS: Neighborhood SES is associated with risk for hospitalization in individuals with CKD even after adjusting for individual SES, lifestyle and clinical factors. These findings suggest consideration of novel policy and system-level public health and primary prevention approaches within disadvantaged communities to improve outcomes for individuals with CKD.

Table 1. Association of Neighborhood SES with Hospitalizations (Rate Ratio, 95% CI)

SES Quartile	Model 1	Model 2	Model 3
All-Cause Hospitalizations			
1 (Lowest SES)	1.59 (1.36, 1.85)	1.32 (1.12, 1.57)	1.28 (1.09, 1.51)
2	1.55 (1.36, 1.77)	1.37 (1.18, 1.59)	1.31 (1.13, 1.51)
3	1.33 (1.18, 1.51)	1.21 (1.07, 1.38)	1.15 (1.01, 1.31)
4 (Highest SES)	Ref	Ref	Ref
Non-CV related Hospitalizations			
1 (Lowest SES)	1.62 (1.38, 1.90)	1.36 (1.14, 1.62)	1.30 (1.10, 1.55)
2	1.57 (1.37, 1.81)	1.39 (1.20, 1.62)	1.32 (1.13, 1.54)
3	1.33 (1.17, 1.51)	1.21 (1.05, 1.38)	1.14 (1.00, 1.30)
4 (Highest SES)	Ref	Ref	Ref
CV-Related Hospitalizations			
1 (Lowest SES)	1.48 (1.21, 1.81)	1.22 (0.98, 1.53)	1.21 (0.97, 1.52)
2	1.49 (1.23, 1.79)	1.29 (1.05, 1.58)	1.25 (1.02, 1.53)
3	1.35 (1.12, 1.62)	1.24 (1.02, 1.50)	1.19 (0.98, 1.43)
4 (Highest SES)	Ref	Ref	Ref

Model 1: Clustered by clinical center and census block group and adjusted for age, sex, race/ ethnicity;
Model 2: Model 1 + SES (education, income, occupation, health insurance)
Model 3: Model 2 + BMI, cigarette smoking, systolic blood pressure, diabetes, eGFR, CV medications (ACEI/ARB, aspirin, statin), urine albumin/24 h.

NEIGHBORHOOD SOCIOECONOMIC STATUS IS ASSOCIATED WITH ADVANCE CARE PLANNING: GEOCODING OF ELECTRONIC HEALTH DATA

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BACKGROUND: Engagement in advance care planning (ACP) is low among diverse older adults. Given sociocultural influences on end-of-life preferences, barriers to ACP engagement may extend to neighborhood-level factors, but this is unknown. We aim to determine whether neighborhood socioeconomic status (nSES) is associated with ACP engagement using geocoded data linked to the electronic health record (EHR).

METHODS: Home addresses of patients who receive primary care at the University of California San Francisco, live in the SF Bay Area, and are ≥65 years old were geocoded to latitude/longitude coordinates then assigned to census tracts. ACP engagement (outcome variable; yes/no) was defined as having a scanned document (advance directive or POLST), ACP CPT code, or ACP note type. Our primary neighborhood-level variable was nSES—a composite variable from publicly available US Census data combining income, education, poverty, employment, occupation, and housing/rent values at the census tract level, divided into quintiles scaled to the SF region. Individual-level variables abstracted from the EHR included age (continuous), sex (male/female), race/ethnicity (white, Black, Latinx, Asian, Other), language preference (English, Spanish, Chinese, other), insurance type (private, Medicare, Medicaid), number of past-year primary care (PC) visits or hospitalizations, advanced illness (yes/no), and cognitive impairment (yes/no). We estimated the relative risk (RR) of ACP across nSES quintiles using mixed-effects modified Poisson regression with a random effect for census tract (1st (lowest) quintile as the referent).

RESULTS: Of 13,676 patients, 3957 (29%) had engaged in ACP. Mean age was 75 (SD 8); 7624 (58%) were female, 6811 (49%) identified as minority race/ethnicity and 2424 (18%) had non-English language preference. Of this cohort, 10% of patients lived in the 1st quintile of nSES, 15% in the 2nd, 18% in the 3rd, 26% in the 4th, and 31% in the 5th. In unadjusted analysis, higher nSES was associated with greater ACP engagement (RR 1.12 (95% CI 1.01-1.24) in 5th vs 1st quintile). After adjusting for all individual-level variables, nSES remained independently associated with ACP engagement (1.12 (1.02-1.23) in 5th vs 1st quintile). Patients with older age, female sex, more PC visits, more hospitalizations, advanced illness, and cognitive impairment were more likely to have engaged in ACP. Conversely, all minority race/ethnicity and non-English language preference groups and those with Medicaid insurance were less likely to have engaged in ACP.

CONCLUSIONS: This study sheds new light on the association between neighborhood-level factors and ACP engagement. Low nSES is associated with lower ACP engagement, even after adjusting for known individual-level predictors of ACP engagement captured in the EHR. These findings and use of geocoded EHR data will allow for future targeted, culturally appropriate interventions to increase ACP engagement in areas with the highest need.

NETWORK SIZE OR PROXIMITY? ASSOCIATION OF NETWORK CHARACTERISTICS WITH VIOLENCE-RELATED STRESS AND PTSD AMONG RACIAL/ETHNIC MINORITIES IN CHICAGO

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BACKGROUND: The epidemic of violence in the U.S has been linked to stress and PTSD. Social networks may be protective against the psychosocial consequences of violence, but research on network characteristics has been limited. To date, few studies, if any, have examined network proximity—the physical closeness of network confidantes. As studies on network size have been mixed, network proximity may help to explain relationships between social networks and psychosocial health in racial/ethnic minority adults.

METHODS: A sample of 504 adults were recruited from two clinics on the South and West sides of Chicago in 2018. Participants were recruited to complete a one-time in-person survey using Computer-Assisted Personal Interviewing software on tablets. Network size was measured using survey items from the National Social Life Health and Aging Project (NSHAP). Participants were asked to list each network confidante one by one ("Who are the people that you've most often discussed important things with over the past year?"). Network proximity was adapted from prior studies ("How far, in minutes or hours, does [listed individual] live from you?"). Stress due to violence and PTSD were measured using validated items. To examine the subgroup of participants at risk for stress due to violence and PTSD, we limited this analysis to participants who reported a prior exposure to community violence, either as a direct victim or indirect witness, close friend, or family member of someone who died violently. Violence exposure was measured using the Brief Trauma Questionnaire. We used logistic regression models to assess stress due

to violence and PTSD as independent functions of network characteristics (network size and proximity), controlling for age, gender, race/ethnicity, education level, insurance status, and clinic location.

RESULTS: Among the subgroup of participants reporting a prior exposure to community violence (n=297), the majority were female (69%) and non-Hispanic black (75%). Many were direct victims of a robbery or assault (66%), or indirect witnesses, close friends or family members of someone who died violently (80%). Approximately one-third (31%) screened positive for PTSD. The mean number of network confidantes was 2.4. Larger network size alone was not associated with stress due to violence or PTSD. However, having a larger network size (3 or more confidantes) within 30 minutes from home was significantly associated with 71% lower adjusted odds of PTSD (95% CI, 0.09-0.94). Associations with stress due to violence were not statistically significant.

CONCLUSIONS: In this sample of high-risk, racial/ethnic minority adults in Chicago, we found that network proximity, not network size alone, was consistently associated with lower PTSD. In a paradoxical era of growing digital connection and greater loneliness, further research is needed on the role of local networks and communities in mitigating the harmful effects of community violence.

NEW SOURCES OF SOCIAL RISK DATA AND THEIR ASSOCIATION WITH TOTAL PER CAPITA COST AMONG MEDICARE BENEFICIARIES

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BACKGROUND: Previous research using Medicare claims data found that dual enrollment status was the most powerful predictor of poor outcomes among Medicare beneficiaries. However, there is a limited number of social risk factors in claims, and therefore using survey data may better capture additional social risk factors. The purpose of this study is to examine the association between new measures of survey-based social risk factors and total per capita cost (TPCC), a quality measure in Medicare's physician Value Modifier (VM) Program. This study links social risk factors from survey data to Medicare claims to understand the effect of various measures of social risk on spending.

METHODS: Data from the 2009–2013 nationally representative Medicare Current Beneficiary Survey (MCBS) Cost and Use, MCBS Income and Assets, and Medicare claims data were used to estimate the association between social risk factors and TPCC. OLS regressions were estimated for each individual social risk factor and then for all risk factors in the same model. The models included social risk factors derived from Medicare claims (dual enrollment, race/ethnicity and rurality), social risk factors reported in the MCBS (living alone, marital status, education, English proficiency, private insurance coverage, home ownership, income, and total assets), the area-level Social Deprivation Index and the current TPCC risk adjustment. The analysis includes Medicare beneficiaries aged 65 or older with claims and MCBS data during the study period.

RESULTS: Each social risk factor was statistically significantly associated with total per capita cost in the raw models (that did not include the TPCC risk adjustment), but only a few factors (including dual enrollment) were statistically significant when the models included the measure risk adjustment. In the raw models, dual enrollment, living alone, and marital status were statistically significantly ($p<.0001$) associated with $6,700, $1,700, and $2,500 additional per capita cost, respectively. Controlling for all social risk factors and the TPCC risk adjustment, dually-enrolled beneficiaries had a statistically significant ($p<.05$) additional $3,700 in spending compared to non-duals. In addition, beneficiaries who lived alone had a statistically significant ($p<.05$) additional $1,900 in spending compared to beneficiaries who did not live alone. Unmarried beneficiaries had a statistically significant ($p<.05$) less $2,000 than married beneficiaries. When the Social Deprivation Index was added, only dual enrollment remained statistically significant (additional $3,100 for dually-enrolled beneficiaries compared to others).

CONCLUSIONS: Dual enrollment and social support are powerful predictors of poor outcomes in the Medicare quality measures. Providers and health systems may need to consider social risk factors in order to connect patients with available community resources and implementing interventions that address social risk factors.

NORMAL VITALS AT EMERGENCY DEPARTMENT VISITS FOR ACUTE RESPIRATORY TRACT INFECTIONS: AN OPPORTUNITY FOR VIRTUAL CARE

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BACKGROUND: Over 8 million Americans visit the emergency department (ED) annually with acute respiratory tract infections (ARIs), among whom only a small fraction require hospitalization. Vital signs can help differentiate between ARIs that are self-limited and those that are more serious. Until recently, obtaining vital signs required an in-person visit. However, advances in device technology and same-day delivery have made remote vitals a feasible component of virtual care programs. To quantify the opportunity for such programs, we examined 1) the proportion of patients presenting to US EDs for ARIs with normal vital signs, and 2) the correlation between vital sign abnormalities and discharge disposition.

METHODS: We analyzed the most recent 2 years of data from the National Hospital Ambulatory Medical Care Survey (NHAMCS). We included all visits by adults with ARI defined by ICD-10 codes and reasons for visit structured data fields that resulted in dispositions of admission or discharge. We excluded visits related to pregnancy and those with missing vitals.

Normal vital signs were defined as temperature 96.5-100.3 degrees Fahrenheit, heart rate 55-99 beats per minute, systolic blood pressure 100-160mmHg, respiratory rate 12-20 breaths per minute, and oxygen saturation greater than 94.0%.

All analyses used survey weights. P values less than 0.01 were considered statistically significant.

RESULTS: Over the 2-year period of 2016-17, the NHAMCS survey estimates 16.9 (95% CI 16.2-17.5) million visits by adult patients with ARIs. Of these, 13.6 (95% CI 12.9-14.2) million met our inclusion criteria. An additional 1.6 million had at least one missing vital sign, and were excluded. Among patients with the complete set of five vital signs, 60.6% (95% CI 57.2-64.1) were all within the normal ranges.(Table 1) Patients with at least one abnormal vital sign were significantly more likely to be admitted than patients with all five vital signs within normal limits (2.99% [95%CI 1.77%-4.21%] vs. 1.04% [95% CI 0.3401.68%], $p<0.0001$).

CONCLUSIONS: The majority of patients presenting to the ED with ARI had normal vital signs. These patients were less likely to have serious disease necessitating hospitalization. This suggests an opportunity to improve care by expanding virtual options for ARI, such as by combining remote vital sign monitors with video visit platforms.

	Discharge disposition (weighted estimates in thousands)		
	Not admitted 11,483	Admitted 482	All patients 11,966
Vital signs			
All normal	7,130	124	7,256
Abnormal temp	927	57	984
Abnormal HR	3,160	190	3,349
Abnormal SBP	189	5	194
Abnormal RR	701	196	897
2 abn. vitals	1,051	87	1,138
3+ abn. vitals	260	86	346

OBTAINING INPUT FROM VETERANS AND VETERAN FAMILY MEMBERS INTO A LUNG CANCER SCREENING RESEARCH AGENDA

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BACKGROUND: Experts suggest that patient involvement throughout the research process improves research relevance; approaches to obtaining input vary. We sought input from patients regarding a research agenda for lung cancer screening (LCS) among Veterans, who have high lung cancer risk. We describe lessons learned.

METHODS: Using peer-to-peer recruitment within Veteran social networks, we recruited 12 Veterans or family members of Veterans familiar with lung cancer or smoking as a Patient Advisory Council (PAC). We met with them 8 times over 2 years; two of the meetings also included an 8-member stakeholder group (SG) including researchers, clinicians, and advocacy group members. Prior to the first joint meeting, PAC members practiced providing feedback on research ideas and methods and discussed how to make feedback most useful for researchers. We emphasized their expertise as consumers of research or medical services, noting they did not need to be expert in LCS to help identify research priorities. SG members were asked to consider insights they might gain from PAC input. After the first joint meeting, each group identified process changes that could facilitate exchange of ideas.

RESULTS: PAC and SG members both pushed for ensuring PAC members understood the LCS process. After the first joint meeting, PAC members asked for more intensive moderation to ensure that SG members did not dominate discussions. SG members suggested that some PAC members focused on personal issues without noting how this experience should inform the research agenda. PAC members reported that SG members seemed to be more receptive to their input in the second meeting, at least in part due to personal familiarity. PAC members prioritized several research topics not identified by SG as high priority, including: Influence of unique Veteran exposures (Agent Orange, burn pits) on lung cancer risk; impact of changes in Veterans Health Administration rules on LCS use; impact of CMS mandated smoking cessation counseling on smokers' participation in LCS; and use of Veteran peer support to encourage LCS. After detailed presentation of the LCS counseling process, PAC members expressed concern that emphasis on false positive results discouraged use of potentially life saving LCS. PAC and SG members agreed that variation in LCS use, dissemination of LCS, and real - world effectiveness of LCS were important research topics. PAC members felt they personally benefitted from learning about LCS and were interested in providing input into other areas of research. Both PAC and SG members were more cognizant of the benefits of PAC insights after the second joint meeting.

CONCLUSIONS: Veteran input highlighted topics that had not been recognized as important by experts and researchers. Both PAC and SG members recognized that information sharing was improved by repeated personal contacts and practice understanding the others' priorities. Optimal use of patient insights requires practice by both patients and researchers.

OHIO CARDIOVASCULAR HEALTH COLLABORATIVE (CARDI-OH) NEEDS ASSESSMENT RESULTS

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BACKGROUND: The Ohio Cardiovascular Health Collaborative (Cardi-OH), partially funded by the Ohio Department of Medicaid, engages teams from Ohio's 7 medical schools to partner with the Medicaid Managed Care Plans (MCPs), primary care clinics, and others to improve cardiovascular health and reduce cardiovascular healthcare disparities. Cardi-OH's collaborative model leverages shared learning of best practices and regional expertise, with initial foci on hypertension (HTN) management and social determinants of health (SDOH). To guide the development of learning activities for Medicaid clinicians across the state, a needs assessment survey was developed and deployed by Cardi-OH topic experts.

METHODS: Questions were distributed via web survey to all 98 active Cardi-OH members, spanning Ohio's 5 geographic regions. Questions asked about participants' use of HTN treatment algorithms, familiarity with and clinical application of hypertension (HTN) guidelines, perceptions of how MCPs could better assist their enrollees, perceived importance of identifying and addressing SDOH, and interest in case-based learning on HTN and SDOH, among other items. Results were summarized using descriptive analysis.

RESULTS: Of 98 individuals invited to complete the survey, 84 responded. Thirty-six of 84 respondents reported direct clinical roles, and were therefore eligible to complete the survey. Of those, 75% practiced in a primary care setting. Nearly 70% reported that they were 'extremely' or 'very' familiar with the 2017 ACC/AHA HTN guidelines. About half (56%) reported achieving guideline-based blood pressure (BP) targets in their patients 50-75% of the time. Few (11.1%) reported using a clinical HTN treatment algorithm. Regarding home BP monitoring, 44% reported being unsure whether home BP monitors were covered, over 60% were uncertain how to order a home BP monitor, and 33% reported insufficient time/resources to teach patients how to take accurate home BP readings. While 89% indicated that it was 'extremely' or 'very' important to screen for SDOH in routine clinical practice, less than 15% felt 'extremely' or 'very' confident that their practice could address SDOH. A majority of respondents were "extremely" or "very" interested in

additional learning around HTN management in special populations (e.g., racial minorities), practical strategies for medication adherence and lifestyle change in low-resource settings, team-based approaches to HTN care and SDOH. When asked about ways Medicaid MCPs could better assist their patients, respondents indicated transportation (81%), prescription coverage (64%), patient navigation of the health care system (75%), child care (36%), and health education resources (50%).

CONCLUSIONS: Our findings indicate a need and interest in ongoing education and practical strategies to improve HTN management, with an eye toward addressing SDOH, in low-resource settings across Ohio. Partnering with payers will be key in addressing policy changes which could improve patient outcomes.

OLDER ADULTS IN PUBLIC HOUSING: PERSPECTIVES ON HEALTHCARE, HEALTH, AND HOW SOCIAL ISOLATION NEGATIVELY IMPACTS HEALTH

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BACKGROUND: Adults ≥ 65 are projected to outnumber children in the US by 2035. The growing lack of affordable housing combined with fixed incomes will lead to more older adults residing in public housing. Public housing authorities, in turn, will face growing health and social needs among their residents. In partnership with a local housing authority, we conducted a qualitative study to better understand the health and social needs of older adult public housing residents.

METHODS: We conducted semi-structured qualitative interviews with 27 older adults at two public housing sites in Austin, Texas; we asked about their experience of aging in public housing, their health, healthcare, and community life. We audio-recorded and transcribed each interview; interviews were systematically coded and coding was verified by a second coder. Spanish transcripts were coded in Spanish. We used constant comparative analysis to identify themes.

RESULTS: We interviewed 10 Spanish and 17 English-speakers; 16 were female and 11 male (mean age = 71.7 years). We identified four themes. First, older adults residing in public housing characterize good healthcare as that which is provided by physicians who are consistent, provide education, and listen to the problem that the patient perceives as the primary concern at each visit. Second, residents perceive good health to be fundamentally determined by healthy personal choices such as eating, moving, and obeying their doctor's orders. Third, they defined health as feeling good, being mobile, and lacking pain. Finally, they want many more opportunities to learn about health and to connect interpersonally within their public housing community. They reflected that current opportunities were not consistent and failed to provide the physical and mental stimulation that residents desire. They perceive limited meaningful community relationships as a significant contributor to poor health in other public housing residents' lives in their community, but not their own.

CONCLUSIONS: The older adult public housing residents in our study outlined what good health care and health looks like to them. They also identified how public housing authorities could do more to address one of the fundamental social determinants of health among older residents: social isolation. Future efforts to improve resident health should focus on programming that will promote physical and mental acuity while building upon resident ideas of good health. It may also be beneficial to build bridges between housing communities and physicians. This research highlights the importance of the social determinants of health in promoting better health among older adult public housing residents.

ONCOLOGIC SERVICES THROUGH PROJECT ACCESS AND OTHER SAFETY NET COORDINATION CENTERS

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BACKGROUND: Since the 1996 formation of Project Access, a nationwide program linking uninsured, low-income, or underserved patients to specialty care, the United States (US) has experienced a growth of third-party safety net care coordination programs that provide subspecialty care at no or reduced cost. These programs pre-negotiate with local physicians and hospitals to offer pro-bono services to patients. Little is known about the provision of oncologic services within these programs, and even less is known about how the Affordable Care Act and Medicaid expansion have subsequently changed the need for these programs. This study evaluated the current landscape of oncologic services within US safety net care coordination programs in both Medicaid-expansion and non-expansion states.

METHODS: An internet search was conducted to obtain information on US safety net care coordination program location, health services offered, and patient eligibility criteria. The current status of Medicaid expansion across the US was also reviewed. Individual programs were called for verification of existence and clarification of services provided. For care coordination programs not offering oncologic care, program directors were interviewed to identify specific barriers that limit their program's ability to offer oncologic care.

RESULTS: Websites of 29 safety net care coordination programs in 22 states were identified, serving approximately 40 counties and 180,000 patients. Three programs (10%) were unreachable by phone, and data was extracted using only available information on each of their websites. Of identified programs, 62% (n=18) offered oncologic services. Of those offering oncologic services, 83% (n=15) offered free chemotherapy, and one program offered chemotherapy at a reduced cost. Nearly all programs offering chemotherapy did so through an affiliated large hospital system. Computed tomography (CT), magnetic resonance imaging (MRI), and/or positron-emission tomography (PET) scans were offered by 93% (n=27) of the programs. Three themes naturally emerged as the program directors were interviewed on specific barriers that limit their program's ability to offer oncologic care: (1) costs, (2) longitudinal care, and (3) multiphysician buy-in. Care coordination centers were most predominant in states that did not expand Medicaid.

CONCLUSIONS: Third-party care coordination centers provide a novel, and potentially unrecognized, approach to increasing oncology service access. Programs are more concentrated in states that have not expanded Medicaid, suggesting these states have a greater need for *pro-bono* subspecialty services. Further research should identify barriers contributing to the relative lack of oncologic services in these programs compared to other specialties, as well as strategies to overcome them.

ONLINE NURSING HOME QUALITY INFORMATION AND HOSPITAL READMISSIONS: INSIGHT FROM NURSING HOME COMPARE AND YELP REVIEWS 2014-2018

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BACKGROUND: Over 40% of older adults who require post-acute care after hospitalization are discharged to skilled nursing facilities (SNFs), which provide short-term nursing and rehabilitation services after hospital discharge. To improve outcomes and reduce costs of SNF care, Medicare invested in public reporting of SNF quality information. However, SNF quality ratings published by Medicare's Nursing Home Compare (NHC) website have been only weakly correlated with hospital readmissions. Whether unsolicited consumer reviews of SNFs available on Yelp.com provide useful information about SNF rehospitalization rates is unknown.

Our objectives were to (1) measure the association between rehospitalization rates and Yelp ratings of SNFs; (2) compare how well Yelp vs. NHC ratings explain the variation in rehospitalizations from the SNFs; (3) identify characteristics of Yelp reviews of SNFs with high vs. low rehospitalization rates.

METHODS: This was a retrospective observational study of 1,536 SNFs with online reviews on Yelp posted in 2014 - 2018 (10.4% of all SNFs). Risk-standardized rehospitalization rates were obtained from NHC. Hierarchical linear regression was used to measure the association between a SNF's rehospitalization rate and the publicly reported quality ratings. Natural language processing was used to identify topics associated with reviews of SNFs in the top and bottom quintiles of rehospitalization rates.

RESULTS: SNFs with the best rating on *both* Yelp and NHC had 2.0% lower rehospitalization rates compared to the SNFs with the worst rating on both websites (21.3% vs. 23.3%, p=0.04) (Table). Compared to the NHC ratings alone, Yelp ratings explained an additional 0.6% of the variation in rehospitalization rates across SNFs (adjusted R^2 0.009 vs. 0.013, p=0.003). Analysis of qualitative comments on Yelp identified several areas of importance to the reviewers, such as the quality of physical infrastructure and equipment, staff attitudes, and communication with caregivers.

CONCLUSIONS: Areas of SNF experience that are important to the public are not included in current Medicare ratings of SNFs. Patients, hospitals, and payers may be able to leverage this information to reduce rehospitalizations from SNFs.

Table: Risk-Standardized 30-Day Hospital Readmission Rates from Skilled Nursing Facilities by Their Yelp and Medicare's Nursing Home Compare Ratings

	Readmission Rate, %	95% CI
Nursing Home Compare Star Rating		
1-star (Worst)	23.3	22.7-23.9
2-star	22.7	22.3-23.1
3-star	22.7	22.3-23.1
4-star	22.7	22.4-23.1
5-star (Best)	21.8*	21.6-22.1
Yelp Rating		
<1.5 (Worst)	22.7	22.3-23.0
1.5-2.4	22.8	22.4-23.1
2.5-3.4	22.5	22.2-22.8
3.5-4.4	22.1*	21.7-22.5
>4.4 (Best)	22.0*	21.5-22.5
NHC & Yelp Ratings Together		
1-star & <1.5 Yelp rating (Worst)	23.3	22.7-24.0
2-star & 1.5-2.4 Yelp rating	23.1	22.6-23.6
3-star & 2.5-3.4 Yelp rating	22.8	22.3-23.3
4-star & 3.5-4.4 Yelp rating	22.4	21.9-22.9
5-star & >4.4 Yelp rating (Best)	21.3*	20.7-21.8

* Significantly different from the reference group (lowest rating) at p<0.05

ONLINE SEARCHES FOR QUITTING VAPING DURING THE 2019 OUTBREAK OF E-CIGARETTE OR VAPING PRODUCT USE-ASSOCIATED LUNG INJURY

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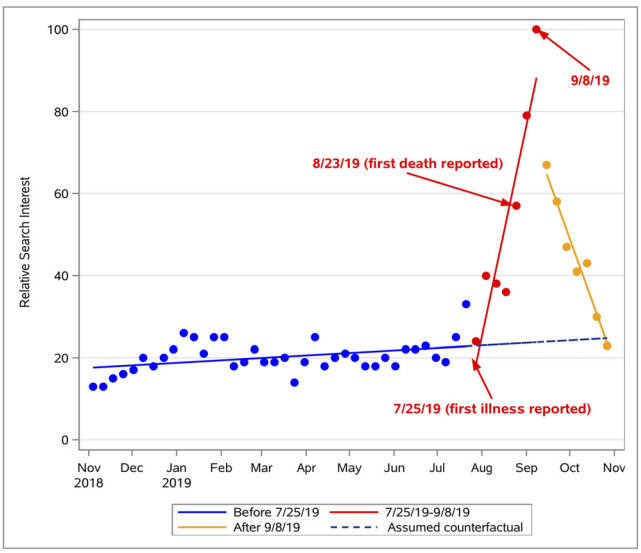
BACKGROUND: The prevalence of current e-cigarette use (vaping) is increasing in the US. The 2019 outbreak of e-cigarette or vaping product use-associated lung injury (EVALI) in the US raised concerns about the health effects of e-cigarettes, and may have increased users' interest in quitting. Our goal was to evaluate trends in internet searches for quitting e-cigarettes before and during the EVALI outbreak.

METHODS: We used Google Trends to search for terms related to quitting e-cigarettes and vaping from the week of 11/4/2018 to the week of 10/27/2019. We looked at relative search interests, where data are indexed from a scale of 0 to 100, with 100 being the week with the maximum search interest. We categorized the data into three periods: before 7/25/19 (date of the first media reports of illness), from 7/25/19 to 9/8/19 (the week of maximum search interest), and after 9/8/19. We used an interrupted time series approach to compare the relative search interest in the 3 periods using SAS version 9.4.

RESULTS: The relative search interest in quitting e-cigarettes started increasing shortly after 7/25/19 (Figure). Compared to the would-be observed volume from the original time trend (dotted line), there was a 3.7-fold increase on 9/8/19 (P<0.001). At the end of the evaluation period, the relative search interest returned to the level predicted by the original trend. The slopes from the increasing trend during 7/25/19 to 9/8/19 and the decreasing trend after 9/8/19 were both significantly different from the trend before 7/25/19 (both P<0.001).

CONCLUSIONS: Internet searches for quitting e-cigarettes increased during the EVALI outbreak in the US. The fact that individuals seek information about quitting e-cigarettes suggests that many users are dependent on these products and may need behavioral and/or pharmacologic assistance. Healthcare providers should routinely screen for and document e-cigarette use in addition to combustible tobacco use to identify e-cigarette users and assist those who are interested in quitting.



OPIOID PRESCRIPTIONS ON DISCHARGE FROM POST-ACUTE REHABILITATION AND RISK OF LONG-TERM OPIOID USE

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BACKGROUND: The national opioid (OPR) epidemic remains a significant challenge. Providers are still unable to predict reliably who will

develop opioid use disorder (OUD). Eliminating opioid prescriptions (Rx) risks leaving patients' pain untreated. The early post-initiation period is crucial in predicting subsequent OPR-related complications. Many with OUD are first exposed during acute hospitalization. Limited prior studies suggest that hospital discharge Rx increases subsequent long-term opioid use (LTOU), a common OUD surrogate. Little is known about the long-term effects of Rx upon discharge from post-acute skilled nursing facility (SNF) rehabilitation, an increasingly prevalent discharge site.

METHODS: This was a retrospective cohort study using Veterans Health Administration (VHA) administrative data. Inclusion criteria were: U.S. Veterans and residents; a VHA encounter in 2011, baseline OPR-naïve and cancer-free; VHA Medical (Med) or Surgical (Surg) hospitalization 2012-2016; acutely OPR- exposed; discharged to a VHA SNF then home. Exclusion criteria were: residing in a long-term care facility, hospice enrollment, or a cancer diagnosis (other than non-melanoma skin cancer), unless >12 months post- discharge. Follow-up was through 2017. New LTOU, evaluated 12 months post-discharge, was defined as a composite of an OPR use episode lasting >90 days, and either a) ≥120 days' supply of OPR dispensed, or b) >10 Rx's in 1 year. Covariates included age at discharge, gender, race, ethnicity, socioeconomic status (SES, as quintile of home zip median income), Charlson Comorbidity Index (CCI), and admission type (Med/Surg).

RESULTS: Of a cohort of 1,977 (96% Male), 469 were dispensed an OPR within 48 hours of discharge. (See table). Gender, SES and ethnicity were similar between groups (χ^2 $p<0.3$). On follow-up, 11 (exposed) and 42 (unexposed) were diagnosed with OUD, and 55 vs 89 developed LTOU, respectively. In unadjusted analyses, the relative risk of OUD wasn't different (RR 0.84, 95% CI 0.44-1.62); however LTOU was more common for those receiving discharge Rx (RR 1.99, 95% CI 1.44-2.74).

CONCLUSIONS: Using observed VHA data, SNF discharge home with (vs without) an Rx increased the likelihood of subsequent LTOU, but not OUD diagnosis. These findings may suggest that SNF providers can reduce LTOU by stopping unnecessary OPR before discharge.

OPIOIDS WITHOUT PAIN? DOCUMENTATION OF THE CLINICAL RATIONALE FOR OPIOID ANALGESICS PRESCRIBED TO YOUNG ADULTS, 2006-2015

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BACKGROUND: Young adults age 16-30 experience the highest rates of opioid misuse, and exposure to opioid analgesics – even for legitimate medical reasons – is an important risk factor. Accordingly, there is a need to improve opioid prescribing safety in this population. One important dimension of safe prescribing is the need for a clearly documented clinical rationale for opioid therapy: documenting the reason for a prescription can improve appropriate medication use and patient safety, particularly for medications with a high risk of adverse effects or misuse such as opioids. Yet providers often fall short of this: nearly 30% of office visits by older adults who receive opioids lack a documented pain diagnosis. Documentation of the reason for opioids is especially important among young adults given their increased vulnerability to opioid misuse, but has yet to be studied in this population. We therefore examined the share of opioid prescriptions with a documented pain diagnosis among young adults age 16-30, and variations by patient, provider and visit characteristics.

METHODS: Using data from the National Ambulatory Medical Care Survey we identified outpatient visits by young adults age 16-30 between 2006-2015 at which an opioid analgesic was prescribed and calculated the share of these visits with a "pain diagnosis" (i.e. provider-assigned ICD-9 codes for conditions that commonly cause pain severe enough to require prescription-strength analgesics). We identified the most common pain and non-pain diagnoses recorded at visits where an opioid was prescribed, and used multivariable logistic regression to identify patient, provider and visit characteristics associated with documentation of a pain diagnosis.

RESULTS: Opioids were prescribed in 2,447 visits (60,932,437 visits when weighted to be nationally representative), of which 29.8% had no documented pain diagnosis. At visits in which a pain diagnosis was documented, the most frequently assigned diagnoses included back pain, "other chronic pain" and post- surgical pain. The probability of a documented pain diagnosis was significantly higher at problem-oriented visits than preventive visits; among surgeons than among primary care physicians; and at visits paid by Workers' Compensation.

CONCLUSIONS: At nearly 1 in 3 ambulatory visits by young adults at which an opioid was prescribed between 2006-2015, there was no documented pain diagnosis and the medical indication for an opioid was uncertain. Clear documentation of the justification for opioid therapy is a critical aspect of safer, appropriate prescribing – yet our findings demonstrate significant gaps in achieving this goal, even among young adults at greatest risk of opioid misuse. Our finding that documentation of the reasons for opioids is higher at visits paid by Workers' Compensation – in which the treated condition must be recorded to allow claims payment – indicates a role for insurers in improving opioid prescribing safety by requiring documentation of their medical necessity.

OPPORTUNITIES, PITFALLS AND ALTERNATIVES IN ADAPTING ELECTRONIC HEALTH RECORDS FOR HEALTH SERVICES RESEARCH

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BACKGROUND: Electronic health records (EHRs) offer potential to study large numbers of patients but are designed for clinical practice, not research. Despite increasing availability, utilizing EHR data for research presents challenges.

METHODS: We created two large-scale, EHR-derived data sets on >3 million unique patients, documenting up to 18 years of care. First, a primary care registry contains data for >800,000 patients seen by a primary care provider at a large health system from 2006-2015. It provides access to commonly-requested EHR variables for ambulatory encounters, in a single file and easy-to-use format. Second, a cross-institutional database studies variation in atherosclerotic disease risk by socioeconomic position over time, with data for >3 million patients from 1999-2017. It combines data from 2 health systems representing approx. 70% market share in the region, one with primarily commercially-insured patients and the other Medicaid or uninsured patients.

In both registries, we cleaned, validated and transformed data into longitudinal format. We geocoded patient addresses to the census block-group level and linked results with publicly-available neighborhood-level data sources, such as the US Census. The atherosclerotic disease risk registry also merged EHRs for patients with encounters at both institutions.

Through this process, we identified 9 pitfalls and potential solutions for other researchers to consider when obtaining large-scale, EHR-derived data. We describe these based on our experience.

RESULTS: Although EHRs are a focus of big data analysis and increasingly viewed as a source of research data, the reality of utilizing EHRs for research is complicated. The researcher must 1) define the relevant patient population, recognizing that some patients obtain most of their care within one health system whereas others obtain care across systems; 2) carefully identify a patient's primary care provider (PCP) based on historical encounters, not the PCP field in the EHR; 3) recognize the EHR as containing episodic data (a patient's current health as of each encounter), which must be transformed and validated to obtain longitudinal health status; 4) account for changes in health system composition and treatment options over time; 5) understand that the EHR is not always well-organized, documented or accurate; 6) design methods to identify the same patient across multiple health systems; 7) account for the enormous size of the EHR as compared with computing resources available to researchers; 8) recognize that associations found in the EHR may be non-representative of the general population, potentially requiring a comparison of the patient population with US Census data and 9) consider barriers to data access.

CONCLUSIONS: When carefully designed, it is feasible to build large-scale EHR-based data registries to facilitate health services research. Attention to the intricacies of EHR data allow for more informed analysis and interpretation of results.

ORAL ANTICOAGULANT USE IN A RACIAL/ETHNIC DIVERSE POPULATION WITH ATRIAL FIBRILLATION

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BACKGROUND: Racial and ethnic minorities are less likely than white patients to receive direct oral anticoagulant (DOAC) for atrial fibrillation (AF) related stroke prevention. However, such phenomenon might not hold true in a multi-racial/ethnic population. In light of recent ACC guideline update recommending DOAC over warfarin for AF, this study investigated oral anticoagulant (AC) use and its prescribing pattern in a tertiary medical center serving a diverse community.

METHODS: In a retrospective study of patients with newly diagnosed AF who were prescribed AC at Montefiore Medical Center between 2015 and 2018, self-reported racial/ethnic group (white, black, Hispanic and other), AC prescribed (DOACs or warfarin), CHA_2DS_2-VASc scores, AC prescribers (cardiologist or non-cardiologist) and insurance status were identified. Logistical Regression model was used to determine prescribing pattern with adjustment of various parameters.

RESULTS: Among the 1674 patients (47% white, 18% black, 28% Hispanic and 6% other, mean age 71.9 and mean CHA_2DS_2-VASc score 2.1), Hispanic patients were prescribed DOAC more often than white patients (79% vs. 70% P=0.001, unadjusted OR 1.582 and CI 95% 1.211-2.067). Cardiologists prescribed DOAC more often than non-cardiologist (79% vs. 21% P=0.007, unadjusted OR 1.412, CI 95% 1.100-1.812). After adjusting for CHA_2DS_2-VASc score and insurance status, the significant difference when comparing white patient to Hispanic patients (P=0.001, adjusted OR 1.729, CI 95% 1.312-2.278) and cardiologists to non-cardiologists (P=0.03, adjusted OR 1.471, CI 95% 1.139-1.900) still held true.

CONCLUSIONS: Racial/ethnic biases in AC prescription do not appear present in our multi-racial/ethnic population located in Bronx, NY. However, cardiologists are more likely to prescribe DOAC than warfarin for AF.

ORGANIZATIONAL AND WORK EXPERIENCE FACTORS AFFECTING COMMUNICATION FLOW AT VHA CALL CENTERS AND PRIMARY CARE: A QUALITATIVE STUDY.

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BACKGROUND: For most Veterans, phoning an administrative call center is their first step in engaging VA Healthcare Systems. Recent studies indicate Veterans experience lingering dissatisfaction communicating with their primary care (PC) teams and that telephone access, specifically the average speed of answer, has important consequences for patient satisfaction. This study explores the organizational and work experience factors that may impact communication between Veterans, call centers, and their PC teams.

METHODS: This cross-sectional, observational study focuses on Medical Support Assistants (MSAs) working in call centers and PC clinics, Administrative Staff Chiefs and MSA Supervisors in one regional network. We conducted site observations at call centers (n = 9) and primary care clinics (n=11) and semi- structured interviews with call center (n=16) and PC clinic MSAs (n=13). Site visits included informal discussions (n=20) with Administrative Staff Chiefs and MSA Supervisors, and observing MSAs. Interviews with MSAs focused on communication flows, training, and work experiences.

RESULTS: Most communication breakdowns occur due to a combination of issues involving location, technology, software, and protocols that, when combined, generate barriers to regular, open communication between call centers, PC clinics, and other service lines. Administrative staff and MSAs describe the organizational factors impacting call center functioning that include: physical location of call centers (co- located at medical center v. offsite), infrastructure (information technology and facility management support), high MSA turnover, lack of standardized training, and communication flow challenges. Contributing factors from work experience include: being short staffed, high job turnover, low pay, no career growth, navigating multiple software programs simultaneously, balancing multiple tasks, and dealing with 'angry Vets'. Promising practices to improve communication flows that we observed include offering MSAs hands-on experience / simulations of real-time work, standardized training, mechanisms to destress after difficult calls. One call center created Preceptor positions for Advanced MSAs, for personalized mentoring, team building and task variation. Other notable practices include: an open-door policy with Supervisors, daily group Skypes, and floor walkers used to monitor difficulties or immediate queries. Two call centers have negotiated with human resources for streamlined hiring process.

CONCLUSIONS: We identified several communication choke points: technology, scheduling processes, administrative protocols, and MSA work experiences. Our findings demonstrate the task complexity of scheduling and customer service provided in primary care. It also illustrates the complexity of communication flows between Veterans, call centers and their primary care teams.

OUCH! ADDRESSING MICROAGGRESSIONS ON THE INTERDISCIPLINARY TEAM

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BACKGROUND: Microaggressions (Sue et al. 2007) are "verbal, behavioral, or environmental indignities, whether intentional or

unintentional, that communicate hostile, derogatory, or negative slights and insults with regards to race, gender, religion, or sexual orientation". In healthcare, studies have examined microaggressions' effect on trainee experience, patient-physician relationships, and frameworks for responding to them. To our knowledge no studies have examined microaggressions within the hospital interdisciplinary team (IDT).

The purpose of this study was to identify whether IDT microaggressions lead to workplace challenges and implement a framework to address them.

METHODS: We surveyed members of the Internal Medicine IDT (resident physician (RP), nurse (N), nurse practitioner (NP), social worker (SW), case manager (CM)) asking how much gender, race, sexual orientation, and team role made it challenging to succeed at the workplace using a five point scale ranging from "not a challenge" to "it interferes with my ability to be effective in my role".

They were then invited to a one hour workshop teaching recognition of micro and macroaggressions and how to constructively address these using the "OUCH" framework from Yale University:

When a microaggression is heard say, "Ouch!":

Open ended question: "What did you mean when you said X?"

Use the chance to teach: "You might have meant it to be funny but X is no joke."

Clarify your stance: "You might have meant well but X makes me uncomfortable."

Here at NYU: "…we have a commitment to respect."

Participants role-played OUCH with adapted workplace scenarios and were given a retrospective pre-post survey (Likert 1-4 scale) measuring self-reported confidence/ability to identify and respond to micro and macroaggressions. Answers were evaluated with a Wilcoxin ranked test of after-before.

RESULTS: 134 IDT members (42 RP, 25 CM, 16 SW, and 51 N; 72% females) completed the needs assessment. 54.1% stated they were misidentified in their roles in the workplace and 63.8% felt their role on the team was slightly challenging or worse with regards to effectivity in the workplace.

Ninety-five members of the IDT (29 RP, 20 SW, 15 N, 15 CM, 6 attendings, 1NP) participated in the workshop; 90/95 (94%) completed the survey. Significant improvement was found in each domain on the survey: identifying microaggressions (3.16 before, 3.69 after, $p < .001$), identifying macroaggressions (3.48 before, 3.76 after, $p < 0.001$), responding to microaggressions (2.78 before, 3.47 after, $p < 0.001$), responding to macroaggressions (2.9 before, 3.49 after, $p < 0.001$).

CONCLUSIONS: This study is one of the first to our knowledge to not only identify microaggressions relating to one's role on the IDT but then demonstrates improvement in identifying and responding to them via a one hour workshop. The OUCH framework has become a regular part of IDT dialogue. Next steps include determining sustainability and studying its effect on IDT communication and morale.

OUTCOME MEASURES FOR INTERVENTIONS TO REDUCE INAPPROPRIATE PRESCRIBING OF CHRONIC DRUGS

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BACKGROUND: Inappropriate prescribing is an important problem, given the growing elderly and multimorbid population and associated polypharmacy. Many studies have tested interventions to withdraw inappropriate drugs (i.e. to deprescribe). However, we lack data on measures used to assess the success of such interventions.

METHODS: We conducted a literature review of intervention studies to deprescribe chronic drugs in adults. We used a comprehensive and systematic framework to categorize and synthesize the measures employed in the studies.

RESULTS: Most of the 93 identified studies used appropriateness prescribing measures, such as drug cessation or dose reduction, to evaluate the impact of the intervention. The following measures were used infrequently: patient- and provider-reported experiences, preferences and outcomes; patient-provider interactions; and measures of unintended consequences. The number and types of measures assessed varied highly across the studies. The table shows the resulting categorized synthesis of measures used across the studies.

CONCLUSIONS: Few studies employed the broad spectrum of relevant measures. This categorized synthesis could facilitate implementation of the full spectrum of measures in future deprescribing intervention studies, and more particularly of patient- and provider-relevant measures. This is important to ensure initiation, success, and sustainability of deprescribing.

OUT OF TIME: DIMINISHING RETURNS OF INTERPROFESSIONAL EXPOSURE THROUGHOUT THE CORE CLINICAL YEAR

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BACKGROUND: Interprofessional exposure (IPE) is associated with evidence-based improvements in care, population health, and reduced cost. IPE is required by the Liaison Committee on Medical Education, though it is given limited time in medical school curricula. The Weill Cornell Community Clinic (WCCC) is a medical student-run interdisciplinary free clinic. IPE to pharmacy students and their supervisors has been offered since 2016; here we evaluate the effect of IPE on medical students.

METHODS: At the WCCC, pharmacy students work with medical students on medication reconciliation and counseling. The validated 10-item Student Perceptions of Physician-Pharmacist Interprofessional Clinical Education Instrument (SPICE-R2) survey was used to assess attitudes towards IPE among medical students across three categories on a 1-5 scale: teamwork, roles/responsibilities, and patient outcomes. SPICE-R2 was administered to 55/58 eligible medical students at the beginning and end of their 6-week WCCC rotation from September 2018 to December 2019. Data was analyzed using 1-way ANOVA within categories and two-tailed t-tests across categories.

RESULTS: Overall, IPE improved students' attitudes toward interprofessional education and collaboration by 5.3% (average score improved from 4.15 to 4.37; p-value=0.0013). Understanding of the roles/responsibilities of pharmacy students improved 15.7% (3.39 to 3.92,

p<0.0001) after the WCCC rotation. There was no significant change in attitudes toward teamwork or patient outcomes. All three categories saw improvements in medical student attitudes in the first half of the clerkship year. Only attitudes in the roles/responsibilities category continued to show improvement in the second half of the clerkship year. Over the study period, the effect of IPE diminished — this was most pronounced in the teamwork category. Relative to the first half of the academic year, students reported an alarming 69% decrease in their appreciation for teamwork. This longitudinal trend was less pronounced in the other SPICE-R2 categories: roles/responsibilities (-47.3%) and patient outcomes (-35.5%).

CONCLUSIONS: In our study, IPE led to diminishing and ultimately negative attitudes toward interdisciplinary teamwork. This has not been previously reported, and underlying drivers need further study. Overall, IPE yielded modest gains in attitudes toward interprofessional collaborative practice. Regardless of prior clerkship exposure, IPE improved medical students' understanding of the roles and responsibilities of pharmacy students on an interdisciplinary team. This suggests student-run free clinics provide a unique and valuable IPE opportunity to understand interdisciplinary roles and responsibilities.

OUTPATIENT CARE FRAGMENTATION PATTERNS AND ASSOCIATION WITH HOSPITALIZATION IN HIGH-RISK VA PATIENTS

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BACKGROUND: Care fragmentation—dispersion of a patient's care across clinicians and healthcare settings—increases risk for information loss, duplicative tests, and unwieldy self-care regimens, and is especially common for patients with complex medical needs. This study examines outpatient care fragmentation patterns and the association with subsequent hospitalization among Veterans Affairs (VA) patients at high-risk for hospitalization.

METHODS: For FY2014, we evaluated fragmentation patterns for 130,704 VA patients at high-risk for hospitalization (Care Assessment Needs score $\geq 90^{th}$ percentile for 1-year hospitalization) who were ≥ 65 years, enrolled in Medicare fee-for-service parts A + B, and had at least 4 VA or Medicare outpatient visits in FY14. We constructed five fragmentation measures for outpatient care: provider count (number of unique providers), concentration of care with an empirically defined "usual provider" using Breslau's Usual Provider of Care (UPC), care dispersion across providers using Bice-Boxerman's Continuity of Care Index (COCI) and an adaption of this measure (MMCI), and health system reliance (proportion of visits in the VA). We examined the distribution of each measure and variation by patient age, gender, race, ethnicity, marital status, rural status, history of homelessness, number of chronic conditions, and mental health care utilization. We then used multivariable logistic regression to examine the association between each fragmentation measure in FY14 and subsequent hospitalizations in FY15.

RESULTS: The study population was predominantly male (98%); 37% lived in rural areas; 79% were white, 16% were black, and 4% were Hispanic. Patients had a mean of 9 (SD=4) chronic conditions. In FY14, these patients had numerous VA outpatient visits (median 11, interquartile range 7-16); approximately one-third (33%) had an outpatient Medicare encounter, and 10% had a community visit paid for by the VA. During FY15, 46% of the study population was hospitalized and 14% died. Medians (IQRs) of the fragmentation measures were: provider count 6 (4-9), UPC 0.33 (0.25-0.44), COCI 0.13 (0.07-0.21), MMCI (0.34-0.61), health system reliance 1 (0.87-1). Patients with mental health care utilization and those with more chronic conditions had more fragmented care across all measures. In multivariable models, a high number of unique providers and having a high portion of care outside VA was associated with FY15 hospitalization (p<0.001), but other fragmentation patterns were not associated with future admission.

CONCLUSIONS: For VA patients at high-risk for hospitalization, individuals with greater medical complexity and mental health care utilization experienced more care fragmentation, and fragmentation across multiple providers was associated with future hospitalization. Measures of care fragmentation and their nuanced relationships with clinical outcomes can inform care coordination policy and programs for patients with complex needs.

OUTPATIENT CLINIC TO EMERGENCY DEPARTMENT TRANSFERS: EVALUATION OF REASONS FOR PATIENT TRANSFER AND OUTCOMES

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BACKGROUND: The emergency department (ED) serves as an important setting for patient triage, stabilization and afterhours care. However, its role and value in the management of patients who have been referred from outpatient clinics is unclear. Little has been published on the reasons for patients to be transferred from outpatient clinics to the ED and the outcomes of these patients. Our study provides a descriptive analysis of reasons for patient transfer from an outpatient clinic to the ED and associated patient outcomes.

METHODS: Retrospective descriptive study was performed on patients transferred from an academic health center's internal medicine clinic (UIM) to the ED from June 2018 through May 2019. All patients were 18 years old or older and were seen in UIM's faculty, resident, or acute care clinic and subsequently transferred directly to ED. Administrative review identified all encounters where patients were seen in the ED within 12 hours after a UIM appointment. Administrative data abstraction from the clinical data warehouse then collected demographic and clinic information on identified patient encounters. Follow up chart review of identified patient encounters was performed to confirm direct transfer from UIM to ED. Encounters where patients were not directly transferred from UIM to ED were excluded. Additionally, chart review was used to collect information on clinical reasons for transfer, inpatient admission after transfer, and outpatient follow up after transfer. Both the administrative data file and the chart review data file were merged to create a comprehensive data file. Descriptive analysis was performed.

RESULTS: 423 patient encounters were identified as having an ED visit within 12 hours of a UIM appointment. 200 encounters were randomly selected for chart review. 168 (84%) were determined to have been transferred directly from UIM to the ED. The most common reason for patient transfer was the need for treatment not available in clinic (25%), followed by subspecialty consultation (22%), further clinical monitoring (19%) and imaging (18%). 47% of transferred patients were ultimately admitted to the hospital. Of patients transferred but not admitted, 45% did not have a follow up appointment within four weeks of ED transfer.

CONCLUSIONS: Patients transferred from UIM to the ED most often needed medical care beyond what could be offered in clinic. Almost half of transferred patients were admitted to the hospital. Improving direct admissions from outpatient clinics, improving delivery of urgent subspecialty evaluation and extending hours for imaging services may reduce unnecessary ED transfers. As with hospital discharge, patients transferred from clinic to the ED need close follow up appointments.

OVERLAP BETWEEN ACCOUNTABLE CARE ORGANIZATIONS AND BUNDLED PAYMENTS AND THE IMPACT ON PATIENTS

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BACKGROUND: Growing participation in alternative payment models leads to overlap in which beneficiaries can receive uncoordinated care under different models. Medicare policy currently does not incentivize overlap and may inadvertently penalize participants in prominent models such as bundled payments and accountable care organizations (ACOs). For example, bundled payment participants are favored in distributions of savings when beneficiaries overlap in ACOs. However, it is unknown if ACO- bundle overlap improves patient outcomes versus participation in a single model.

METHODS: We used 2013-2016 Medicare claims data for all Medicare fee-for-service beneficiaries hospitalized at all US hospitals. We determined patients' ACO status (based on attribution in the Medicare Sharing Savings Program) and bundled payment status (based on admission to a hospital participating in one of the 48 medical and surgical episodes in Medicare's Bundled Payments for Care Improvement Initiative). Overlap was defined as being attributed to an ACO and receiving care at a bundled payment hospital. We used difference-in-differences and ordinary least squares regression with hospital and ACO fixed-effects to evaluate whether overlap patients had differentially better outcomes than non-ACO-attributed patients treated at bundled payment hospitals. Our primary outcome was institutional post-acute care spending. Secondary outcomes were unplanned readmissions, mortality, discharge to institutional post-acute care, skilled nursing facility [SNF] length of stay, and discharge with home health.

RESULTS: The sample included 9,850,080 Medicare fee-for-service beneficiaries. In adjusted analysis for the 24 medical episodes, there was lower institutional post-acute spending among Overlap patients vs. non-ACO patients hospitalized at bundled payment hospitals (-$507 vs. -$191, p=0.03). Overlap patients also had lower SNF length of stay (-0.8 days vs. -0.4 days, p=0.02) and 90-day unplanned readmissions (-1.1% vs. -0.1%, p=0.001). While patients hospitalized at bundled payment hospitals for a medical episode were more likely to be discharged with home health, there were no differential changes by Overlap status. Among the 24 surgical episodes, institutional post-acute care spending did not differ by overlap status (-$789 vs. -$676, p=0.25). However, compared to non-ACO patients, Overlap patients hospitalized at bundled payment hospitals for surgical episodes had lower 90-day unplanned readmissions (-1.5% vs. -0.7%, p=0.001). While hospitalization at bundled payment hospitals for a surgical episode was associated with lower institutional post-acute care use and higher home health use, these differences did not vary by Overlap status.

CONCLUSIONS: ACOs and bundled payments may prompt participating organizations to implement different, complementary processes that improve outcomes for patients receiving overlapping care for both medical and surgical episodes. Policymakers may consider revising current policies to encourage overlap.

PATIENT ACTIVATION AND MHEALTH INTERVENTIONS DECREASED CARDIOVASCULAR DISEASE RISK FOR DIABETIC PATIENTS: THE OFFICE-GUIDELINES APPLIED TO PRACTICE PROGRAM.

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BACKGROUND: Cardiovascular disease (CVD) deaths in patients with type 2 diabetes mellitus (T2DM) are 2-4 times higher than among those without T2DM. A key contributor is medication non-adherence. Our objective was to determine the impact of a patient activation program (Office-Guidelines Applied to Practice [Office-GAP]) plus mHealth intervention compared to mHealth alone in improving medication use and decreasing atherosclerotic CVD (ASCVD) risk score in patients with T2DM.

METHODS: Office-GAP included: 1) Patient activation group visit 2) Physician training for patient activation, and 3) Decision support checklist used in *real time* in the office. mHealth included teaching patients to send and receive text messages; patients received daily messages appropriate to their diagnosis for 14 weeks, along with appointment and medication reminders. Participants were diabetic patients with A1c>8 or uncontrolled hypertension (BP >130/80) attending Internal Medicine Residency Clinics. Patients were consecutively assigned to combined Office-GAP + mHealth group (Combined Intervention Arm/Green group) or mHealth only group (mHealth only Arm/White group) based on resident clinic designation. After a group visit, patients followed up with two physician visits over a 4-month period. Fifty-one (25 Green Team/26 White Team) patients who completed the pilot study were evaluated for evidence-based medication (EBM [Aspirin, Statin and ACEI/ARBs]) use for secondary prevention of heart disease. Additionally, ASCVD risk score at baseline and 4 months post intervention was determined. We evaluated only patients eligible for each medication use. Generalized Estimating Equation (GEE) regression model was used for statistical analysis controlling for gender, race, Charlson Index and other demographics.

RESULTS: Of 51 patients that completed the pilot study, statin use [OR=1.26 for Green; p=0.42 and OR=2.32 for White; p<0.01], aspirin use [OR=3.16 for Green; p=0.04 and OR=4.02 for White; p=0.03], and ACEI/ARBs use [OR=1.81 for Green; p=0.57 and OR=3.86 for White; p=0.08] increased over four months for both groups. There were no significant differences between Green and White group for EBM use. At four months follow-up, ASCVD risk scores decreased for both groups: 3.23 points for Green; p=0.05 and 3.98 points for White; p=0.01. We found no significant difference between both groups regarding decreased ASCVD risk score. Black participants had 6.62 points higher ASCVD score compared with White counterparts; p=0.01. ASCVD risk score increases with age (on average 1.01 points higher per year; p<0.01).

CONCLUSIONS: Office-GAP + mHealth and mHealth only interventions improved EBM use. There was no significant difference in impact of Office-GAP + mHealth compared to mHealth only on EBM use at

4months. Office-GAP and mHealth both decreased ASCVD risk scores by >3 points on average, while there is no statistical difference between both groups regarding decreased ASCVD risk score.

PATIENT ATTITUDES TOWARD SUBSTANCE USE SCREENING AND DISCUSSION IN PRIMARY CARE ENCOUNTERS

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BACKGROUND: Alcohol and drug use are often under-identified in primary care settings. While prior research indicates that patients are generally supportive of alcohol screening, less is known about attitudes toward drug screening or the collection of this information in electronic health records (EHRs). As a part of an implementation study of EHR-integrated substance use screening in primary care, conducted in the NIDA Clinical Trials Network, patients were surveyed on their attitudes toward screening for substance use during medical visits.

METHODS: Surveys were administered to patients in four urban academic primary care clinics on a quarterly basis, for one year following the introduction of a screening program. English-speaking adult patients presenting for a primary care visit were eligible. Participants were recruited from the waiting room and self-administered an 18-item survey exploring attitudes toward screening and discussing substance use with healthcare providers.

RESULTS: A total of 479 patients completed the survey (mean age 54.1; 58% female; 58% white, 23% black; 19% Hispanic/Latino). Participants overwhelmingly felt that they should be asked about their substance use (91%), and deemed it appropriate for their doctor to recommend reducing use if it could adversely affect their health (92%). Most (87%) were equally comfortable discussing alcohol or drug use. A majority (63%) preferred discussing substance use with their doctor over other medical staff. Responses were mixed regarding screening modality: 55% preferred face-to-face, 22% had no preference, 14% preferred self- administration. Participants reported that they would be honest with their provider (94%), but 32% were concerned about medical record confidentiality.

CONCLUSIONS: Primary care patients strongly supported being screened for drug and alcohol use, and would be comfortable discussing it with their doctor. However, patients' concerns about having their substance use documented in their medical record could pose a barrier to achieving accurate responses. These findings suggest a need to educate patients on the confidentiality of medical records and the value of disclosing substance use for their medical care.

PATIENT-CENTERED MEDICAL HOME (PCMH) TEAMS' USE OF RESOURCES AND STRATEGIES FOR IDENTIFYING AND MANAGING HIGH-RISK PATIENTS IN PRIMARY CARE

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BACKGROUND: Most high-risk patients are managed in primary care, but primary care teams may not be well equipped or have training specific to this population. Patient-Centered Medical Home (PCMH) teams may be better equipped and trained, but little is known about which resources PCMHs find important for identifying these patients, which care management strategies they use, and whether use varies by team member role.

METHODS: We analyzed a national primary care personnel survey, fielded within Veterans Health Administration (VHA) July-September 2018. Respondents included primary care providers (PCPs: medical doctors, nurse practitioners, physician assistants), registered nurses (RNs), clinical associates (licensed practical nurses, medical assistants), clerical associates, social workers, pharmacists, behavioral health providers, nutritionists, health educators (n=5,803, 17.7% response rate). Respondents rated importance (3- point Likert scale) of 11 factors/population health management tools to identify high-risk patients and how likely (5-point Likert scale) they were to use 6 care management approaches. We conducted univariate and bi-variate analyses by role to understand which tools and approaches respondents found most important and useful.

RESULTS: Recent ER visits/hospitalizations (70%), specific medical/mental health diagnoses (57%), and specific prescription medicines (47%) were rated most important for identifing high-risk patients. RNs were significantly more likely than PCPs to report that the VA risk prediction algorithm (48% vs 31%), case management software (28% vs 16%), and quality dashboard (56% vs 32%) were very important. For help with managing their high-risk patients, a majority reported being likely/very likely to consult with specialists (90%), to request help from PCMH social workers, pharmacists, behavioral health, etc. (88%), and to refer to VA programs/services outside of PCMH (84%). A lower percentage reported being likely/very likely to discuss management of these patients with the PCMH team (68%) or for a specific team member to review and make care plans (64%). A lower percentage of PCPs reported being likely/very likely to use any strategies, compared with other disciplines.

CONCLUSIONS: PMCH team members find markers of patient utilization (ER visits, hospitalizations) especially useful for identifying high-risk patients as compared with other resources. In the PCMH, non-physician team members such as RN care managers could play a larger role in identifying high-risk patients, potentially avoiding costly emergency room or inpatient admissions. PCMH team members' reliance on clinicians and resources outside of the core PCMH team to manage high-risk patients suggests they lack the time or expertise to provide complex care management. Future research should explore what design features of specific tools and resources would make them more valuable/useful to PCMH teams, and what supports outside PCMH are needed to better manage care for high-risk patients.

PATIENT COMFORT AND EXPERIENCES WITH SCREENING FOR SOCIAL ISOLATION IN PRIMARY CARE SETTINGS

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BACKGROUND: Social isolation is a key predictor of mortality that disproportionately affects vulnerable populations in the United States. Recently, some public health officials have declared social isolation a health epidemic, prompting accelerated support for routine screening in clinical settings. However, no studies to our knowledge have examined patients' comfort levels and prior experiences with screening for social isolation in the real world, nor whether current screening practices are associated with the levels of social isolation experienced.

METHODS: Adults (N=251) were recruited from 3 primary care clinics in Boston, Chicago, and San Francisco to complete a one-time survey. Surveys included a modified version of the Berkman-Syme Social Network Index (SNI), a screening tool endorsed by the National Academy of Medicine, as well as additional items to assess for comfort level and prior experiences with screening for social isolation. SNI scores ranged from 1 to 4, with 1 representing the highest level of social isolation and 4 representing the lowest level. We used ordinal logistic regression models to examine SNI levels as a function of screening characteristics (prior screening, discomfort with screening, desire for assistance, prior assistance), adjusting for age, gender, education, race/ethnicity, self-reported health status, and clinic.

RESULTS: In the sample population, 12% reported the highest level of social isolation (SNI=1), compared to 37% (SNI=2), 35% (SNI=3), and 16% (SNI=4; lowest level) at each respective level. While 94% reported no discomfort with screening for social isolation, only 12% reported having been asked about social isolation in a healthcare setting in the past 12 months. Discomfort with screening and participation in prior screening for social isolation were not associated with the level of social isolation experienced. However, having other social risks was associated with higher reports of isolation. For instance, difficulty paying for material needs (AOR=2.0; 95% CI, 1.1-3.8) and safety concerns due to intimate partner violence (AOR=2.9; 95% CI, 1.2-7.4) were both associated with a higher level of social isolation. Having a desire for assistance with social isolation was associated with a higher level of social isolation (AOR=6.0, 95% CI, 1.3-28.8), and also associated with 9.1 times higher adjusted odds (95% CI, 1.3-64.1) of fair or poor health, relative to those reporting good or better health.

CONCLUSIONS: Social isolation is a growing public health concern that is relevant to clinical decision- making. In this study, few patients reported being screened for social isolation, despite low levels of discomfort with screening. Sicker and more isolated patients expressed higher levels of interest in assistance. Future work should explore strategies to support clinical screening and other interventions related to social isolation.

PATIENT EXPERIENCE-BASED PHYSICIAN COMPENSATION AND QUALITY OF CARE IN THE UNITED STATES, 2012-2016

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BACKGROUND: Patient experience measures have increasingly been used in determining physician compensation. Ideally, patient experience-based physician compensation incents care that is timely, coordinated, and patient-centered. However, physicians express concern that patient experience-based compensation is a cause of stress and burnout; draws attention away from high-value preventive or chronic care; and incents low value care, like inappropriate antibiotic and opioid prescribing. However, the relationship between patient experience-based physician compensation and clinical quality is poorly understood.

METHODS: We performed a retrospective, cross-sectional visit-level analysis of ambulatory visits by adults to primary care physicians from the National Ambulatory Medical Care Survey (NAMCS) from 2012-2016.

We examined 7 measures of low value care (e.g., antibiotics for upper respiratory infections) and 10 measures of high value care (e.g., statins for diabetes) based on national clinical guidelines. We used Pearson's Chi Square test to assess the association of patient experience-based physician compensation with measure performance. To evaluate the independent association between patient experience-based compensation and performance, we used multivariable logistic regression with adjustment for year, patient sex, age, race/ethnicity, number of chronic diseases, primary source of payment, physician specialty, region of practice, practice size, physician ownership/employment status, and electronic medical record capabilities.

RESULTS: Between 2012 and 2016, there were 1.45 billion visits were made nationally by adults to primary care physicians from 2012-2016 and 16.8% of these visits were to physicians with patient experience-based compensation. Physicians with patient experience-based compensation performed significantly better on 3 of 17 measures than physicians without patient experience-based compensation: unnecessary cardiac screening at preventive visits (6% versus 9%; $p = 0.05$); HgbA1c < 8% in diabetes (66% versus 54%; $p < 0.01$); and A1c within last 12 months in diabetes (47% versus 39%; $p = 0.02$). In multivariable models, patient experience-based compensation was associated with better performance on only 1 of 17 measures: unnecessary cardiac screening (adjusted odds ratio [aOR], 0.62; 95% confidence interval [CI], 0.40 to 0.96). Patient experience-based physician compensation was not significantly associated with quality of care for 16 of 17 measures, which included antibiotic prescribing for upper respiratory infections (52% versus 56%; aOR, 1.00; 95% CI, 0.58 to 1.71), opioid prescribing for low back pain (4% versus 8%; aOR, 0.66; 95% CI, 0.30 to 1.47), statin prescribing for patients with diabetes (45% versus 41%; aOR, 1.01; 95% CI, 0.73 to 1.40), and control of blood pressure in patients with hypertension (77% versus 76%; aOR, 0.88; 95% CI, 0.67 to 1.16).

CONCLUSIONS: Patient experience-based compensation was generally not associated with better or worse quality of care.

PATIENT EXPERIENCES WITH A PATIENT-CENTERED MEDICAL HOME TEAM TAILORED FOR VETERANS WITH SERIOUS MENTAL ILLNESS

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BACKGROUND: Patients with serious mental illness (SMI) such as schizophrenia receive a disproportionately low amount of preventative

medical services and have higher rates of mortality compared to the general population. Due to associated cognitive deficits, a unique challenge facing primary care providers (PCPs) is making specific adaptations in caring for this population. The VA piloted a specialized medical home "Patient-Aligned Care Team" for patients with SMI, called SMI PACT, to address these issues and improve outcomes. We used qualitative analysis to understand patient experiences in comparison to previous medical home experiences.

METHODS: A SMI PACT team was piloted at a VA medical center to provide patient care for 13 months. Patients received integrated primary and mental health care by a PCP, supported by a nurse and consulting psychiatrist. The team was provided training on how to work with this population. Semi-structured interviews were conducted post-implementation with 28 SMI PACT patients. Interviews were recorded, professionally transcribed, and coded prior to qualitative thematic analysis.

RESULTS: Patients mostly described positive experiences with SMI PACT. Many patients (n=16) mentioned caring interpersonal qualities displayed by SMI PACT providers, individualized care (n=11), good follow-up (n=10), and providers using repetition and/or easy-to-understand language (n=8). Caring interpersonal qualities included good listening (undivided attention, eye contact), showing concern, "warmth", being non-judgmental, kind, conveying genuine interest in the patient, and being patient and not pressuring. SMI-PACT providers were described as taking more individualized (not "cookie cutter") approaches than they had experienced with prior providers in the general primary care setting, i.e., asking more questions, taking time to go over apprehensions, and reviewing patient notes prior to the appointment. They recounted experiencing an overall greater amount of communication (e.g., receiving proactive check-in calls in between appointments, post-hospital or emergency room discharge, and after tests). Patients also described appreciating how SMI-PACT providers used simplified language ("explaining everything in laymen's terms"), repeated or rephrased sentences, and gave print-outs, charts, and pamphlets. There were a few instances of negative experiences regarding the SMI PACT model; one patient felt that a psychiatrist signature on paperwork would carry more weight than that of a SMI-PACT PCP, and another patient who chose the integrated model experienced a dip in confidence when the PCP could not answer a psychiatric question and had to confer with the consulting psychiatrist.

CONCLUSIONS: Patients identified provider characteristics and behaviors that informed an overwhelmingly positive impression of the program model and their experiences. Our findings may help with guiding similar primary care models for SMI, as well as other specialized services for patients with SMI.

PATIENT-LEVEL BARRIERS AND FACILITATORS TO COLLABORATIVE CARE ENGAGEMENT: A QUALITATIVE STUDY

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BACKGROUND: Recent research suggests patient engagement is a key barrier to sustaining collaborative care (CC) models for depression. Few studies have examined patient perspectives of CC in mature programs, particularly among minority patients. We sought to examine patient-level barriers and facilitators to engaging in CC in settings treating minorities already implementing integrated care models.

METHODS: We conducted focus groups and semi-structured interviews with patients (n=12) attending an academic primary care clinic in Northern Manhattan who had been referred to the CC program (enrolled (n=8) and no-show patients (n=4)). The interview guide and preliminary codebook were informed by the Theoretical Domains Framework (TDF). Two independent coders (MD, LS) coded relevant TDF constructs in the context of CC engagement using content analysis in NVIVO 12.

RESULTS: All participants were female and identified as either Hispanic, Black, or both. Patients most often endorsed opportunities as primary drivers of CC engagement, such as social influences and environmental resources. Enrolled patients referred proportionally more to stigma and poor insight as barriers, while no- show patients expressed treatment-related fear/anxiety and beliefs that treatment is ineffective. Enrolled patients referenced accessibility and quality of care (e.g. effective care managers) as facilitators, while no- show patients discussed education of treatment options as a potential facilitator. All participants, including "no shows" described the program as highly acceptable and seemed open to technology-delivered facilitators.

CONCLUSIONS: Any setting implementing CC, specifically those treating minorities, should consider psychoeducation at the time of referral to address barriers e.g., fear of treatment or perceived inefficacy for no-show patients. Emphasizing convenience and quality of care (i.e., effective care management) may be key to increasing long-term adherence for patients already engaged in more mature programs. Leveraging technology may also facilitate engagement and retention.

PATIENT PERCEPTIONS OF FACTORS CONTRIBUTING TO HIGH HOSPITAL UTILIZATION: A QUALITATIVE STUDY OF YOUNG WOMEN ENROLLED IN AN INPATIENT GENERAL MEDICINE HIGH UTILIZER PROGRAM

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BACKGROUND: Patients who are frequently admitted to the hospital are a vulnerable population, facing medical, social, and behavioral health challenges that are compounded by discontinuity between hospital admissions and care settings. At the Hospital of the University of Pennsylvania, the multidisciplinary STEP program works intensively with the most frequently admitted patients on the inpatient general medicine service (minimum of 5 but often 10-30 admissions per year). Over half of enrollees are 18-35 years old, and of these, over 80% are women. This study aims to better understand the perceptions and experiences of this important subset of the high utilizer population.

METHODS: In depth, semi-structured interviews were carried out with 11 women ages 18-35 who are currently or previously enrolled in the STEP program. 15 patients were identified as eligible for the study and 11 interviews were completed. Interviews were conducted by two medical students trained in qualitative interviewing. Most interviews took place in-person, during hospital admissions, with the remainder conducted over the phone. Questions were open-ended, designed to identify drivers of frequent

hospitalizations, patients' experiences with transition from pediatric to adult care, and patient perceptions of how their care could improve. Interviews were audio recorded, transcribed, coded, and thematically analyzed.

RESULTS: Of patients interviewed, 64% have a primary diagnosis of sickle cell disease. Two major themes emerged: challenges in communication with inpatient care teams and difficulties with the transition from pediatric to adult care. Patients feel stigmatized by providers, particularly in regard to pain management.

They feel their providers do not adequately involve them in clinical decision making and that they are discharged before their pain is adequately controlled. All but one patient experienced difficulty transitioning from pediatric to adult care. Patients described strong alliances with pediatric providers, who they felt were more understanding of their needs. Study participants experienced fragmentation in care when transitioning to adult providers, facing delays and confusion when establishing a new outpatient team. Over 70% of participants reported 2 or more Adverse Childhood Experiences, with an average of 3.6 experiences.

CONCLUSIONS: Based on the findings in this study, patient centered interventions aimed at improving care for young patients with high rates of readmission should focus on improving communication and shared decision making between patients and providers. Another crucial area for improvement is the transition from pediatric to adult care. This transition represents a vulnerable time, during which these high-risk patients would benefit from additional structure and support to establish a strong relationship with a new care team. A history of adverse childhood experiences may be useful in identifying pediatric patients who require additional support during transition to adult care.

PATIENT PERCEPTIONS OF THE USE AND VALUE OF BLOOD GLUCOSE SELF- MONITORING IN ABSENCE OF INSULIN

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BACKGROUND: SGIM has identified self-monitoring of blood glucose (SMBG) for patients with type 2 diabetes not on insulin as low value care. Advocates cite behavior change promotion and patient preference as reasons for SMBG, while clinical trials show SMBG to be associated with psychological burden. We sought to understand how SMBG affects such patients, how they use SMBG, and how they value it.

METHODS: We developed a survey based on interviews with physicians, literature review, and expert opinion. Survey questions included demographic information, diabetes characteristics (e.g. duration of disease), SMBG practices (e.g. frequency of use; who told them to start SMBG), health behaviors (e.g. changing diet in response to blood glucose) and value of SMBG (effect on worry about diabetes; whether they would stop SMBG if a physician said they could). We administered online and in-person surveys in 2018-19 to adults with type 2 diabetes who use SMBG and were seen by a Cleveland Clinic primary care physician in the prior year, excluding patients taking insulin.

We used a logistic regression to evaluate the association between demographic factors, diabetes characteristics, SMBG practices and desire to stop SMBG.

RESULTS: Overall, 249 (98 in-person [response rate 64%] and 151 online [response rate 17%]) patients completed the survey; 51% were female, 46% were ≥65 years, 34% were black, and 44% had at least an associate's degree. Individuals who responded online vs in-person had similar SMBG use characteristics: 57% had diabetes > 5 years and 3% for ≤ 6 months. Most (91%) were instructed by a doctor to initiate SMBG; 57% said a doctor checked their readings and 25% said no one did. Over half (55%) used SMBG at least daily, and 23% used it ≥2x/day. Most used SMBG first thing in the morning (80%), and some did before (24%) or after (21%) meals. In response to SMBG readings, 60% changed eating habits and 26% changed physical activity. Only 5% reported that SMBG worsened their quality of life, while 62% reported that SMBG improved it; 45% felt it reduced their worry about diabetes and 28% that it increased worry.

The most common reasons for using SMBG were "My doctor wants me to" (66%), "To see if my diabetes medication is working" (64%), "To see what the number is" (63%), "To feel more in control of my diabetes" (52%), "To avoid damaging my body" (47%), and "I was told to" (47%). Half of respondents (52%) said they would stop SMBG if their doctor told them they could. In the adjusted regression model, respondents who performed SMBG at least daily were less willing to stop than others (AOR 0.46, 95% CI 0.26-0.82).

CONCLUSIONS: Despite evidence from randomized trials that SMBG does not improve glucose control and reduces quality of life, many patients value it. Letting patients know they can stop might reduce SMBG by half, but many patients, particularly those who check their sugars frequently and incur the highest costs, will need other reasons to stop.

PATIENT PERSPECTIVE OF TARDIVE DYSKINESIA: RESULTS FROM A SOCIAL MEDIA LISTENING STUDY

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BACKGROUND: Tardive dyskinesia (TD) is a persistent and potentially disabling movement disorder associated with prolonged exposure to dopamine receptor blocking agents such as antipsychotics. With the expanding use of antipsychotics, research is needed to better understand patient perspectives of TD, which clinical assessments may fail to capture. This is the first study to use a social media listening (SML) analysis of unsolicited patient and caregiver insights from various social media sources to help clinicians understand how patients describe their symptoms, the emotional distress associated with TD, and the impact on caregivers.

METHODS: In this retrospective, observational study, a comprehensive search was performed for publicly available, English-language, online content posted between March 2017 and October 2019 on social media platforms, blogs, and forums. A social media analytics platform, NetBase, identified posts containing patient or caregiver experiences of assumed TD with a set of pre-defined search criteria (inclusion/exclusion). All posts were then manually curated and reviewed to ensure quality and validity of the post and to further classify key symptoms, sentiments, and themes.

RESULTS: A total of 210 posts from patients or caregivers ("patient insights") were identified for manual review; 107 posts were used for these analyses. Posts were from forums (47%), Twitter (33%), Instagram (7%), Tumblr (5%), blogs (5%), and other online

sources (3%). The most common disease characteristics and affected body areas described in posts included: movements, tongue, twitching, face, tremor and tic. A majority of posts (64%) had a negative sentiment; 33% were neutral and 3% were positive. The most common emotional sentiments included: worse/worst, bad, horrible, pain and difficult. Theme analysis revealed that TD often caused patients to feel angry about having TD from a medication that was for a different condition. In addition, patients felt insecure and that TD made them feel ugly, weird, and uncomfortable in their skin.

CONCLUSIONS: The patient perspective generated from analyzing social media can help in understanding the needs of a heterogeneous patient population with TD. The analysis of patients with assumed TD with SML indicated the most common concern for patients are their symptoms which result in strong feelings of anger and insecurity.

PATIENT PERSPECTIVES ABOUT HEALTHCARE SCREENING FOR GUN POSSESSION AND EXPOSURE TO NEIGHBORHOOD VIOLENCE

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BACKGROUND: Gun violence is increasingly recognized as a social determinant of health, associated with negative patient outcomes, but whether or not physicians should intervene remains fiercely contested. While some states have enacted laws that limit physicians' ability to screen for gun possession, multiple medical associations encourage physicians to do so. Few studies, if any, have examined patient perspectives about healthcare screening for gun possession and exposure to neighborhood violence.

METHODS: 40 patients, aged ≥35 years, were recruited from a Chicago primary care clinic to participate in a one-time, qualitative study. In-depth, semi-structured focus groups and interviews were used to elucidate patients' experiences with and perspectives regarding healthcare screening for gun possession/safety and exposure to neighborhood violence. Focus groups were transcribed verbatim from audio recordings and analyzed for major themes using grounded theory and the constant comparison method.

RESULTS: The mean age was 60.7±10.8 years. Patients were predominantly female (67.5%) and Black (90%). Almost one-quarter (22.5%) reported possession of any firearm. Many reported prior experiences with violence as a direct victim (47.5%), witness (36.8%), or close friend or family member of someone who died violently (42.1%). Very few had discussed gun possession/safety (5.3%) or exposure to neighborhood violence (7.9%) with a healthcare provider. Many barriers to and benefits of screening were identified. Most notably, patients shared concerns about discrimination, stigma, and encounters with the criminal justice system, one stating, "If the doctor asks [about guns], patients will think they're going to get locked up." Other major themes included insufficient time to screen during patient encounters and the providers' ability to effectively intervene. Although themes overlapped, patients voiced stronger concerns about screening for gun possession compared to violence exposure, particularly given fears regarding the sharing of gun possession data between healthcare systems and legal systems. One-third (34.2%) reported that screening for gun possession/safety was never appropriate compared to less than one-quarter (21.6%) for exposure to neighborhood violence. Participants acknowledged some benefits to screening, for instance, identifying patients at risk for trauma, suicide, and other mental health concerns. One noted, "Every illness ain't a physical thing. Some things are mental and sometimes…you have left over feelings from what happened to you from the violence."

CONCLUSIONS: Although patients described important benefits related to healthcare screening for gun possession and violence exposure, many voiced concerns, especially related to screening for gun possession. Emergent themes may serve as targets for making screening more acceptable for all patients.

PATIENT PERSPECTIVES ON RECEIVING TREATMENT FOR TOBACCO, ALCOHOL, OR OPIOIDS IN HIV CLINICS

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BACKGROUND: Screening and treatments for substance use disorders (SUD) involving tobacco, alcohol and opioids are inconsistently provided in HIV clinics. To explore patient perspectives on factors impacting receipt of evidence-based SUD treatment, we conducted focus groups with patients receiving HIV treatment in four HIV clinics in the US northeast.

METHODS: From July 2017–February 2019, we conducted four focus groups at HIV clinics in Brooklyn, NY; New Haven and Hartford, CT; and Providence, RI. We purposefully invited patients with SUD and HIV receiving treatment at the participating clinics. Informed by the *Promoting Action on Research Implementation in Health Services Research (PARiHS)* implementation science framework, we sought to understand patient perspectives on *evidence* supporting SUD screening and treatment and the HIV clinic *context* for treatment delivery to inform future *facilitation* efforts to increase clinic implementation. Focus groups were digitally recorded, professionally transcribed, and independently coded by three investigators. We used directed content analysis to identify consensus-based themes. Participants completed a brief survey to assess demographic, clinical and behavioral characteristics.

RESULTS: Among the 28 participants, the mean age was 58, the majority were African American (61%), and 32% were female. Self-reported current substance use was common: 71% tobacco, 46% alcohol, 39% heroin, and 39% prescription opioids. Overall, 57% reported receiving any treatment for SUD. Regarding *evidence*: 1) patients recognized tobacco and opioid use as harmful, but reported less consistent concerns regarding alcohol's impact on health; 2) barriers to use of addiction treatment medications included lack of knowledge of their availability (i.e. alcohol treatment medications), stigma and misperceptions (i.e., opioid agonist treatment as substitution), and concerns of side effects. Regarding *context*: 1) patients had experiences with being screened for substance use, but this was inconsistently addressed in follow-up; 2) patients had favorable experiences receiving education of and treatment for substance use at their HIV clinics, particularly when provided by their HIV provider; 3) HIV clinics were recognized to include multidisciplinary teams; while patients generally endorsed the HIV clinic as a safe setting for care, educational priorities of training students and residents undermined continuity of care.

CONCLUSIONS: Efforts to implement screening and treatments for tobacco, alcohol and opioid use within HIV clinics will require a multifaceted facilitation approach that involves enhanced patient education regarding evidence, particularly of alcohol's harmful effects and treatment options; stigma reduction around medications for opioid use disorder; provider training on SUD treatments to follow-up positive screening; patient-centered care that incorporates educational training priorities; and an integrated multidisciplinary approach that offers onsite SUD treatment.

PATIENT PERSPECTIVES REGARDING THE SOCIAL AND CULTURAL ACCEPTABILITY OF A BIBLICALLY-BASED HEALTHY EATING AND WEIGHT LOSS INTERVENTION: A MIXED METHODS RESEARCH STUDY

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BACKGROUND: Obesity affects 32% of U.S. adults and is associated with chronic conditions of high mortality. Recent studies have demonstrated the positive impact that plant-forward low-calorie diets can have on such conditions. Memphis, TN is a medically underserved area with obesity occurring in 37% of the population. Further, Tennessee ranks 3rd highest in the nation for religious participation. This study seeks to assess the social and cultural acceptability of a biblically-based healthy eating and weight loss intervention. We specifically wanted to gauge interest in the biblically-based *Daniel Fast* in which a vegan diet is strictly followed for a 21-day initiation period. In addition, we sought to assess whether acceptability of a biblically- based diet is associated with patient religiosity.

METHODS: We used a convergent parallel mixed-methods design to collect quantitative survey and qualitative focus group data. We used a phone script to recruit participants from a regional Diabetes Wellness and Prevention Coalition practice-based research network including all adults with obesity recently seen in a religious affiliated and federally qualified health center in Memphis, TN. We collected demographic data surveys and measured religiosity using a validated scale developed by Lukwago. Participant interest level regarding a biblically-based vegan diet was examined using Likert scale survey items and in-depth semi- structured focus group discussions. All focus groups were audio recorded and transcribed. The data were systematically reviewed using NVivo 12 software to identify common themes.

RESULTS: Most participants (n=17) self-identified as African American (94%), female (65%), and Christian (82%). The mean age of participants was 49 (range 23-78). Mean participant religiosity index score was 0.84 (range .20 to 1, SD=.10). The majority of participants (88%) reported liking the biblical basis of the diet. Many participants were receptive to participating in Bible study (65%) and prayer (94%) in support of healthy eating, and 82% were open to receiving religious health-related text messages. Focus groups demonstrated that participants generally felt comfortable with their providers offering a biblically-based healthy eating program. Some Christian participants expressed uncertainty of whether peers of varying faith traditions would accept this diet. Other identified focus group themes included Parallel Spiritual and Physical Motivation and Need for Religious Inclusivity when Referencing a Clinic-based Diet.

CONCLUSIONS: This study suggests that a biblically-based diet is viewed as socially and culturally acceptable by a majority of patients. Our data indicates that obese patients in medically underserved areas of the Southern U.S. appreciate prayer, religious health-related text messages, and Bible studies as supports for healthy eating. Furthermore, this study suggests that biblically-based healthy eating and weight loss programs may be well-received by patients in many primary care settings.

PATIENT PREFERENCE DOES IMPACT INTENSITY OF CARE

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BACKGROUND: Patients may be maintained in health states or receive care that they do not want. Physician orders for life sustaining treatment (POLST) capture patient preferences including CPR and DNR orders. Their impact on care intensity is unknown. This study estimates the impact of POLST on one aspect – acute care hospital days.

METHODS: Retrospective study of all nursing home residents enrolled in traditional Medicare in California in 2011 using the Minimum Data Set with California Section S (required reporting of POLST) merged with Medicare hospital claims. In multivariate regression models, we estimate the conditional relationship of preferences marked on a POLST form and inpatient days. We divide each patient's year into "segments," which are defined by days between assessments, and we study the number of inpatient days per segment. Inpatient days are normalized to annual inpatient days by multiplying by 365. We regressed the outcome on whether the patient has a valid POLST and preferences marked on the POLST. Estimates are relative to the excluded category of not having a valid POLST and account for demographics, comorbidity, functional status, cognitive status (BIMS score), type of nursing home, and median household income of the zip code. We estimate using OLS weighted by the number of days in the segment. Standard errors are adjusted for individual-level clustering. We also performed stratified analyses by BIMS category.

RESULTS: 110,921 Medicare nursing home residents were studied. Among these, 42% completed a POLST (21.2% chose CPR and 20.9% chose DNR) across MDS assessments in 2011. In the overall sample, as compared to not completing a valid POLST, patients with a valid CPR order had two more hospital days, while those with a valid DNR order had one fewer hospital day. In stratified analyses, impairment moderated the impact of CPR and DNR with the least impact among the unimpaired and the most with those with the greatest impairment.

CONCLUSIONS: Overall, the specific order (CPR vs. DNR) that is put on the POLST for nursing home patients matters and potentially impacts aggressiveness of care (hospital days) as compared to not completing a POLST. Further investigation should focus on specific care received.

PATIENT RECRUITMENT: INSIGHTS FROM THE GOALS FOR EATING AND MOVING STUDY (GEM); A CLUSTER-RCT OF A HEALTH COACHING TECHNOLOGY-ASSISTED WEIGHT-LOSS INTERVENTION IN PRIMARY CARE

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BACKGROUND: Over one-third of American adults have obesity and are at increased chronic disease risk. The Goals for Eating and Moving (GEM) protocol is a health coaching and technology-

assisted, 5A-based weight management intervention. We describe our insights recruiting and enrolling 454 patients in two different NYC healthcare systems serving diverse populations.

METHODS: This cluster-RCT trial is conducted at the VA NY Harbor Healthcare System Manhattan Campus (VA) and four Montefiore Health System Medical Groups Bronx, NY (MMG) primary care practices with the patient-centered medical home. We randomized 19 primary care teams (11 VA teams with a total of 23 providers and 8 MMG teams with a total of 31 providers) to the GEM intervention or EUC (enhanced usual care). Eligibility criteria include age 18–69 years, obese/overweight with co-morbidity, PCP visit within 2 years, and no physical/mental health contraindications.

To enroll 512 patients, we identify eligible patients via queries of electronic health records. Primary care providers receive a list of their patients and have the opportunity to exclude any patients based on medical/behavioral issues. We mail potential eligible participants a customized opt-out invitation letter and a flyer describing the study. A week later, staff attempts to follow-up with 1-3 telephone calls to assess interest in participation, screen for eligibility and schedule interested eligible patients for the baseline visit at their primary care site, where they complete the informed consent. After 3 unsuccessful telephone calls, a patient is marked as inactive for outreach.

RESULTS: From November 2017- January 2020, we identified 4,386 patients via electronic health records (1,662 VA; 2,724 MMG), mailed 4,237 invitation letters (1,588 VA; 2,649 MMG), completed 8,278 telephone calls (4,676 VA; 3,602 MMG) and enrolled 454 patients (234 VA; 220 MMG). On average, for every patient enrolled, our staff had to identify: 9 records, mail 9 letters and make 18 telephone calls. Eligible patients at the VA and MMG most reported refusal reasons were lack of interest (1) and lack of time (2) to participate in a weight management study. Reflecting the characteristics of the study sites VA (21% Hispanic; 53% non-Hispanic black; mostly male) and MMG (55% Hispanic; 37% non-Hispanic black; 62% women) our recruited sample consisted of VA (30% Hispanic; 52% non-Hispanic black; 26% women) and MMG (51% Hispanic; 49% non-Hispanic black; 83% women). The mean ±SD age of enrolled patients was VA 51.9 ±12yrs and MMG 48.7 ±11yrs.

CONCLUSIONS: Results provide support for the validity to recruit a representative sample. Although this method of recruitment can yield a demographically representative sample, results are likely to differ in unmeasured ways. Also, we provide estimates for efforts needed to recruit a diverse patient sample into a weight management study. Refusal reasons may guide future improvements in recruitment strategies to address barriers and increase intervention uptake.

PATIENTS WHO HAVE NEWLY IDENTIFIED PRE-DIABETES LOSE WEIGHT IN THE FOLLOWING YEAR

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BACKGROUND: Obesity is the second leading cause of preventable death. Given the difficulty of weight loss, identifying opportunities to capitalize on patients' motivation can help physicians promote a healthier lifestyle. We evaluated whether developing pre-diabetes is associated with weight loss at 6 and 12 months. We chose pre-diabetes due to its close association with obesity.

METHODS: We conducted a retrospective cohort study in a large integrated health system. We included patients who saw a primary care provider between January 2016 and December 2017, were over 18 years, had a body mass index (BMI) ≥30, and Hemoglobin A1c (HbA1c) result within 45 days of a primary care visit (the "index" visit). We excluded patients who were over 65 years, were previously prescribed metformin, had a diagnosis of diabetes or pre-diabetes prior to their index visit, or had bariatric surgery within a year of the index visit. We classified patients into pre-diabetes (HbA1c 5.7 to 6.4) and control (HbA1c<5.7) groups since we hypothesized having a lab result indicating pre-diabetes is a motivating factor for weight loss. The outcomes were percent weight change at 6 and 12 months (with a 60-day window around each outcome). All data were collected from the electronic health record. The multilevel linear regression models were adjusted for patient age, sex, race, smoking and new prescription of an antipsychotic, antidepressant, metformin and/or anti-obesity medication. New prescriptions were required to occur within the first 4 months of the index date for the 6-month outcome, and within 9 months for the 12-month outcome to account for side-effects after starting a new medication. The models were clustered by physician.

RESULTS: Our study included 12,417 participants of which 42% developed pre-diabetes. The pre-diabetes group was older (49 vs 43 years), had a higher initial BMI (38 versus 37) and had a lower percentage of white (66% vs. 75%) and female (54% vs 59%) individuals, and more smokers (16% vs. 13%) ($p<0.01$ for all comparisons). Patients in the pre-diabetes group were more likely to receive metformin (5% vs. 2%, $p<0.01$) and less likely to receive an antidepressant (10% versus 11%, $p=0.02$) in the first 9 months. There was no difference in prescriptions for anti-obesity medication. In the unadjusted regressions, the pre-diabetes group lost a higher percentage of weight at 6 months (β = -0.9% vs -0.3%) and 12 months (β = -0.7% vs 0.1% weight change) ($p<0.01$). The adjusted multilevel regression models produced similar results (β = -0.9% vs -0.3% at 6 months and β = -0.7% vs 0.3% at 12 months).

CONCLUSIONS: We found that individuals with obesity who recently developed pre-diabetes lost more weight than the comparison group in the subsequent 6 and 12 months. Primary care practitioners should view sharing laboratory results indicating pre-diabetes as a "teachable moment" to promote weight loss.

PATTERNS OF INPATIENT HYPERTENSION MANAGEMENT IN OLDER ADULTS HOSPITALIZED IN THE NATIONAL VA HEALTH SYSTEM

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BACKGROUND: Transient asymptomatic elevations of blood pressure (BP) are common in hospitalized older adults, yet no guidelines exist on inpatient management. Unnecessary exposure to antihypertensives, particularly intravenous (IV) medications, may risk adverse drug events including hypotension.

METHODS: We examined all older adults (age >=65) receiving regular care in the Veterans Health Administration (VHA) health system and who were admitted to VHA hospitals between 2015 and 2017. We excluded patients admitted to intensive care units and those admitted for cardiovascular conditions or stroke. Using inpatient VHA pharmacy and vital sign records, we examined the prevalence of elevated inpatient BPs as well as oral and IV antihypertensive administration (excluding loop diuretics). We identified prior BP control as the mean of the 3 most recent ambulatory BP recordings within the prior year. Outcomes included any exposure

to antihypertensives during hospitalization and exposure to antihypertensives within 90 minutes of an elevated BP recording.

RESULTS: We identified 220,964 hospital admissions (98% male, median age 71) to 115 VHA hospitals which met inclusion criteria. Prior to hospitalization, 77% of patients had a diagnosis of hypertension and 28% had an outpatient BP >140/90 mmHg. The majority (61%) of patients with elevated inpatient BPs had well-controlled BP prior to admission (outpatient BP<140/90 mmHg). Among the 51% of patients who had one or more inpatient BP recording >160/100 mmHg, 85% received oral antihypertensives (95,995/113,1965) and 9.5% received IV antihypertensives (7,590/113,195) during their hospital stay. The proportion of patients with elevated inpatient BPs treated with IV antihypertensives varied across hospitals, with hospital rates ranging from 1% to 31%. We next looked at clinical actions taken within 90 minutes of an elevated BP recording. Among 486,134 elevated BP recordings (systolic BP 160-179mmHg or diastolic BP 110-119 mmHg), 11% were repeated, 20% were treated with oral antihypertensives, and 1% were treated with IV antihypertensives. Among 113,112 severe hypertension recordings (systolic BP >180 mmHg or diastolic BP >120 mmHg), 20% were repeated, 27% were treated with oral antihypertensives, and 5% were treated with IV antihypertensives. In total, 39% of IV antihypertensives were given following a severe hypertension recording, 31% following an elevated BP recording, and 30% following a BP<160/90 mmHg.

CONCLUSIONS: The majority of older adults hospitalized for non-cardiovascular conditions in the VHA health system experienced elevated inpatient BPs. Nearly 1 in 10 patients with elevated BPs received IV antihypertensives indicating there is a critical need to understand the benefits and harms of this common practice.

PATTERNS OF MEDICAL CANNABIS USE AMONG ADULTS WITH CHRONIC PAIN AND OPIOID USE

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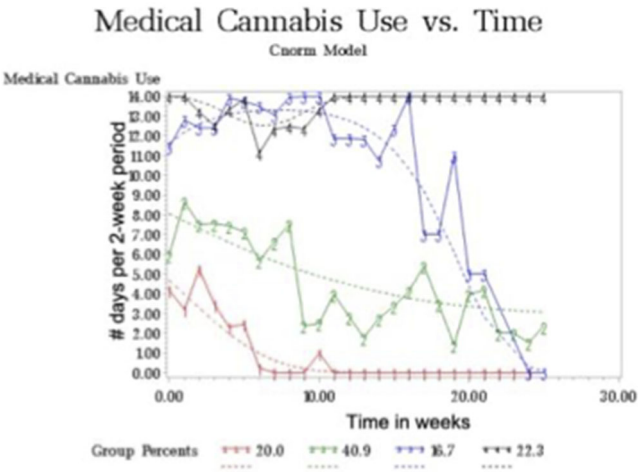
BACKGROUND: Medical cannabis is increasingly used as an alternative to prescription opioids in adults with chronic pain, but little is known about how it is incorporated into their daily lives. Among adults with chronic pain who were taking prescription opioids and were newly certified for medical cannabis in New York, we examined patterns of medical cannabis use over time. We hypothesized there would be two distinct medical cannabis use patterns: near-daily use, and infrequent use.

METHODS: In an ongoing observational study examining how medical cannabis affects prescription opioid use in adults with chronic pain, we enrolled 54 adults from 11/2018-11/2019. Every two weeks participants completed questionnaires to assess days of medical cannabis use. To date, because participants have varying duration of study follow-up (2-52 weeks), we conducted latent class analyses to classify participants into groups based on medical cannabis use over time. Number of medical cannabis use patterns was determined by Bayesian Information Criterion. After extracting latent classes, we assigned participants to groups with the largest Bayesian posterior probability.

RESULTS: Mean age was 53 years, 67% were female, and 42% white. We identified four distinct patterns of medical cannabis use over time. In the most common pattern (41% of participants), participants used medical cannabis about one-half of days, then declined to about one-third of days. In the next most common pattern (22%), participants used medical cannabis daily most of the time. In the third most common pattern (20%), participants used medical cannabis only a few days per two-week period, followed by no use at all. Finally, in the least common pattern (17%), participants used daily most of the time.

CONCLUSIONS: Among adults with chronic pain who take opioids and were newly certified for medical cannabis in New York, four distinct medical cannabis use patterns emerged. Medical cannabis may be used differently and more variably than traditional medications. Medical cannabis cost can be prohibitive, leading adults to reduce frequency of use even if they experience benefit. Finally, adults may moderate medical cannabis use to limit side effects. As medical cannabis use continues to increase, it is important to understand medical cannabis use patterns and the factors that drive them.



PATTERNS OF OSA TESTING IN PRIMARY CARE: ARE HIGH RISK PATIENTS RECEIVING EVIDENCE-BASED CARE?

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BACKGROUND: Obstructive sleep apnea (OSA) is associated with cardiovascular disease, decreased quality of life and mortality. Given availability of treatment, the American Academy of Sleep Medicine recommends routine evaluation for symptoms in high risk patients (e.g. BMI>35, type 2 diabetes and hypertension). Data regarding OSA evaluation in primary care is limited. We examined prevalence of sleep study orders across individuals with varying levels of risk and markers of sleep disturbance.

METHODS: We analyzed EHR and survey data collected by the PaTH Cohort Study of Healthy Lifestyles, Body Weight and Health Care. Survey data collected from primary care patients in 5 health systems were linked with de-identified EHR data collected from the PCORnet Common Data Model. Patient vital signs, comorbid conditions and sleep study orders were extracted from the EHR and analyzed in relation to survey responses. We categorized 5-point Likert responses for PROMIS-29 data related to sleep: sleep quality [worse >3]; [more: </=3; less: >3]; and fatigue [more: >48.6; less: </=48.6]. T-scores for PROMIS-29 subscales were calculated for patients overall and by weight class. Linear regression models were used to perform ANOVA and test for trends in t-scores across classes.

RESULTS: EHR data were analyzed from 3,191,225 patients; a subset of 1,070 patients completed the PROMIS-29 survey. Among the EHR cohort, 30% had a normal BMI, 31% had overweight, 29.5% had Class I/II obesity and 7.6% had Class III obesity. Mean age was 52.4 years, 58% were female, 79% were white and 11.7% were African American. The prevalence of weight-related comorbidities increased with increasing weight category; 3.1% of all patients, 6.1% of patients with Class II obesity and 8.9% of those with Class III obesity had a sleep study ordered between 2011 and 2018. Among individuals with BMI<40 (n=892), the proportion of sleep studies ordered in 2017-18 was significantly higher in those with more fatigue (16.7%) vs. those with less fatigue (8.6%;p<0.001). However, that proportion was similar for individuals with better (11.7%) vs. worse (12.6%) self-reported sleep quality (p=0.76). Furthermore, those with greater refreshment from sleep were significantly more likely to have a sleep study ordered (16.2%) vs. those with less refreshment (6.1%,p<0.001). Among individuals with Class III obesity, the percentages with a sleep study order were similar regardless of sleep quality (21.4 vs. 19.2%;p=0.75), refreshment from sleep (21.3 vs. 19.6%;p=0.80) and fatigue (19.4 vs. 22.4%;p=0.62).

CONCLUSIONS: OSA may be underdiagnosed in high risk patients given the low rate of sleep studies ordered compared with the high prevalence of OSA in this population. A lack of correlation between sleep study orders and markers of sleep disturbance suggests that despite guideline recommendations, these tests are not being ordered based on evaluation of sleep-related symptoms.

PATTERNS OF UTILIZATION AND EVALUATION OF ADVANCED PRACTICE PROVIDERS ON HOSPITAL MEDICINE TEAMS AT ACADEMIC MEDICAL CENTERS

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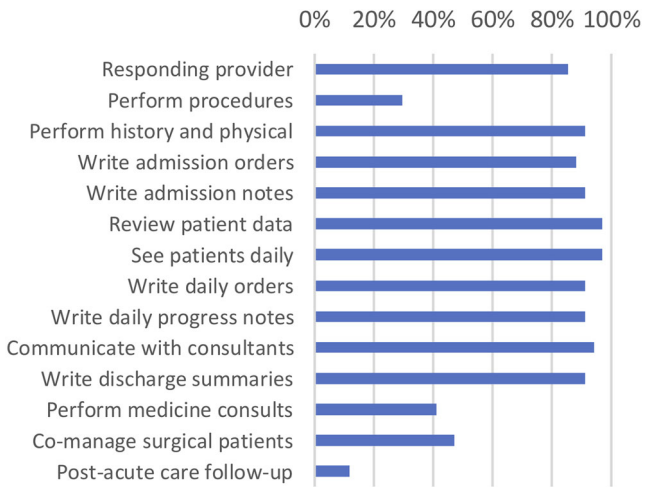
BACKGROUND: Staffing of inpatient medicine services with Advanced Practice Providers (APPs), including physician assistants and nurse practitioners, is becoming increasingly common at academic medical centers across the United States. The purpose of this study is to better characterize how APPs are utilized and to summarize perceptions of APP contributions to inpatient general medicine teams at academic medical centers.

METHODS: We performed a survey of hospital medicine programs at academic medical centers in the United States affiliated with the Hospital Medicine Reengineering Network (HOMERuN), a hospital medicine research collaborative. Questions regarding different APP roles were multiple choice. Questions that rated APP contributions were on a 1-5 Likert scale. Surveys were distributed via email to division/section chiefs and/or senior leaders of unique hospitalist groups between January and August 2019. Responses to questions are reported as proportions or mean/standard deviation (SD).

RESULTS: We received responses from representatives of 43 hospital medicine groups from 86 invitees (50%). Thirty-four (79.1%) programs employed APPs. Respondents stated that APPs perform a wide range of roles (Figure). The following were rated of highest importance in deciding to incorporate APPs within the hospitalist group: allow physicians to focus on "higher level" activities (mean=4.2, SD=1.1), increase efficiency (mean=4.4, SD=0.9), and decrease physician burnout (mean=4.1, SD=1.1). APPs were considered beneficial for the quality of patient care (mean=3.8, SD=0.9) and physician retention (mean=3.7, SD=0.9). The greatest reported challenges to having APPs as part of the service included training requirements and support for new hires (mean=3.4, SD=1.1) and less flexibility in number of hours (mean=3.2, SD=1.1). **CONCLUSIONS:** We found that the majority of surveyed hospitalist groups at academic medical centers employed APPs. APPs performed a variety of roles with substantial heterogeneity across sites. The presence of APPs was generally considered beneficial to hospitalist groups. Additional research is needed to better elucidate the contribution of APPs to clinical outcomes, cost, physician and patient satisfaction.



PERFORMANCE AND DISPARITY PATTERNS: FOLLOW-UP OF ABNORMAL CANCER SCREENING IN CALIFORNIA'S PUBLIC HOSPITAL SYSTEMS

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BACKGROUND: Little is known about disparities in follow-up of abnormal cancer screening results (e.g., colonoscopy after abnormal fecal immunochemical tests (FITs) or biopsies after high-risk mammograms). Since safety net systems provide a disproportionate amount of care to populations that experience health disparities, we explored whether there are disparities in follow-up of abnormal FITs/mammograms within California's public hospital systems.

METHODS: Using electronic health records (EHRs) from five California safety net systems, we collected data from 7/1/15-6/30/17 for patients with an abnormal FIT from 7/1/15-12/31/16 or BIRADS 4/5 mammogram from 7/1/15-5/31/17. Our primary outcomes were binary: whether a colonoscopy was acquired after abnormal FIT, or tissue biopsy pursued after BIRADS 4/5 mammogram. Controlling for system (sites 1-5), we used a multivariable logistic regression for each outcome to assess if patient characteristics (age, gender, race/ethnicity, preferred language, insurance status) predicted outcomes.

RESULTS: *Abnormal FIT Follow-Up:* Across all sites, 1850/4860 (38%) participants with abnormal FIT received a colonoscopy. We found age, language, and insurance type/coverage status impacted odds of follow-up. Relative to 50-59 years old patients, those that were 70+ years old had lower odds of receiving a colonoscopy (aOR: 0.77; 95% CI: 0.60-0.99). Individuals with Medicare (aOR: 0.68; 95% CI: 0.51-0.91), Medicaid (aOR: 0.69, 95% CI: 0.54-0.89), or uninsured (aOR: 0.33; 95% CI: 0.21-0.50) had lower odds of receiving a colonoscopy than privately insured patients. Patients with a language preference other than English/Spanish (aOR: 1.32; 95% CI: 1.05-1.65) had higher odds of receiving follow-up than English speakers. *Abnormal Mammogram Follow-Up:* Across all sites, 1378/1617 (85%) participants received a biopsy after a BIRADS 4/5 mammogram. We found only that Asian patients had increased odds of biopsy vs non-Hispanic White patients (aOR: 1.92; 95% CI 1.06, 3.46).

CONCLUSIONS: The performance of public systems on follow-up for cancer screening tests is variable; despite these systems' focus on reducing financial barriers, insurance type/coverage status remained a predictor of colonoscopy receipt. This supports assertions that insurance type/coverage status are proxies for social needs that impact longitudinal access to healthcare, a necessity for acquiring follow-up tests months after an encounter. Social needs need to be routinely measured to explore how they mediate associations between sociodemographic traits and health outcomes. These public systems did not generate the race/ethnicity-related disparities documented in other settings. Moreover, some non-English speaking patients had better abnormal FIT follow-up, and Asian patients had better mammogram follow-up. Understanding these systems' performance with respect to race/ethnicity and language-related disparities may shed insights on reducing disparities in other systems.

PERFORMANCE OF COMMON HEALTH LITERACY MEASURES IN YOUNGER ADULT PARENTS

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BACKGROUND: Nearly one third of US parents have limited health literacy, therefore lacking the full capability of making appropriate health decisions for themselves, and for their children. Despite the importance of addressing parent health literacy, the most commonly used health literacy instruments utilized in research were developed and validated in older adult populations, and may have reduced discriminative predictive validity in younger adults (40 years old and younger). As part of a larger controlled study of pediatric liquid medication dosing, we examined the performance of three health literacy measures, BHLS (Brief Health Literacy Screen), S-TOFHLA (Short Test of Functional Health Literacy in Adults) and NVS (Newest Vital Sign) in a diverse, younger parent population.

METHODS: We used data from a randomized controlled study of strategies to improve medication label and dosing tools, and reduce parental error in dosing liquid medicines. Parents and legal guardians, 18 years or older, were recruited in pediatric outpatient clinics in New York, NY, Atherton, CA and Atlanta, Georgia. Parents were eligible if they identified as caregivers for their child of 8 years or younger. Kappa statistics were used to assess the agreement between BHLS, S-TOFHLA and NVS. Multivariate logistic regressions were performed to assess the associations between these health literacy measures and making a medication dosing error (>20% deviation from correct dose). Additionally, ROC curves and contrasts were used to compare the predictive validity of these measures.

RESULTS: Of the 1,956 parents, 92% were mothers of young children, with a mean age of 28. Over half of the parents identified as Hispanic, and nearly one-third reported low English proficiency and grade school as their highest educational attainment. According to the BHLS, 98% self-identified as having adequate health literacy, whereas, 85% of them were classified as having adequate health literacy by S-TOFHLA and only 23% by the NVS measure. Weak agreements between NVS and S-TOFHLA (kappa=0.13; 95%CI:0.11-0.14), and NVS and BHLS (kappa=0.03; 95% CI:0.0048-0.02) were observed. Adequate health literacy, by all the measures, was associated with lower probability of making a dosing error (BHLS: aOR=0.52, p<0.001; S-TOFHLA: aOR=0.47, p<0.001; NVS: aOR=0.53, p<0.001). However, ROC contrasts estimates show significant differences between the predictive validity of BHLS and NVS (-0.01; p<0.001), and S-TOFHLA and BHLS (0.01; p<0.001). The ROC contrasts showed no significant differences between S-TOFHLA and NVS (-0.003; p=0.36).

CONCLUSIONS: Our analysis found the BHLS and S-TOFHLA to be poor assessments of health literacy with significant ceiling effects when administered to a younger, ethnically diverse, primarily female, adult parent population. The NVS, an objective health literacy measure, may perform better in younger adults than subjective measures such as BHLS, and measures with questionable discriminative and predictive validity, such as S-TOFHLA

PERFORMANCE OF THE ADA AND CDC DIABETES RISK SCORES USING STRUCTURED EHR DATA VS. PATIENT-REPORTED DATA

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BACKGROUND: The American Diabetes Association (ADA) and Centers for Disease Control (CDC) diabetes (T2D) risk scores are patient-reported instruments to identify individuals in need of T2D screening and/or eligible for the evidence-based Diabetes Prevention Program. Although they have been automated in some EHRs, their performance using EHR data is unknown. We compare risk score performance using EHR data

alone vs. EHR data + patient-reported data on T2D risk factors that are not routinely collected in the EHR.

METHODS: Primary care patients in a safety-net health system ages 18-65 without diagnosed prediabetes (PDM) or T2D and no T2D screening in the past 2 years (N=523) were enrolled in a prospective screening study and classified as normal (HbA_{1c} <5.7% and Fasting glucose (FBG) <100 mg/dL) or having dysglycemia (HbA_{1c} ≥5.7% or FBG≥ 100 mg/dL). We then calculated the ADA and CDC 2018 risk scores in 2 datasets from the same 523 patients: 1) EHR+Patient-reported: EHR data (age, sex, BMI, hypertension) plus prospectively collected patient-reported data (family history of T2D, physical activity, gestational diabetes); 2) EHR-only: all data from structured, retrospective EHR data. For each dataset, we calculate and compare overall discrimination and sensitivity/specificity/predictive values at recommended cut-points (ADA ≥4; CDC ≥9) to detect dysglycemia using the EHR+P^2atient-reported data as the gold-standard.

RESULTS: Of 523 participants (mean age 48 years, mean BMI 30 kg/m^2, 61% female, 68% Hispanic, 23% black) in the screening study, 33% had dysglycemia. Using recommended risk score cut-points for dysglycemia, more patients qualified for screening when patient-reported data were included vs. EHR data alone (ADA 74% vs. 54%; CDC 75% vs. 43%; p<0.001). The c-statistic for discrimination was similar using EHR only and EHR+patient-reported data for ADA [0.69 (0.65-0.74) vs. 0.71 (0.67-0.75)] and CDC [0.67 (0.62-0.71) vs. 0.64 (0.59-0.68)] risk scores. Use of EHR data only underestimated risk compared with EHR+patient-reported data (Table).

CONCLUSIONS: Using patient-reported data to calculate the ADA and CDC diabetes risk scores markedly improved detection of dysglycemia compared with the use of EHR data alone when recommended cut-points were used. In the absence of patient-reported risk data, alternate cut-points are needed to optimize performance of the ADA and CDC risk tests for use with existing, structured EHR data.

PERSPECTIVES ON DECISION-MAKING DURING HOSPITALIZATION AMONG FREQUENTLY HOSPITALIZED PATIENTS IN THE COMPREHENSIVE CARE PROGRAM STUDY

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BACKGROUND: Research in medical decision-making during hospitalization suggests that patients hold a wide range of preferences for their involvement. Less is known about if patient involvement differs if they are cared for by a physician with whom they have a prior relationship. This work seeks to explore patient experiences with decision-making during hospitalization qualitatively through the lens of the Comprehensive Care Program (CCP) study, a randomized controlled trial that assesses the effects of an interdisciplinary care team led by a physician who serves as both the outpatient PCP and inpatient attending as compared to usual care (ambulatory care for a PCP, hospital care from hospitalists) for patients at high risk of hospitalization.

METHODS: This is a qualitative study embedded within a randomized controlled trial, using semi-structured interviews with 12 CCP patients and 12 standard care (SC) patients. Patients were interviewed near the end of or shortly after a hospitalization, and were asked to describe 1) their communication with doctors during hospitalization and 2) a major decision made during their hospitalization. Interviews were analyzed using general thematic analysis. Each transcript was independently coded by two team members. Common themes were agreed upon by consensus.

RESULTS: Decisions were coded in 3 domains: topic, process (provider-dominant, patient-dominant, collaborative), and preferences. The most frequently described decision topic was discharge timing, with most patients requesting additional days to recover prior to discharge and a few preferring earlier discharge. Other common decision topics included medical procedures, and medication changes; not infrequently, patients stated that there were no major decisions made. When describing the decision-making process, CCP patients more often used collaborative language ("She always asks me if I'm feeling good enough to go, so I appreciate that."); in contrast, SC patients more often used provider-centric language ("She finally came to me and said, 'Mr. H, we need to remove the PD tube'."). The few instances of patient-dominant language were in the setting of refusing recommended care ("I ain't taking no test, I wasn't taking nothing. Just leave me alone.") Patients who had a longitudinal relationship with a physician caring for them during hospitalization (most frequently a CCP physician; occasionally a specialist) often described preference for discussing major decisions with this physician: "Should no other doctor be running nothing or make no decisions because you don't know me."

CONCLUSIONS: Many patients identify discharge timing as the main decision during a hospitalization. Patients who were treated by a physician familiar to them tended to use more collaborative language to describe the decision-making process. Future investigation into inpatient shared decision-making should consider provider continuity and the doctor-patient relationship as a driver for patient involvement.

PERSPECTIVE-TAKING, A NOVEL MECHANISM FOR ENHANCING TRAINEE EMPATHY: A QUALITATIVE ANALYSIS

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BACKGROUND: Residency is marked both by intense knowledge acquisition, personal growth, and by increasing levels of burnout and cynicism both of which have been shown to erode empathy and undermine the altruistic motivations that led to a medical career path. Interactions with so-called "challenging" patients in the ambulatory setting are often cited as drivers of burnout and cynicism. Perspective-taking (PT) is a cognitive skill defined as "an understanding of other people's mental states" and has been studied as a way to cultivate empathy. We qualitatively assessed internal medicine (IM) residents' response to the implementation of a PT curriculum for enhancing empathy.

METHODS: *Setting and participants*: This curriculum took place during the 2018-2019 academic year within the PGY3 Ambulatory rotation of the UPMC Internal Medicine Residency. All PGY3 residents complete this rotation but could opt-out of our research evaluation. Our curriculum included: 1) a brief introductory session of narrative, medical writing and perspective-taking, 2) a self-directed, written perspective-taking exercise in which all residents were asked to respond to a prompt about a "challenging" patient in their ambulatory clinic, and 3) a de-briefing session in which PT pieces were shared in a facilitator- guided, group reflection.

Evaluation: Residents who completed the PT curriculum were invited to participate in 30-minute phone interviews assessing their attitude of the curriculum. A $30 gift card was offered as incentive. The semi- structured interviews were conducted by an independent research group. Interviews were transcribed and a code book was development. The interviews were independently coded by two coders who then met to adjudicate disagreements. Thematic analysis was achieved.

RESULTS: Four major themes emerged from the interviews: (1) Writing in first-person, from the patient's perspective, was challenging but beneficial, allowing residents to re-examine their judgements

on patient's actions. (2) Residents found discomfort in first-person because they feared making wrong assumptions about their patients. (3) The exercise allowed residents to better identify patients' barriers in the healthcare system. Lastly, (4) trainees almost universally enjoyed the de-brief session despite having initial apprehension. The de-brief allowed for reflection, which the trainees found extremely valuable but rare in medical education.

CONCLUSIONS: First-person writing through the technique of PT beneficially impacted how residents thought about challenging patients but also brought discomfort. De-Briefing of the PT exercise was felt to be essential as it allowed for both self- reflection and the ability to draw realizations from peers' pieces. Discomfort in first-person narration and reflection of patients' challenges are elements of empathy. The novel use of PT may serve as a potential strategy for enhancing empathy in medical training.

PERSPECTIVE-TAKING, A NOVEL MECHANISM FOR ENHANCING TRAINEE EMPATHY: A QUANTITATIVE ANALYSIS

Brianna Rossiter[2,1]; Melissa McNeil[3]; Gaetan Sgro[4]. [1]General Internal Medicine, UPMC, Pittsburgh, PA; [2]Internal Medicine, VA Pittsburgh Healthcare, Pittsburgh, PA; [3]Medicine, University of Pittsburgh Medical Center, Pittsburgh, PA; [4]Medicine, VA Pittsburgh Healthcare System, Pittsburgh, PA. (Control ID #3392483)

BACKGROUND: Residency is marked both by intense knowledge acquisition, personal growth, and by increasing levels of burnout and cynicism both of which have been shown to erode empathy and undermine the altruistic motivations that led to a medical career path. Interactions with so-called "challenging" patients in the ambulatory setting are often cited as drivers of burnout and cynicism. Perspective-taking (PT) is a cognitive skill defined as "an understanding of other people's mental states" and has been studied as a way to cultivate empathy. We evaluated whether implementation of a PT curriculum within an internal medicine (IM) residency could enhance empathy in challenging patient encounters.

METHODS: *Setting and participants*: This curriculum took place from November 2018 until April 2019 within the PGY3 ambulatory rotation of the UPMC Internal Medicine Residency. All PGY3 residents complete this rotation but could opt-out of the research evaluation. Our curriculum included: 1) a brief introductory session on PT, 2) a self-directed, written PT exercise in which residents responded to a prompt about a "challenging" patient in their ambulatory clinic, and 3) a de-briefing session in which PT pieces were shared in a facilitator-guided, group reflection. Residents who completed the curriculum (Nov. 2018-April 2019) were considered the intervention group. Residents who had their rotation prior to the initiation of the curriculum (July-October 2018) were considered the control group.

Methods and Evaluation: Participants in the control group completed a one-time, validated, empathy measure, the Jefferson Empathy Scale (JSE). Participants in the intervention group completed the survey both before and after completion of the PT curriculum. Demographic questions were asked and the analyzed by descriptive statistics. The JSE scoring algorithm was used to process the control group, pre-intervention and post-intervention survey data. Composite scores were compared using paired t-tests.

RESULTS: Both control and intervention groups were similar in respect to age, gender, race and previous experience in narrative writing. There was no statistical difference in baseline empathy between the control and pre-intervention group (p=0.403). There was a statistically significant change towards higher empathy between the pre- and post-invention groups (p = 0.006). When stratified by gender, female residents had higher empathy at baseline than males. The significant difference in empathy between males and females pre- curriculum (p=0.028) closed post-curriculum (p=0.129), with males having a change towards higher empathy (p=0.017).

CONCLUSIONS: Implementation of a brief, novel curriculum that combined aspects of narrative writing and perspective-taking enhanced empathy among IM residents in challenging patient interactions. Our innovative curriculum can serve as a relatively small but actionable strategy to preserve and strengthen trainee empathy.

PHYSICIAN ASSISTANTS' KNOWLEDGE, CONFIDENCE AND COMPETENCY WITH PRESCRIBING PRE-EXPOSURE PROPHYLAXIS

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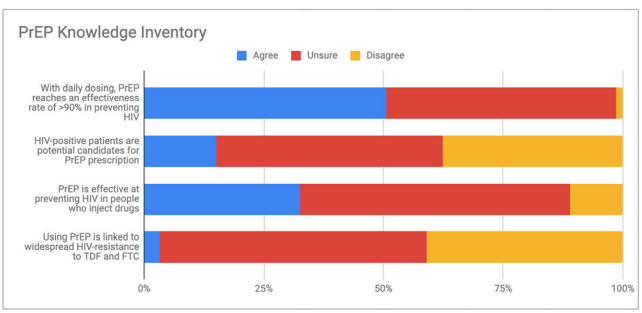
BACKGROUND: Pre-exposure prophylaxis (PrEP) is a safe and effective tool for preventing HIV, but remains significantly underutilized, particularly among primary care providers. Scaling up of PrEP will require engagement of providers at all levels of care in interdisciplinary collaborative practice models.

METHODS: We conducted an online survey of physician assistants (PAs) regarding knowledge of CDC guidelines for PrEP prescribing and confidence prescribing and managing PrEP, counseling patients about PrEP, and educating colleagues about PrEP. Online surveys were completed by 461 PAs who were attending a national conference (Response rate = 36.2%). A 7-point Likert scale was utilized to analyze participant responses.

RESULTS: A significant proportion of respondents were uncertain about PrEP indications and clinical management: 50% were unsure if HIV-positive patients were candidates for PrEP, and 56% were uncertain on whether PrEP prescribing would lead to high HIV-resistance rates. Mean confidence scores for were low (12.1, max = 28). PAs practicing at an academic medical center and those practicing in Family Medicine were more confident in all areas (M = 12.9 vs 9.8, p = .03; M = 15.3 vs 10.0, p < .001).

CONCLUSIONS: We found that there were significant knowledge gaps as well as low confidence with prescribing PrEP among our surveyed sample of PAs. These results highlight the need for increased training and support for PrEP prescribing among PAs.



PHYSICIANS' VIEWS ON UTILIZATION OF AN EHR-EMBEDDED CALCULATOR TO ASSESS RISK FOR VENOUS THROMBOEMBOLISM AMONG MEDICAL INPATIENTS

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BACKGROUND: Venous thromboembolism (VTE) is a common cause of preventable morbidity and mortality among hospitalized patients. Pharmacologic prophylaxis is effective in reducing rates of VTE in at risk patients, but indiscriminate use of prophylaxis increases the risk of bleeding. To increase appropriate prescribing of VTE prophylaxis, as part of a randomized clinical trial, a risk assessment calculator was embedded in the electronic health record at Cleveland Clinic. Despite efforts to promote use of the calculator through staff meetings, email reminders, local champions, and weekly audit and feedback, routine use by physicians was low and highly variable among sites. The objective of this research was to understand provider perspectives on using the VTE risk calculator in clinical practice and factors that may hinder its use.

METHODS: We conducted a qualitative study exploring provider perspectives on use of the VTE risk calculator. Eligible participants included attending physicians and advanced practice providers (APPs) in the department of hospital medicine at 10 hospitals who had at least 10 opportunities to use the calculator over a three month period. They were categorized by level of utilization of the calculator, low (<20%), moderate (20-50%), or high (>50%). We sent interview requests via email. We conducted semi-structured interviews from April 2019 to July 2019 either in person or by phone. The semi-structured interview was developed using literature review and expert opinion, and asked respondents about use, relative advantage, and support for the VTE calculator, as well as general VTE prophylaxis questions. Interviews were approximately 30 minutes, audio recorded and transcribed verbatim. Interviews continued until thematic saturation was reached. Transcripts were analyzed using a grounded theory approach to identify themes associated with engagement with the risk calculator.

RESULTS: Fourteen providers participated, including twelve physicians and two APPs. Five providers were high utilizers of the VTE risk calculator, three were moderate utilizers, and six were low utilizers. There were five major themes identified. 1) Regardless of level of utilization, most clinicians overestimated their usage of the VTE calculator. 2) Clinicians felt that the calculator sometimes underestimated the risk of VTE. 3) The calculator validated clinicians' decision to withhold VTE prophylaxis from low risk patients. 4) Trust of the calculator was predicated on clinicians' awareness that it had been validated. 5) The calculator was easy to use and did not take excessive time or hinder work flow.

CONCLUSIONS: The optimal VTE risk assessment tool would be both easy to use and trusted by providers. While providers feel that the VTE risk calculator is easy to use, routine use may be hindered by provider mistrust of the calculator's recommendations. Specifically, providers believe that the calculator underestimates some patients' risk of VTE.

PHYSICIAN VOTING PRACTICES FROM 2006-2018 IN CALIFORNIA, NEW YORK, AND TEXAS

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BACKGROUND: From 1976 to 2002, physicians voted 43% less often in elections than the general population. Voting has significant implications on health care policy, and physicians are valuable members of society in this regard. It remains unclear how physician voting practices have changed over the last decade in the midst of major health care reform. We characterized physician voting patterns from 2006 to 2018 in California (CA) New York (NY), and Texas (TX) – the three states with the largest numbers of physicians.

METHODS: We merged physician profiles from the National Physician Registry (Centers for Medicare & Medicaid Services) with state voter registration files obtained from L2, a private non-partisan company, using a name matching algorithm, comparing National Physician Identifier enumeration with voter file birth dates, and demographic data on occupation from L2 linked commercial data. We excluded physician trainees. Our primary outcome was voter participation - the percentage of voting eligible physicians (VEP) - who voted in general elections (even-numbered years) from 2006 to 2018. VEP was calculated based on state physician workforce profiles published by the Association of American Medical Colleges. We compared to general population voter participation rates from publicly available data. We then used logistic regression to predict odds of our secondary outcome, voter turnout (percentage of registered physicians who voted), comparing female to male physicians.

RESULTS: We identified 117,478 physicians registered to vote – 50,854 in CA, 39,046 in NY, and 27,578 in TX. Two-thirds (66%) were male with median age 42 in 2006 (IQR: 31 – 52). Internal Medicine was the most represented specialty (17%). Overall, 36% of eligible physicians in these states voted in general elections between 2006-2018, significantly lower than 46% of the general population ($p<0.001$). From 2006 to 2018, physician voter participation was lowest in 2006 (25%) and highest in 2016 (45%), though even in 2016 it was significantly lower than general population voter participation (56%, $p< 0.04$). Registered female physicians generally had lower adjusted odds of turnout than males in midterm elections: 2006 aOR: 0.94 (95% CI: 0.91-0.97); 2010 aOR: 0.89 (95% CI: 0.86-0.91); 2014 aOR: 0.90 (95% CI: 0.88-0.93), but higher odds of turnout than males in 2016 (aOR 1.16, 95% CI: 1.13-1.20) after controlling for age and specialty.

CONCLUSIONS: Our study found that eligible physicians voted approximately 22% less than the general population from 2006-2018, with physicians' highest voter participation in 2016. Voting rates varied between general vs. midterm election, and gender. Although in general, higher income households have higher voter participation rates, physicians consistently had lower voter participation than the general population since 2006. Registered female physicians generally had lower voter turnout than their male colleagues in midterm elections. Barriers to physician voting should be identified and addressed.

PILOT TESTING A BEDSIDE PATIENT SAFETY DISPLAY TO INCREASE PROVIDER AWARENESS OF THE 'HIDDEN HAZARDS' OF CATHETERS AND WOUNDS

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BACKGROUND: We developed and piloted a digital bedside "Patient Safety Display" of catheter and wound information to improve awareness by rounding providers.

METHODS: Display development was informed by clinical observations, interviews, and prototype testing with clinicians. The display reported presence and duration of urinary and vascular catheter use, urinary catheter indication, wound presence and severity, and wound and catheter location on a human outline, from real-time documentation in the electronic medical record (EMR). In a pilot study in a tertiary care medical-surgical step-down unit with 20 private rooms, including a pre-intervention period and a post-intervention period with 10 control rooms without the display and 10 intervention rooms with the display, we surveyed providers directly after rounds to assess awareness of their patients' catheters and wounds, compared to the EMR. We assessed

display utility and usability from clinician interviews, and used an adapted grounded theory approach to identify major themes.

RESULTS: A total of 787 surveys (681 Medicine service with 89% response rate, 106 Surgery service with 47% response rate; 363 pre-, 424 post-intervention) were completed involving 176 unique patients and 47 unique providers. Among all 787 patient encounters, 156 (20%) had a transurethral indwelling urinary catheter (Foley), 314 (40%) had a central venous catheter (CVC, including peripherally inserted central catheters), and 247 (31%) had at least one pressure injury. The Figure summarizes provider awareness of catheters and pressure injuries when present as assessed pre- and post-intervention. Benefits identified from 13 post-intervention clinician interviews included: prompted discussion and increased awareness of catheter and skin issues; limitations reported were: didn't notice display and repetitive to EMR.

CONCLUSIONS: In this pilot study of a Patient Safety Display, although provider awareness of Foleys, CVCs, and pressure injuries appeared higher for patients in the intervention rooms compared to pre- and/or post-intervention control rooms, most comparisons did not meet statistical significance. Clinicians varied in views of the display as useful for improving catheter and wound awareness and prompting discussion.

	Pre-Intervention Period 14 weeks January-April 2019	**Post-Intervention Period** 13 weeks June-September 2019	
	20 rooms **WITHOUT** Patient Safety Display (**Pre-Intervention Rooms**)	10 rooms **WITHOUT** Patient Safety Display (**Control Rooms**)	10 rooms **WITH** Patient Safety Display (**Intervention Rooms**)
Awareness* of Transurethral Indwelling Urinary Catheter (i.e., Foley)	**66.0%** from survey of 50 patients with Foley	**80.4%** from survey of 56 patients with Foley	**86.0%**+, ++, # from survey of 50 patients with Foley
Awareness of Central Venous Catheter (CVC)**	**73.9%** from survey of 138 patients with >=1 CVC	**63.2%** from survey of 76 patients with >=1 CVC	**77.0%**+, ++, # from survey of 100 patients with >=1 CVC
Awareness of Pressure Injury	**51.9%** from survey of 108 patients with >=1 Pressure Injury	**45.5%** from survey of 77 patients with >=1 Pressure Injury	**58.1%**+, ++, # from survey of 62 patients with >=1 Pressure Injury

*Awareness by the rounding physician or advanced practice provider, as assessed by brief paper survey immediately after they rounded on their patients in the unit.
**CVCs in this survey included lines such as subclavian, internal jugular, femoral CVCs, ports, hemodialysis lines, and peripherally-inserted central catheters.

+When comparing awareness results for Intervention Rooms compared to Pre-intervention Period Rooms, Foley awareness increase did meet statistical significance (p=0.02), but there was no statistically significant increase in CVC (p=0.59) or Pressure Injury (p=0.43) awareness.

++When comparing the awareness for Intervention Rooms compared to Post-Intervention Control Rooms, the increase in CVC awareness marginally did meet statistical significance (p=0.045), but there was no statistically significant increase in Foley (p=0.44) or Pressure Injury (p=0.14) awareness.

#When comparing the awareness for Intervention Rooms compared to pooled results from the Pre-Intervention Rooms and Control Rooms, there was no statistically significant change in Foley awareness (p=0.08), CVC awareness (p=0.20), or Pressure Injury awareness (p=0.23).

PILOT TESTING OF THE MYCOG PARADIGM: RAPID DETECTION OF COGNITIVE IMPAIRMENT IN EVERYDAY CLINICAL SETTINGS

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BACKGROUND: Cognitive impairment (CI) and dementia are significant public health burdens that can have profound social and emotional effects on older adults. Early detection of CI is imperative to identifying potentially treatable underlying conditions and providing supportive services to minimize the effects of CI in cases of Alzheimer's Disease and Related Dementias (ADRD). While primary care settings are ideal places for identifying CI, it frequently goes undetected. DetectCID is a consortium of three institutions funded to develop clinical paradigms to detect CI and dementia in primary care settings. We developed the Northwestern 'MyCog Paradigm' and piloted the brief, technology-enabled, 2-step CI detection assessment in a sample of older adults.

METHODS: In all, 80 participants were recruited from an ongoing cognitive aging study conducted in one academic general internal medicine clinic and six community health centers. Impaired cases were determined based on a diagnosis of dementia or mild cognitive impairment (MCI) in their medical record or an impairment based on performance on a comprehensive cognitive battery within the prior 18 months. During in-person interviews, participants completed the MyCog CI detection assessment via an iPad, consisting of an initial subjective assessment of their memory followed by two objective cognitive assessments from the NIH Toolbox for Assessment of Neurological and Behavioral Function: Picture Sequence Memory (PSM) and Dimensional Change Card Sorting (DCCS). We evaluated of the efficacy of the MyCog paradigm as a detection tool using sensitivity, specificity, and receiver operator characteristic (ROC) curves.

RESULTS: 31 of the 80 participants who were administered the MyCog paradigm were classified as impaired cases. The single self-report item regarding concern about memory or other thinking problems demonstrated high sensitivity (92%, 95% Confidence Interval (CI): 75%-99%) with 23/25 cases expressing concern; yet it yielded low specificity (46%, 95% CI: 33%-60%) with 29/54 controls also expressing a concern. In the subsample of participants who expressed concern, PSM and DCCS assessments were demonstrated exceptional ability in detecting CI (AUC=0.92), with an average administration time of 12 minutes. Only including the first of two PSM trials along with the DCCS reduced this time to an average of <7 minutes, with little change in AUC (0.90).

CONCLUSIONS: Based on our preliminary findings, we plan to continue optimizing our paradigm by 1) examining other self-reported items to improve the specificity in Step 1, 2) include only PSM Trial 1 and the DCCS in Step 2 to reduce administration time, 3) create a self-administered version to optimize use in clinical settings based on clinician feedback. With further validation and feasibility testing, MyCog offers a practical, scalable, primary care paradigm for the routine case finding of cognitive impairment and dementia.

PLEASE FOLLOW UP WITH YOUR PCP: RISK FACTORS ASSOCIATED WITH NOT HAVING A PRIMARY CARE PROVIDER ON HOSPITAL DISCHARGE

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BACKGROUND: Despite known benefits of primary care, over 40 million Americans do not have a specific source of ongoing care. Data on risk factors for not having a primary care provider (PCP) are lacking. To explore this gap, we performed a descriptive analysis of patients with no assigned PCP at the time of hospital discharge and followed these patients over one year to determine risk factors for a persistent lack of access to primary care.

METHODS: We analyzed electronic medical record (EMR) data for all patients discharged from the medicine service at a large urban academic medical center for two years (2017-2018), N= 12,675. We used chi squared analysis to compare sociodemographic characteristics and ICD-10 codes in those with and without an assigned PCP in the EMR. We further analyzed patients without an assigned PCP who had subsequent interactions with our health system, examining the rate of acquiring a PCP at 12 months post- discharge and analyzing characteristics of patients who remained without a PCP after one year.

RESULTS: Of 12,675 patients discharged from our academic center, 9645 (76%) had a PCP and 3030 (24%) did not. Not having a PCP was associated with male gender, non-married status, Hispanic ethnicity, White and Black/African American race, having a substance use disorder diagnosis, having a psychiatric diagnosis, and experiencing homelessness (Table). Patients with Asian race and with non-English preferred language were more likely to have a PCP.

After hospital discharge, 2060 (68%) patients without an assigned PCP had further in-person encounters with our health care system in the year after discharge. 887 (43%) of those patients acquired a PCP after one year. Still not having a PCP one year after hospital discharge was most strongly associated with male gender, substance use disorder, and homelessness.

CONCLUSIONS: In our descriptive study, patient with sociodemographic factors traditionally associated with poor access to care were at higher risk of having no assigned PCP at the time of discharge, and most remained without a PCP after one year despite further encounters with the health care system. Targeted interventions need be undertaken to connect these patient groups to primary care and its associated benefits.

Table. Comparison of sociodemographic variables of Medicine discharges with and without an assigned PCP in the EMR

Sociodemographic Variables	PCP Assigned N= 9675 (%)	No PCP N = 3030 (%)	*p* Value
Age (years)	61.9	52.9	**<0.001**
Gender (M)	4685 (48)	1762 (58)	**<0.001**
Marital Status (Married)	3738 (39)	820 (27)	**<0.001**
Ethnicity (Non-Hispanic)	8493 (90)	2524 (85)	**<0.001**
Race (White)	4597 (48)	1507 (50)	**0.0344**
Race (Black/African American)	1463 (15)	516 (17)	**0.0124**
Insurance status (Insured)	9615 (99.97)	2948 (97)	**<0.001**
Insurance type (Medicaid)	2230 (23)	1130 (37)	**<0.001**
Language (English)	7881 (82)	2604 (86)	**<0.001**
Substance use *	1034 (11)	705 (23)	**<0.001**
Homelessness	851 (8.8)	821 (27)	**<0.001**
Psychiatric comorbidity *	2825 (29)	947 (31)	**0.0325**

* Derived through ICD-10 discharge diagnoses

POOR SLEEP PERSISTS AFTER HOSPITALIZATION AND IS ASSOCIATED WITH MOBILITY IMPAIRMENT: TIME-SERIES ANALYSIS OF A LONGITUDINAL COHORT STUDY

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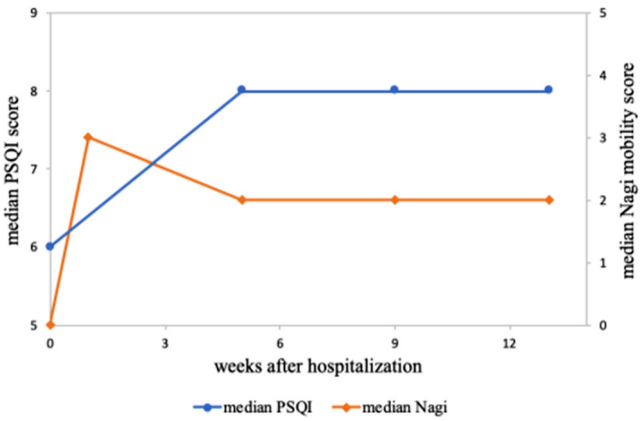
BACKGROUND: Poor sleep is robustly associated with morbidity and mortality in the community. However, the health impact of sleep during and after hospitalization is poorly characterized. Our objectives were to describe trends in sleep and physical function during and after hospitalization and evaluate sleep as a predictor of function over time.

METHODS: We conducted a longitudinal observational study of 237 adults hospitalized in 2018-2019, embedded in a randomized controlled trial of an e-health intervention. Patient-reported surveys were collected in the hospital and monthly for 13 weeks post-discharge. Sleep was measured by the Pittsburgh Sleep Quality Index (PSQI) and physical function by the Nagi mobility scale, Lawton-Brody instrumental activities of daily living (IADLs), and Katz basic activities of daily living (BADLs). Changes from baseline to each follow-up time were assessed by Wilcoxon signed-rank tests. Time-series multivariable linear regression was performed with PSQI as the primary predictor and Nagi score as the outcome. Covariates included age, gender, Charlson comorbidity index (CCI), length of stay (LOS), and trial arm.

RESULTS: Participants' mean age was 40, median CCI was 2, and median LOS was 3.8 days. Pre-hospital sleep was poor (median PSQI=6) and persistently worse after hospitalization (p<0.002 at each follow-up) (Figure 1). Pre-hospital mobility was intact (median Nagi score=0), but impairment increased post-discharge and did not recover to baseline (p<0.0001 at each follow-up). Median IADLs and BADLs were unchanged. The final time-series regression model explained 43% of variation in mobility over time (p<0.0001). The model predicted a direct, dose-response relationship between poor sleep and mobility impairment during the study period (beta=0.13, 95% CI 0.09-0.16, p<0.001).

CONCLUSIONS: Even in this relatively young and healthy group of patients, sleep and advanced physical function significantly declined for up to 3 months after brief hospital stays, and poor sleep predicted impaired mobility over this time. This result has important implications for the long-term health of hospitalized patients. Further studies should test the causal nature of this relationship and explore the association of poor sleep with post-hospital healthcare utilization.



POST-ELECTION U.S. TRENDS IN INSURANCE COVERAGE, HEALTH CARE UTILIZATION, AND DISPARITIES AMONG LOW-INCOME HISPANIC ADULTS

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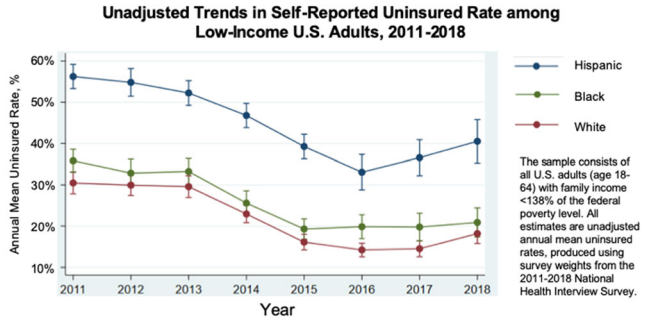
BACKGROUND: The Affordable Care Act was associated with significant decreases in the uninsured rate, especially among low-income and Latinx adults. However, following the 2016 election, there were several changes to national health policy and rhetoric—including the cessation of cost-sharing subsidies to insurers and efforts to enhance immigration enforcement—that may have adversely affected health insurance participation and utilization, particularly among vulnerable, minority populations. We assessed trends in insurance coverage, utilization, and racial/ethnic disparities before and after the 2016 U.S. election.

METHODS: We identified a nationally representative sample of low-income U.S. adults (age 18-64, family income <138% of the federal poverty level) from the 2011-2018 National Health Interview Survey. Our primary outcome of interest was the annual mean uninsured rate while our secondary outcomes were rates of Medicaid coverage, private insurance coverage, people reporting a usual source of care, and delays in care due to cost. We used linear regressions to model each outcome as a function of a linear annual time trend interacted with race/ethnicity and plotted the predicted probabilities.

RESULTS: For low-income Hispanic adults, the annual mean uninsured rate decreased from 56.3% [95% CI 53.3-59.2] in 2011 to 33.1% [95% CI 28.8-37.4] in 2016 but increased to 40.5% [95% CI 35.2-45.8] by 2018 (Figure). In 2011, there was a 26% absolute difference in insurance coverage between Hispanic and non- Hispanic white low-income adults. This narrowed to 19% in 2016 then widened to 22% by 2018. Rates of Medicaid participation among low-income Hispanic adults rose from

2011 to 2016 and continued to rise from 2017-2018. However, rates of private insurance coverage (including insurance exchanges) increased from 13% in 2011 to 20% in 2016 then decreased to 15% in 2018. Similarly, the proportion who reported having a usual source of care peaked in 2016 then declined from 2017-2018 while the rate of delaying care due to cost was at its lowest in 2016.

CONCLUSIONS: Despite large gains in insurance coverage and health care utilization before 2017, there have been significant reversals since then, particularly among low-income Hispanic adults. With the rise in the uninsured rate, there was a concurrent decrease in private insurance coverage without a decline in Medicaid coverage, suggesting that losses occurred primarily from employer or exchange-based insurance.



PRACTICES FOR HUMANISM AND CONNECTION IN MEDICINE: A QUALITATIVE STUDY OF STRATEGIES FROM PRESENCE CIRCLE PHYSICIAN PEER GROUPS TO SUPPORT PRESENCE 5 PRACTICES

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BACKGROUND: The Presence 5 intervention comprises practices derived from a systematic literature review, observation of doctor-patient interactions, qualitative interviews with medical experts and nonmedical professionals, and a review by a panel of expert clinicians, researchers, patients, and caregivers.

Presence 5 practices are: (1) prepare with intention (take a moment to prepare and focus before a patient); (2) listen intently and completely (sit down, lean forward, avoid interruptions); (3) agree on what matters most (find out what the patient cares about and prioritizes for the visit agenda); (4) connect with the patient's story (consider life circumstances that influence the patient's health; acknowledge positive efforts; celebrate successes); and (5) explore emotional cues (notice, name, and validate the patient's emotions).

METHODS: Presence 5 was delivered as a pilot intervention via Presence Circles: peer-facilitated hour-long discussions where physicians (n=15) across three primary care clinics discussed Presence 5 practices and shared specific examples. The discussions were transcribed and coded by Presence 5 practice area.

RESULTS: In the first five circles, 104 discreet Presence 5 practices were shared in Presence Circles (~average 24 per circle).

"Prepare" strategies (n=26) included mental preparation such as mindful handwashing, and physical preparation such as pending the note prior to entering the exam room to seamlessly integrate EMR into the visit, or utilizing the pre-visit briefing with scribes/MAs/students to obtain key information about a patient.

"Listen" strategies (n=17) included avoiding interruptions; non-verbal behaviors such as facing patients, making eye contact, or uncrossing legs to signal openness; and sign-posting – telling patients when providers need to turn attention to the EMR "Give me a second [to write this in the EMR]."

"Agree" strategies (n=21) of interest included eliciting patient priorities ("tell me the whole list first), using alternative appointments (monthly/telephone) to address all priorities over time. Two providers mentioned using MAs to elicit patient top priorities when running behind schedule.

"Connect" strategies (n=26) included focusing on common interests and shared experiences, including family and travel, use of humor, and acknowledgment of patient effort.

"Explore emotion" strategies (n=17) ranged from explicit efforts to notice emotions to naming and eliciting them ("asking about stressors"). Some providers who were less comfortable with managing patient emotions said they put a tissue box in front of patients who were visibly distressed.

CONCLUSIONS: A repository of Presence 5 strategies may serve as a resource to clinicians who seek to try new practices to enhance their communication and relationships with patients. Future research will examine themes within each practice that illustrate variations in how clinicians foster humanism and connection with patients.

PREDICTORS OF PATIENT LOSS TO FOLLOW-UP IN PRIMARY CARE: AN ANALYSIS OF PATIENT RETENTION AT AN ACADEMIC PRIMARY CARE PRACTICE

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BACKGROUND: Primary care in the United States is undergoing a major transformation toward value-based care, with a new focus on population health. Defining patient panel is the foundation of these efforts. Preliminary analyses from a large academic primary care clinic undergoing such a transition revealed the following: despite acquiring 400 new patients every month, the overall panel size remained at 40,000 patients from 1990 to 2019, suggesting significant patient attrition. Little is published about what drives patient loss. In our current study, we aimed to define patient attrition and identify relevant patient, provider, and practice factors that contribute to this phenomenon.

METHODS: Study Design, Population: We performed a retrospective cohort analysis from 7/2014 - 6/2019 using five years of billing data from a single academic primary care practice, and conducted a qualitative analysis via structured telephone interviews with patients who had left.

Measures: The primary outcome was patient loss to follow-up, defined as a lapse in visits greater than 3 years. Predictors included patient, provider, and practice variables.

Analysis: We compared characteristics of patients lost to follow-up with those who remained in the practice. We used multivariable cox regression analyses to determine significant predictors of loss to follow-up. We identified themes from structured telephone interviews.

RESULTS: We examined 402,415 visits for 41,876 distinct patients. A total of 22% of patients were lost to follow-up, with trainee and departing faculty losing 38% of panel, and stable faculty losing 20% of panel. Patient characteristics associated with loss to follow-up included patient age <40 (HR 2.83 (2.70-2.96)) and limited English proficiency (HR 1.20 (1.10-1.31)). Provider characteristics included trainee status (HR 2.33 (2.22-2.44)) and departing faculty (HR 2.64 (2.50-2.80)). Lower cancer screening rates were noted in the attrition cohort (65% vs 85% for breast, 75% vs 83% for cervical, and 67% vs 88% for colorectal, all p<0.01).

Structured interviews revealed distance, cost, provider turnover, and provider discontinuity within a given year as contributors to loss.

CONCLUSIONS: In this large academic primary care practice, 20% of patients were lost to follow-up. Young patient age and physician transitions were the most powerful predictors of loss, while limited English proficiency had a small but significant effect. Patients lost to follow-up had significantly lower cancer screening rates. Primary care practices, particularly those with trainee and faculty turnover, should dedicate resources to retaining patients and invest in faculty retention. Further efforts should also focus on providing equitable care to patients with limited English proficiency. Further investigation into a more ideal loss to follow-up definition for younger, healthier patients who may engage in primary care in non-traditional ways will better inform panel definition for practices serving these populations.

PREP IN STUDENT HEALTH SERVICES: AN OPPORTUNITY TO EXPAND

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BACKGROUND: Despite an overall decline in US HIV incidence, the rate of new infections remains unacceptably high in young men who have sex with men (MSM). HIV pre-exposure prophylaxis (PrEP) is a safe and effective mode of HIV prevention. However, it remains underutilized, and young people ages 16-24 have the lowest rates of PrEP coverage. College and university student health services (SHS) may be a resource for expanding PrEP access to young MSM.

METHODS: We conducted an electronic survey of medical directors of SHS at two and four-year undergraduate institutions in New England (n=143). The primary outcome was availability of PrEP. Secondary outcomes included frequency of PrEP prescribing, barriers and facilitators to offering PrEP, and provider PrEP knowledge. Associations between PrEP prescribing and institutional characteristics were tested using Fisher's exact test.

RESULTS: Thirty-nine percent (N=56) of surveyed institutions responded, the majority of which were private (75%) and four-year (93%) (Table). More than 1 in 3 institutions (n=18, 36%) did not offer PrEP. Those offering PrEP started a mean of 2.0 per 1000 students/year on PrEP (range 0-11.9) and continued a mean of 0.7 per 1000 students/year who had started PrEP elsewhere (range 0-2.7). PrEP was more likely to be offered by four-year schools than two-year schools (68% vs 0%, p=0.042) and by private schools than public schools (73% vs 38%, p=0.043). No differences between religious and secular schools were observed (33% vs 70%, p=0.16). Among institutions not currently offering PrEP (n=18, 36%), the most commonly cited barriers were lack of insurance coverage (n=13, 72%), clinical monitoring requirements (n=12, 67%), and staffing/time constraints (n=10, 56%). Access to on-site support staff (n=11, 61%), institutional willingness for new protocols (n=11, 61%), peer champions (n=11, 61%), and PrEP guidelines and protocols (n=10, 56%), and were identified as potential facilitators of PrEP implementation.

CONCLUSIONS: In spite of strong evidence, PrEP was not available in one in three New England college and university SHS. Absolute prescribing rates among institutions that do offer PrEP are low. Results suggest a substantial opportunity to increase PrEP access to young MSM and others via SHS. Interventions that focus on two-year and public institutions and that support insurance navigation and on-demand provider support may be effective in addressing this gap.

PREP TBL CURRICULUM: IMPROVES IM RESIDENTS PREP KNOWLEDGE

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BACKGROUND: Pre-exposure prophylaxis (PrEP) is an HIV prevention strategy, but Primary Care Provider (PCP) directed-education has been limited. PCPs have increasing awareness of PrEP, but adoption of PrEP services has been slow. Lack of education is cited as a major barrier.

METHODS: The primary outcome is to improve knowledge of PrEP among Temple University Hospital Internal Medicine categorical residents (N = 97) by implementing a PrEP team-based learning (TBL) curriculum in the academic year 2017-2018. The categorical program is composed of 53 men (55%) and 44 women (45%), 55% self-identifying as white (53/97). Ninety-three residents met eligible criteria, excluding residents on vacation or away rotations. The study was conducted over 5 outpatient clinic weeks to account for the 4 + 1 schedule. Residents were provided with preparatory material regarding PrEP including iPrex study. Residents answered completed a five-question individual readiness assessment test (IRAT) followed by the group readiness assessment test (GRAT). At the end of the PrEP TBL curriculum, residents completed a post PrEP knowledge survey to assess PrEP knowledge acquisition. Thirty-three residents (35% of eligible pool) completed the IRAT and GRAT, including 11 interns, 13 junior residents, and 9 senior residents. Thirty- one residents completed the post-PrEP knowledge survey, including 14 interns, 9 junior residents, and 8 senior residents.

RESULTS: Based on IRAT analysis, 52% of residents did not know the appropriate test for HIV screening. Forty-five percent of residents had difficulty identifying patients who should be counseled on PrEP based on CDC guidelines. Twenty-five percent of residents did not know the recommended immunizations nor sexually transmitted infection tests they should offer men who have sex with men. Thirty-nine percent of residents did not correctly choose the recommended clinical follow-up and monitoring of patients on PrEP. Overall, residents did well on Post-PrEP knowledge survey compared to IRAT and GRAT results. Eighty-eight percent of senior residents answered all five questions correctly compared to 79% of interns and 78% of junior residents. However, 19% of residents still had difficulty determining appropriate testing for acute retroviral syndrome.

CONCLUSIONS: Implementing PrEP TBL curriculum is an important educational tool in order to expand PrEP provider adoption. Based on survey results, resident knowledge of eligible patients and recommended schedule of testing and follow-up for individuals on PrEP improved. Residents need further education on appropriate testing for HIV screening and acute retroviral syndrome.

PRESCRIBING NRT IN HOSPITALIZED PATIENTS WHO SMOKE

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BACKGROUND: Studies have shown that prescribing nicotine replacement therapy (NRT) to hospitalized patients who smoke increases the rate of successful smoking cessation after discharge. As NRT is not part of our standard admission orders, we hypothesized that many of our patients who smoke are not being prescribed NRT within 24 hours of admission to our hospital.

METHODS: We performed a chart review of all patients admitted to the inpatient general medicine service at our academic community hospital in NYC from November 1st 2017 through October 31st 2018, who answered yes to the question on the provider admission note: "Has the patient used tobacco in the past 30 days?" We excluded patients with admissions to step-down units or intensive care units, as well as patients with lengths of stay one day or less. We evaluated whether NRT was prescribed to these patients during their hospitalization, and if so, whether it was prescribed within 24 hours of admission. NRT was defined as either the nicotine patch, gum or lozenge. For those who were not prescribed NRT, we looked for documented refusal of NRT within the admission note.

RESULTS: Of the 1,289 patients admitted to the regional medicine service during this time period, 762 patients had the question "Has the patient used tobacco in the past 30 days?" answered on their admission note. Of these 762 patients, 100 (13.1%) answered "yes." Of these 100, 17 had lengths of stay one day or less, resulting in 83 patients. Of those 83, 24 (29%) had NRT prescribed at some point during the admission. Of those 24, 19 (79%) were within the first 24 hours of admission, and one patient had documented refusal within the first 24 hours, that was later prescribed NRT, resulting in a 23% (19/82) rate of prescribing NRT within the first 24 hours without documented refusal. Of the initial 83 charts reviewed, 59 (71%) were never prescribed NRT during their hospital stay but only 13 (22%) of these had documented refusal in the admission note. This results in 46 (55%) of the original 83 patients who should have been prescribed NRT, as they did not refuse (or were without documentation of such refusal) but no NRT was prescribed.

CONCLUSIONS: Based on our chart review, we are not sufficiently prescribing NRT within the first 24 hours of admission to patients who smoke, likely because NRT is not a part of our standard admission orders. Prescribing NRT in hospitalized patients who smoke has proven benefits. We can do a better job of prescribing NRT to our patients while they are admitted to the general medicine service. We plan to make a list of general medicine admission orders and add consideration of smoking status and need for NRT as part of that list, and disseminate it to our fellow residents. We have also partnered with the pharmacist on the medical floor, who will follow up with the medical residents regarding patients documented as smokers that do not have NRT ordered.

PRESCRIBING PATTERNS OF ANTIHYPERTENSIVE AND ANTIDIABETIC DRUG THERAPY IN PATIENTS WITH COMORBID HYPERTENSION AND TYPE 2 DIABETES

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BACKGROUND: Hypertension when co-occurring with type 2 diabetes doubles the risk of death from cardiovascular disease. Blood pressure and glucose control are strong modifiable risk factors. We studied prescription patterns of antihypertensive and anti-diabetic drug therapy and their adherence with published guidelines.

METHODS: We performed a cross sectional, observational study of patients with hypertension and diabetes followed in our primary care clinic within a large public teaching hospital. Included patients were seen in the prior year with data collected from medical records through 12/2019.

RESULTS: A total of 533 patients were included (mean age 61 ± 10, 43% men, and 91% black patients). Prevalent comorbidities were CHF (14% of patients), CKD (24%), CAD (8%), and obesity (59%). At their last clinic visit, 53% and 28% of patients had achieved blood pressure targets of <140/80 vs. BP <130/80, respectively, and 75% and 56% achieved HgbA1c<8 vs. HgbA1c<7, respectively.

As shown in table 1, anti-hypertensive polytherapy (70%) was more common than monotherapy with 2.3 ± 1.3 mean number of drugs prescribed. ACE or ARBs were the most prescribed drugs followed by calcium channel blockers (CCB). For antidiabetic agents, the majority were on monotherapy with 1 ± 0.9 mean number of oral anti-diabetics prescribed. The oral anti-diabetics prescribed included metformin (59% of patients), dipeptidyl peptidase 4 inhibitors (16%), glucagon-like peptide-1 agonists (9%), sulfonylureas/meglitinides (9%), sodium-glucose transport protein 2 inhibitors (6%), and thiazolidinediones (1%).

Regression analysis revealed higher BMI, lower eGFR, and a diagnosis of CHF were independent predictors of antihypertensive polytherapy (significance level $p<0.05$). Higher eGFR, no diagnosis of CHF, and current non-smoking status were independent predictors of antidiabetic polytherapy. Other significant patterns (significance level $p<0.05$) were increased age positively associates with thiazide and CCB use and higher BMI associates with GLP1, loop diuretic and thiazide use, and negatively associates with DDP4 use.

CONCLUSIONS: Antihypertensive drug utilization at our clinic generally follows guidelines with preferential use of renin-angiotensin inhibitors. Areas of improvement include increasing the proportion of patients achieving blood pressure and glucose control, which commonly requires multi-drug therapy, and further increasing use of renin-angiotensin inhibitors whenever indicated.

Table 1- Antihypertensive drug utilization by drug class in mono- and poly-therapy

Drug Class, N (%)	Overall N= 533	No Drug n=31 (6%)	Mono-therapy n= 126 (24%)	Polytherapy n=376 (70%)			
				2 drugs n=168 (32%)	3 drugs n=116 (22%)	4 drugs n=72 (14%)	5 or More Drugs n=20 (4%)
ACE or ARB	368		66	125	98	63	16
Thiazides	166		12	47	67	32	8
CCB	303		38	110	83	56	16
Beta blocker	192		10	40	63	61	18
Loop diuretic	79		0	12	22	35	10
Spironolactone	35		0	1	5	18	11
Other Hypertensives	47		1	4	8	19	15

PREVALENCE AND COST OF CASCADES AFTER LOW-VALUE ROUTINE TESTING DURING THE MEDICARE ANNUAL WELLNESS VISIT

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BACKGROUND: For healthy adults, routine testing during annual check-ups is considered low-value and may trigger cascades of further

medical services that are of unclear benefit. We do not know how often routine tests are performed during Medicare Annual Wellness Visits (AWVs) nor whether they are associated with cascades (ie, downstream laboratory tests, imaging/cardiac tests, procedures, hospitalizations, and new diagnoses).

METHODS: Using national 20% Fee-for-Service Medicare claims, we identified patients 66 years and older who received an AWV in 2014, had no prior Elixhauser or Charlson comorbidities, had not gotten one of the routine tests of interest (urinalysis, thyroid stimulating hormone (TSH), or electrocardiogram (EKG)) in the 6 months before their AWV, and had no symptoms or conditions in the AWV testing period that would suggest a non-"preventive" indication for a routine test. Within this cohort, we compared patients who received a given routine test between 7 days before and 1 day after the AWV to those who did not. Our primary outcome was cascade-attributable event rates and associated charges in the 90 days after the AWV test period, using Poisson and linear regression models adjusted for visit, patient, and area-level characteristics and physician random effects. We also examined patient, physician, and area-level predictors of receiving routine tests.

RESULTS: Among 62,531 AWV recipients, 17.5% (n=10,952) received at least one routine test including an EKG (6.9%, n=4,321), urinalysis (9.3%, n=5,817), or TSH (8.0%, n=4.987). Patients who were younger (Adjusted Odds Ratio (AOR) 1.84 for 66-74 years old vs >85 years old [95%CI, 1.64-2.07]), white (AOR 1.21 vs black [95%CI, 1.05-1.39]), and lived in urban areas (AOR 1.55 vs rural [95%CI, 1.36-1.76]) and higher income areas (AOR 1.73 for >400% above federal poverty level vs 0-200% FPL [95%CI, 1.60-187]) were more likely to get any routine test. We identified 7.8 [95%CI, 5.9-9.6] cascade-attributable events per 100 beneficiaries in the 90 days following routine EKGs, 2.4 [95%CI, 0.0-4.7] following urinalyses, and 4.2 [95%CI, 2.1-6.2] following thyroid tests, with cascade-attributable cost per beneficiary of $152.6 [95%CI, $6.5-$298.6], -$25.2 [95%CI, -$109.2-$58.9], and $24.8 [95%CI, -$62.7-$112.3] respectively.

CONCLUSIONS: A sizable minority of healthy Medicare beneficiaries received routine EKGs, urinalyses, or thyroid tests during their annual wellness visits – more often those who were younger, white, and lived in urban, high income areas. All 3 tests were associated with downstream cascades while only EKGs demonstrated significant downstream cost, suggesting clinicians and policymakers might weigh both financial and non-financial effects of low-value testing cascades when prioritizing efforts to reduce them.

PREVALENCE OF ADVERSE CHILDHOOD EXPERIENCES AND POST TRAUMATIC STRESS DISORDER SYMPTOMS IN AN AMBULATORY SAFETY-NET POPULATION

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BACKGROUND: Adverse childhood experiences (ACEs) have a strong linear relationship with common causes of adult illness, death, and disability. The burden of ACEs and lifetime trauma among ambulatory patients in safety-net healthcare systems and the association of ACES with population health risk stratifications measuresis less well-understood. We sought to evaluate the burden of ACES and association of ACES with Tier; evaluate the incidence of lifetime trauma and presence of PTSD symptoms in patients seeking primary care at Denver Health Hospital Administration (DHHA).

METHODS: We conducted a cross-sectional survey of patients attending primary care visits at DHHA, a safety-net healthcare system that utilizes a 4-tiered population health risk stratification method, based on ICD-10s and health service utilization. We recruited patients 18 to 65 years old whose primary language was English or Spanish. We used a pseudo-random sampling method that included features of systematic and multistage sampling. Outcome measures included: ACEs measured using the 10-question survey, Adverse Childhood Experiences Questionnaire. Each item scored as the presence or absence of exposure with a summary score of 0 to 10. Primary Care Posttraumatic Stress Disorder for DSM 5 (PC-PTSD5) used to screen for current symptoms of posttraumatic stress disorder. Series of trauma informed care interventions and treatments rated on a scale of "not helpful at all" to "extremely helpful" to assess treatment preferences. Data collected from DHHA EHR included patient tier (range of 1-4) and presence of a trauma-related diagnosis. In multivariable analysis of association of ACES with Tier, we controlled for age, race, ethnicity, gender, and SES.

RESULTS: 303 of 481 approached participated for a response rate of 63%. Of 289 respondents who completed ACES, 148 (51.2%) scored 3 or greater and 117 (40.4%) with score 4 or higher. 172 of 300 participants who responded (57.3%) had positive response to lifetime presence of a traumatic event on the PC-PTSD. Of those 172,88 (51.2%) had a score of 3 to 5. 20 (22.7%) of those with a positive score had a trauma-related diagnosis in their chart. Odds of ACES ≥ 4 if PC-PTSD $\geq 3 = 4.2$ (95% CI 2.3-7.7). In multivariable analysis, ACES score was not significantly associated with tier ($p = 0.3150$) when controlling for age, race, ethnicity, gender, and socioeconomic status. People with trauma history were significantly more likely to endorse "Does going to a doctor's visit at this clinic make you feel stressed?" ($p < 0.01$). Patients with trauma expressed preferences for changes to their primary care provider's behavior over changes to team behavior or clinic built environment.

CONCLUSIONS: Rates of ACES and positive PC-PTSD were higher than the general population and past studies of primary care populations. In next steps, we will include the Chronic Illness and Disability Payment System (CDPS) in the multivariable analysis to risk adjust for severity of illness.

PREVALENCE OF FINANCIAL CONFLICTS OF INTEREST AMONG NON-INDUSTRY FUNDED TRIALS

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BACKGROUND: Randomized controlled trials (RCTs) are considered the most reliable form of evidence in evaluating the safety and efficacy of drugs. Because results of RCTs shape the evidence

base, objectivity in the conduct of clinical trials has important implications for clinical practice and the health and safety of patients. Previous studies have demonstrated that financial ties are common among trial principal investigators (PIs). However, the prevalence of financial ties has not been examined among non-industry funded studies. We examined the prevalence of financial ties among PIs of non-industry funded drug efficacy studies.

METHODS: We conducted a cross sectional study examining the prevalence of financial ties among PIs in non-industry funded published RCTs registered in clinicaltrials.gov between 01/01/2015 and 12/31/2017. We included studies examining drug efficacy. We excluded studies of generic drugs, head-to-head studies, and dosing studies. We defined financial ties as the direct compensation of PIs by the manufacturer of the drug of interest in the form of speakers' fees, honorariums, consultant and advisor fees, employee relationships, patents, travel fees, or food/beverage fees. We designated PIs as first and last authors. We searched each study for declaration of financial ties and regardless of disclosure, we searched for ties using Open Payments Data and Disclosure UK. Searches were limited to the two years prior to online study publication. If any of the PIs had a financial tie, we considered the publication as having a financial tie.

RESULTS: Our search yielded 755 studies, of which 90 met inclusion criteria. First authors were predominately based in North America (80%), followed by Europe (9%), then Asia (8%). Best represented specialties included Cardiology (16%), OBGYN (13%) and Anesthesiology (10%). The most common funding sources included NIH (44%), Foundations (24%), and Other Government Agencies (14%). Among 90 studies, 16 (18%) had PIs with financial ties and 74 (82%) had no PIs with financial ties. Among the 40 studies with some NIH funding, 21 (53%) had financial ties. Among the 18 PIs with financial ties identified, 56% had not disclosed them in the paper. Types of financial ties included food/beverage (32%), unspecified (28%), honorariums (12%), consultant/advisor (12%), travel (12%), and employee relationship (4%).

CONCLUSIONS: Among non-industry funded studies, financial ties are common. There is a high prevalence of nondisclosure of financial ties. A larger sample size with a more diverse geographic authorship would provide greater generalizability.

PREVALENCE OF RISK FACTORS FOR COGNITIVE IMPAIRMENT AMONG MIDDLE AGE AND OLDER ADULTS: THE LITCOG STUDY

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BACKGROUND: Investigations into cognitive changes have typically focused on older adulthood, as Alzheimer's disease and related dementias (ADRD) are most prevalent among people 65 years and older. However, evidence has emerged suggesting that clinically meaningful cognitive decline may present earlier on. Several known or suspected risk factors for cognitive impairment/ADRD manifest during middle age, including chronic conditions that may be newly acquired or inadequately managed, entrenched lifestyle behaviors such as obesity or smoking, and psychosocial stressors (e.g. employment, finances, depression). Using an existing cohort study of older adults, we explored these risk factors by age.

METHODS: Patients ages 55-74 were recruited from an academic internal medicine clinic and six federally qualified health centers in Chicago (N=900). In-person structured interviews were conducted every 2.5 years to investigate changes in cognitive function, health literacy (HL), and health self-management (SM). We examined behavioral characteristics by age group (ages 55-59 (n=279); 60-64 (n=284); 65-69 (n=182); 70+ (n=155)). Patients self-reported chronic conditions, employment/income status, and Body Mass Index (BMI). Smoking habits were assessed via the Behavioral Risk Factor Surveillance System (BRFSS), and health literacy was measured by the Newest Vital Sign (NVS). Global health, physical function, and mental health symptoms were assessed using the PROMIS short forms. For this analysis, we used Chi-square statistics and one-way ANOVA, as necessary, to evaluate associations between behavioral and psychosocial characteristics and age groups.

RESULTS: Participants mean age was 63 years; 69% were female, 47% were African American, and approximately half had limited health literacy. When comparing age groups, the late middle age adults (ages 55-59) were more likely to work full time (33.5% vs. 19.5%, 9.4%, 3.9%, $p<0.001$) and to support a greater number of individuals on their income (M=1.9 (1.1) vs. 1.8 (1.1), 1.6 (0.8), 1.6 (0.9), p=0.01). They had significantly higher rates of obesity (45.4% vs. 38.8%, 35.8%, 29.0%, p=0.01) and were more likely to self- report "fair" or "poor" overall health (30.2% vs. 26.1%, 18.1%, 17.4%, p=0.004). Additionally, they reported a significantly greater number of anxiety (M=54.7 (9.1) vs. 53.6 (8.3), 51.8 (9.1), 51.6 (8.9), p=0.001) and depressive symptoms (M=49.0 (9.8) vs. 48.5 (9.1), 46.6 (8.4), 46.0 (7.9), p=0.001). Smoking status, total number of chronic conditions, and physical function were consistent across age groups.

CONCLUSIONS: Late middle age adults were associated with higher rates of specific lifestyle behaviors and psychosocial stressors, including obesity, anxiety, depression and worse health status than older adults in this sample. Further exploration of risk factors for cognitive impairment among middle age and older adults may inform health system strategies to prevent, better detect or manage cognitive impairment.

PRIMARY CARE MEDICAL STAFF ATTITUDES TOWARD SUBSTANCE USE: RESULTS OF THE SUBSTANCE ABUSE ATTITUDES SURVEY (SAAS)

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BACKGROUND: Under-treatment of drug and alcohol use in primary care settings has been attributed, in part, to medical providers' negative attitudes toward substance use. As a part of an implementation study of electronic health record-integrated substance use screening in primary care clinics, conducted in the NIDA Clinical Trials Network, we assessed baseline attitudes among medical staff.

METHODS: Eligible participants were primary care providers and medical assistants in 4 urban academic primary care clinics. Prior to implementation of a substance use screening program, participants completed the Substance Abuse Attitudes Survey (SAAS), a validated 50-item self-administered survey that measures attitudes to substance use in 5 domains: permissiveness, non-moralism, non-stereotyping, treatment intervention, and treatment optimism. Participants were asked to rate their level of agreement with each item on a five-point Likert scale.

RESULTS: In total, 131/191 (69% response rate) eligible staff completed the survey. Participants had mean age 42; 76% were female; 11% Hispanic/Latino, 6% Black, 25% Asian. The majority of the sample was physicians (78%), while 11% were nurse practitioners, and 11% were medical assistants. Participants had an overall average of 13.2 years in practice. Approximately one-third reported moderate to high satisfaction treating patients with drug problems (35.1%) and alcohol problems (33.6%). The proportion of participants having positive attitudes in each of the following domains were: non-moralism (64.1%); non-stereotyping (55.7%); treatment intervention (47.3%); treatment optimism (48.9%); and permissiveness (44.3%). Negative attitudes toward permissiveness reflect responses to items addressing health effects of substance use, especially among teens.

CONCLUSIONS: While most primary care staff did not endorse moralistic or stereotyping statements about alcohol and drug use, attitudes toward addiction treatment were mixed, with less than half endorsing positive attitudes toward treatment effectiveness. These results suggest a need to improve attitudes, particularly toward addiction treatment. This could be accomplished through education and increased exposure to effective interventions that can be delivered by primary care providers, including office-based treatment for alcohol and opioid use disorder.

PRIMARY CARE NEEDS AMONG PATIENTS RECEIVING OFFICE BASED OPIOID TREATMENT (OBOT) WITH BUPRENORPHINE

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BACKGROUND: Opioid use disorder (OUD) is a chronic disease. Integrating OUD treatment and primary care is feasible, effective, and promotes retention. Integrated models of care are effective when several chronic conditions can be treated in one setting. This is important for older patients or patients with other conditions or who are prescribed multiple medications. Little is known about the primary health care needs of patients with OUD and how this differs by age or treatment retention. The purpose of this study is to characterize the primary care conditions and prescription medications among patients treated with office-based opioid treatment (OBOT) with buprenorphine.

METHODS: Our retrospective study was conducted at an integrated outpatient primary care clinic within the APT Foundation, a non-profit opioid treatment program in CT. We included all patients enrolled in OBOT in the electronic health record as of an index date of 4/29/2019. Patients were excluded if they were not prescribed buprenorphine or if they did not have urine toxicology testing for the three months prior. Variables extracted included demographics, chronic pain management and other primary care practitioner status. Urine testing was reviewed for presence of buprenorphine or substance use. Descriptive statistics were calculated using R and Microsoft Excel. P- values were calculated using an independent 2-group Mann-Whitney U Test and Fischer's Exact Test. We stratified results by older vs. younger patients (defined as <50 vs.> or = to 50) and by patients retained vs. not retained in OBOT for >or = 1 year.

RESULTS: 355 patients were included. 33.7% of patients were > or =50 years old, 71.5% male, 89% White/Caucasian, and 7.3% Latino/Hispanic. 42.0% of patients had another primary care practitioner. Comorbid conditions included chronic pain (24.5%), psychiatric diagnosis (38.5%), and other SUDs (54.8%). 3.65% had chronic viral hepatitis and zero had HIV. Patients reported taking a median of 4 medications (IQR: 2-6), and 59.6% used 1 or more psychoactive medications (PAM). Common classes of medications were cardiovascular (36.62%) and non-opioid pain (22.54%). Older patients used more medications than younger patients (Median: 5 vs Median: 3, p-value 1.3×10^{-7}). Older patients, patients with chronic pain, and patients prescribed PAMs were not more likely than their counterparts to have a urine toxicology test positive for opioids (OR 0.93, OR 0.88, OR 1.3, p-value= 0.83, p-value= 0.81, p-value=0.68 respectively). Patients retained in treatment <1 year were more likely than those retained > or = 1 year to have a urine toxicology test positive for opioids (OR 2.44, p-value= 0.03).

CONCLUSIONS: Our findings underscore the importance of incorporating OBOT into integrated primary care settings. Primary care practitioners should be encouraged to offer OBOT as they are well equipped to treat the most commonly occurring conditions among patients.

PRIMARY CARE PHYSICIAN EXPERIENCE WITH SINGLE-LEAD ECG SCREENING FOR UNDIAGNOSED AF: RESULTS FROM THE VITAL-AF STUDY

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BACKGROUND: Atrial fibrillation (AF) is a common arrhythmia associated with a 5-fold increased risk of stroke. Since AF may be asymptomatic and related strokes may be preventable with anticoagulation, we conducted a pragmatic cluster-randomized trial (VITAL-AF, ClinicalTrials.gov NCT03515057) in a large primary care network in the United States to assess the efficacy of population-based screening for AF in older patients using a 30-second handheld single-lead ECG as part of routine care. We examined primary care provider (PCP) experience with screening at study completion.

METHODS: We randomized practices to AF screening (n=8) or to usual care (n=8). All patients ≥ 65 years attending an outpatient

visit with a physician or nurse practitioner were eligible. Intervention sites embedded screening by medical assistants as part of routine vital signs assessment at each clinic encounter. Control practices continued with usual care that may have included rhythm assessment as determined by each PCP. Following the 1-year screening period, intervention PCPs (88 physicians and 16 nurse practitioners) were sent a survey that asked about AF screening practice prior to the study, experience with screening during the study, and preferences for future practice.

RESULTS: During the 1-year screening period, 17,645 unique subjects had 45,406 encounters in an intervention practice. Overall, 16,105 (91%) patients completed at least one single-lead ECG tracing and screening was completed at 35,080 (77%) encounters. The PCP survey response rate was 81% (84/104) among intervention PCPs. PCPs rated integrating AF screening into clinical practice favorably (81% easy/very easy to integrate). 71% of PCPs reported ordering more ECGs, and 34% reported ordering more Holter/patch monitors during the study period. All but 1 PCP reported being informed about one of their patients screening as "Possible AF," and 62% indicated AF screening led to a new true diagnosis of AF for at least one patient (27% 1 patient, 26% 2 patients, 8% ≥3 or more patients). However, PCPs estimated that the false positive rate of screening was high (57% estimated that <30% of "Possible AF" screening results were true positives). Most PCPs stated that they performed pulse palpation to screen for AF prior to the study. When asked about future use PCPs said they favored screening (86%), either annually (36%) or at each visit (45%), preferentially with a single lead ECG (73%). PCP reported occurrence of true positive cases or estimated false positive rates did not affect preference for single lead ECG screening.

CONCLUSIONS: Screening and survey data suggest that adding automated AF rhythm assessment as a new vital sign with a single-lead ECG among older adults at primary care visits is feasible and accepted by patients and PCPs. PCPs viewed single-lead ECG screening for AF favorably despite a low true positive rate and the need for additional ECGs or ambulatory rhythm monitoring that were prompted by the screening.

PRIMARY CARE PHYSICIANS FAIL TO RECOGNIZE DEPRESSIVE SYMPTOMS AMONG MOST CHINESE AND LATINO PATIENTS DURING ROUTINE PRIMARY CARE VISITS

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BACKGROUND: Poor recognition of depressive symptoms may contribute to racial and ethnic minorities disparities in depression treatment. Primary care physicians fail to recognize depressive symptoms in half their non-Latino white patients, yet little is known about rates of under-recognition in Chinese and Latino patients. We sought to determine whether physicians recognize and treat Chinese and Latino patients with depressive symptoms during routine primary care visits.

METHODS: This cross-sectional study included Chinese and Latino primary care patients with a preferred language of English, Cantonese, Mandarin or Spanish and no documented prior diagnosis of depression in a large academic practice in San Francisco, California prior to implementation of universal screening. We recruited and interviewed participants within 1 week of a primary care visit. The study questionnaire included the Patient Health Questionaire-2 (PHQ-2) to assess depressive symptoms in the prior 2 weeks. For patients with current depressive symptoms (PHQ-2 score ≥3), we conducted chart reviews to determine if the physician had documented discussion of symptoms, initiated an antidepressant, or referred the patient for therapy. We further determined whether the patient had a follow-up visit within 30 days that addressed depression.

RESULTS: Among 1171 Chinese and Latino participants, 118 patients (mean age 68) had current depressive symptoms. In total, only 11 unique participants (9% of those with PHQ-2 score ≥3) had their depressive symptoms recognized and addressed. Physicians initiated antidepressants for four participants (2.5%) and referred 6 participants (5.0%) for services. Eight participants (6.7%) received an antidepressant and/or a referral. Twenty-three participants (19%) had follow-up appointments within 30 days; of those a further three participants (2.5%) had a discussion with their physician about their depressive symptoms and all were referred to therapy. We found no significant differences in recognition and treatment initiation by race/ethnicity (Chinese vs Latino) or English proficiency, though the number of patients with recognized symptoms was small.

CONCLUSIONS: Physicians recognized and addressed depressive symptoms in only a small proportion of Chinese and Latino patients with no history of depression during routine visits in a large academic primary care practice. Low rates of physician recognition of depressive symptoms in Chinese and Latino patients likely contribute to significant disparities in depression treatment for these populations. Universal depression screening followed by targeted follow-up may help address unmet mental health needs in these patients.

PRIMARY CARE PHYSICIANS THAT PRACTICE IN A SINGLE CARE SETTING: A COHORT STUDY OF US PHYSICIANS TREATING OLDER ADULTS 2014-2017

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BACKGROUND: As US health care shifts to delivery models that place emphasis on improving population health and controlling costs, primary care has become a target of investment. By directing resources toward primary care, these models recognize the important role that primary care physicians play in care coordination and continuity between settings. However, some primary care physicians are increasingly limiting their scope of practice to a single setting defined by the type of facility where they practice (e.g., hospital, skilled nursing facility, office). We examined recent trends in the prevalence of primary care physicians treating older adults who focus their practice on a single setting and of physician groups that contain different types of setting-based primary care 'specialists'.

METHODS: We used 2014-2017 billing data for Medicare fee-for-service beneficiaries to measure the proportion of all patient visits by primary care physicians (family medicine, internal medicine, geriatrics, and general practice) in the physician office, inpatient hospital, outpatient hospital department, and other settings (e.g., skilled nursing facility, assisted living facility, etc). Outpatient hospital department visits included visits to patients in observation units and ambulatory hospital-based clinics. A 'setting-based specialist' was defined as a physician who had at least 90% of all their professional services performed in a single setting. To describe regional trends in primary care physician setting-based specialization during the study period, we calculated the proportion of all physicians who focused their practice in a single setting. We also measured the proportion of primary care physician groups that included different types of setting-based specialists.

RESULTS: 141,404 primary care physicians were included in the analyses. From 2014 to 2017, the proportion of primary care physicians who narrowed their practice to a single setting increased by 6.7% (from 62.8% to 67.0%, $p_{for\ trend}<0.001$). The greatest relative increase occurred among physicians who practiced in the hospital outpatient department (15.7% increase from 5.1% to 5.9%; $p_{for\ trend}<0.001$). The proportion of primary care physicians who practiced in an office not affiliated with a hospital increased by 5.1% (from 43.0% to 45.2%; $p_{for\ trend}<0.001$), in a hospital by 8.5% (from 9.4% to 10.2%; $p_{for\ trend}<0.001$), and in other settings by 7.5% (from 5.3% to 5.7%; $p_{for\ trend}<0.001$). This trend was not accompanied by growth among primary care physician groups that include different types of setting-based specialists (4.6% of physician groups included more than one type of setting-based specialist).

CONCLUSIONS: Two-thirds of US primary care physicians treating older adults focus their practice on a single type of health care setting or facility. These findings raise concerns regarding increasing fragmentation of primary care delivery across different health care settings.

PRIMARY CARE PHYSICIANS' PERSPECTIVES ON LOW-VALUE PRESCRIBING IN OLDER ADULTS

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BACKGROUND: Health systems are increasingly implementing interventions to reduce older patients' use of low-value medications. However, prescribers' perspectives regarding medication value and views of such interventions are poorly understood. Our objective was to identify the characteristics that affect the perceived value of a medication and those factors that incentivize or disincentivize low-value prescribing from the perspective of primary care physicians.

METHODS: We conducted 16 semi-structured interviews of primary care physicians from academic and community settings. We elicited their views on definitions and examples of low-value prescribing in older adults, the factors that incentivize or disincentivize them to engage in such prescribing, and the characteristics of interventions that make them more or less likely to deprescribe low-value medications. Interviews were audio-recorded and transcribed verbatim. We developed a codebook that 2 members of the research team applied to each transcript. To identify salient themes, we conducted a thematic analysis of 5 transcripts, with analyses of the remaining transcripts 4We identified 3 key preliminary themes. First, physicians viewed low-value prescribing among older adults as prevalent and described factors such as patients' limited life expectancy and the increased risk of side effects like falls and bleeding as reducing or eliminating the value of certain medications. Second, physicians consistently described the concept of "prescriber inertia", defined as the continuation of medications that were once appropriate but are no longer safe or effective, as the driving force behind low- value prescribing. Reasons for this inertia included insufficient time, the cognitive burden of performing medication reconciliation, and the subtle nature of shifting patient characteristics over time. As one participant described, "patients accumulate these medicines and it's just easier to continue than it is to think critically and have the discussion about discontinuing." Third, providers believed that interventions to address low-value prescribing must address the cognitive load and time pressures that drive "prescriber inertia." Examples included sending targeted messages alerting providers to potentially low-value medications and shifting responsibility for medication reconciliation to ancillary staff. Conversely, initiatives that would increase time pressure or cognitive load, such as increased documentation, were less acceptable.

CONCLUSIONS: Our preliminary findings demonstrate that low-value prescribing is a well-recognized phenomenon among primary care physicians, and that interventions to facilitate the deprescribing of low- value medications must address the time pressures and cognitive burden that result in prescriber inertia. Our findings will allow health systems to design interventions in ways that are acceptable to physicians by accounting for their views and values regarding low-value prescribing in older adults.

PRIMARY CARE PRACTITIONER AWARENESS OF AND REFERRAL TO NATIONAL DIABETES PREVENTION PROGRAMS: A LOCAL ASSESSMENT

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BACKGROUND: Thirty-four percent of US adults have prediabetes.[1] The burden of disease is even higher in California at forty-six percent. Those with prediabetes have a forty percent risk of developing diabetes within five years. The Diabetes Prevention Program (DPP) is an evidence-based, CDC-accredited program focusing on lifestyle change to prevent diabetes in patients with prediabetes. However, few providers are aware of and refer to the DPP. According to a national survey of one thousand two hundred thirty-six primary care providers, thirty-eight percent were aware of the DPP and only twenty-three percent referred prediabetic patients to

the DPP.[2] Concerningly, a larger deficit exists as only four percent of prediabetic patients report being referred to DPP.[3]

METHODS: To assess knowledge of and referral to DPPs, an anonymous questionnaire including a subset of questions from the 2016 DocStyles web-based survey was sent to all one hundred forty providers (attending physicians, resident physicians, and nurse practitioners) within the Division of General Internal Medicine at UCSF.[2] The five questions measured providers self-reported prediabetes screening practices, awareness of DPP, referral patterns, as well as EMR panel management habits for prediabetic patients.

RESULTS: Of the 140 providers, we had 73 complete responses (52%). 42 (58%) were attending physicians, 26 (35%) were resident physicians, and 5 (7%) were nurse practitioners. 33% of respondents had heard of the National DPP. 8% had referred to an in-person or online CDC-recognized DPP, and those responses were all from attending physicians. 10% used the EMR panel management tool to identify pre-diabetic patients in their panels.

CONCLUSIONS: Rates of provider awareness of and referral to DPP at our institution are much lower than national averages. Furthermore, clinicians are not using built-in EMR panel management tools to help identify pre-diabetic patients which could help increase and streamline referral practices. Overall, addressing these gaps in practice through provider education interventions as well as creating a partnership between our institution and the local YMCA-led DPPs has the potential to increase patient referrals and improve health outcomes.

References:

1. Prevalence of prediabetes. https://www.cdc.gov/diabetes/data/statistics-report/prevalence.html. Feb 19, 2018.

2. Nhim K, Khan T, Gruss SM, et al. Primary care providers' prediabetes screening, testing and referral behaviors. Am Jour of Preventive Medicine. 2018 Aug;55(2):e39-e47.

3. Venkataramani M, Pollack E, et al. Prevalence and correlates of diabetes prevention program referral and participation. Am Jour of Preventive Medicine 2019 Mar; 56(3): 452-457.

PRIMARY CARE PROVIDER INVOLVEMENT DURING HOSPITALIZATION: PERSPECTIVES OF FREQUENTLY HOSPITALIZED PATIENTS IN THE COMPREHENSIVE CARE PROGRAM VERSUS USUAL CARE

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BACKGROUND: As hospitalized patients are increasingly cared for by hospitalist physicians with whom they have no prior relationship, discontinuities in care and communication may arise. These problems may be magnified for frequently hospitalized patients with complex medical and social conditions. Involvement of primary care physicians (PCPs) could mitigate these discontinuities; however, patients' experiences and preferences related to PCP involvement in the hospital setting are not well studied. The goal of this study was to explore patient perspectives within the context of the Comprehensive Care Program (CCP) study, a randomized controlled trial which assesses the effects of an interdisciplinary care team led by a physician who serves as both the outpatient PCP and inpatient attending as compared to usual care (ambulatory care from a PCP, hospital care from hospitalists) for patients at high risk of hospitalization.

METHODS: This is a qualitative study embedded within a randomized controlled trial. In-depth interviews were conducted with a purposive sample of 12 CCP and 12 usual care patients to better understand patients' experiences and preferences surrounding the role of their PCP during hospitalization. Data were analyzed by the research team using general thematic analysis. Each transcript was coded by two researchers; themes and representative quotes were agreed upon through discussion in face-to-face meetings.

RESULTS: Four primary themes emerged: 1. PCP continuity (CCP patients described longitudinal relationships with their PCP which improved over time. Usual care patients reported frequent turnover of PCP); 2. PCP involvement during hospitalization (CCP and usual care patients valued PCP involvement during hospitalization. While most usual care patients did not interact with their PCP during hospitalization, CCP patients described active involvement of their PCP in decision-making: *"You ask about your discharge plans, you talk to your doctor about what I've gotta do to get better."*); 3. Communication between PCP and hospital providers (CCP patients emphasized PCP's role aligning the knowledge and goals of the providers: *"She's my main doctor, so she makes sure everybody gets the email when I'm in the hospital."* Most usual care patients were not aware of communication between PCP and hospital providers: *"I don't know for sure that they're calling him…or if he's getting the reports or any of that."*); and 4. Shared trust (CCP patients valued PCP's clinical judgement, but also felt their PCP empowered them to make decisions: *"We have this really good relationship, and she knows that I am an informed patient…so she trusts me the same way I trust her."* No mention of shared trust with PCP among control group patients).

CONCLUSIONS: Patients at high risk of hospitalization value PCP involvement during hospitalization. Active involvement of PCPs during hospitalization may increase longitudinal PCP continuity, and improve shared decision making and care coordination.

PRIMARY CARE PROVIDERS' AWARENESS AND ATTITUDES TOWARD MASKED HYPERTENSION: A QUALITATIVE STUDY

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BACKGROUND: Masked hypertension (MHT) is blood pressure (BP) phenotype defined as non-elevated BP in the office setting but elevated BP out of the office setting. MHT confers a similar level of cardiovascular risk as sustained hypertension. MHT is also common, present in approximately 12% of US adults with non-elevated office BP. Hypertension guidelines now recommend that patients with non-elevated office BP undergo screening for MHT through 24-hour ambulatory BP monitoring (ABPM) or home BP monitoring (HBPM), with lifestyle and/or medication treatment for patients who screen positive. Yet, few primary care providers (PCPs) are screening for or treating MHT, and little is known about the attitudes of PCPs toward MHT.

METHODS: Three focus groups were conducted with 30 PCPs affiliated with 3 academic medical centers in New York City. Focus groups explored awareness of MHT and attitudes toward MHT screening and treatment. Two researchers (R.B., I.K.) independently analyzed transcripts using a conventional content analysis to identify attitudes that represented barriers or facilitators to implementing MHT guidelines.

RESULTS: There was wide variation in familiarity with MHT, and only 2 PCPs had ever diagnosed or treated MHT. Common barriers to screening for MHT included lack of knowledge about the prevalence and impact of MHT, distrust of the accuracy of HBPM to detect MHT, inaccessibility of ABPM, discomfort with labeling patients with non-elevated office BP as hypertensive, perception of inadequate evidence in support of screening and treatment (i.e., no randomized screening or treatment trials, no cost-effectiveness studies), and reluctance toward adding to the long list of screening guidelines. While few had heard of MHT prior to the focus group, PCPs were receptive to MHT screening after being educated about its prevalence and impact. Other screening facilitators included opportunities for office visits dedicated to MHT screening, nurses and medical assistants trained to help PCPs follow MHT screening protocols, and easily accessible testing for MHT through ABPM. There was broad agreement with guidelines recommending lifestyle changes for treatment of patients with MHT, but PCPs had low confidence patients would comply. While some PCPs agreed with prescribing BP medications for MHT, prominent barriers to medication treatment were concerns that BP medication could induce harm (e.g., falls, side-effects) and the lack of randomized trials testing BP medication in patients with MHT.

2**CONCLUSIONS:** Lack of awareness of prevalence and impact of MHT on cardiovascular health were major barriers to implementation of MHT guidelines. Prior to broad uptake of guidelines by PCPs, randomized clinical trials and cost-effectiveness studies demonstrating the net benefits of screening and treatment may be needed, coupled with greater accessibility of ABPM for MHT screening.

PRIMARY CARE PROVIDERS' PERCEPTIONS ABOUT PARTICIPATING IN LOW-RISK PROSTATE CANCER TREATMENT DECISION MAKING

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BACKGROUND: Primary care provider's (PCP) role in cancer care is expanding and may include supporting patients in their treatment decision making. This is important in low-risk cancers where patients are being managed with active surveillance. Because active surveillance involves management similar to any other chronic disease, it is well-aligned with PCP expertise. However, the degree to which PCPs engage in this role for low-risk prostate cancer is unknown.

METHODS: We surveyed 1000 PCPs randomly sampled from the American Medical Association between July and September 2018 (N=347, response rate 56%). For patients with low-risk prostate cancer, PCPs reported their: 1) confidence to engage in low-risk prostate cancer treatment decision making (based on a 4-item scale, categorized as high vs. low based on median cutoff); and 2) intended participation in active surveillance treatment decision making including reviewing all treatment options, discussing worry, and reviewing risks and benefits (dichotomized into less (not at all/little/some) vs. more (much/a great deal) participation). We examined associations between PCP confidence and physician and practice characteristics. We then examined associations between PCP confidence and intended participation for each of the four aspects of active surveillance using multivariable logistic regression.

RESULTS: Half of the PCPs (50.3%) reported high confidence in engaging in low-risk prostate cancer treatment decision making. The odds of high confidence were greater among those in solo practice (vs working with > 1 PCP) (OR 2.18; 95% CI 1.14-4.17) and with higher volume of prostate cancer patients (>15 vs. 6-10 in past year) (OR 2.16; 95% CI 1.02-4.61). PCP intended participation in active surveillance treatment decision making varied: discussing worry (62.4%), reviewing risks (41.8%) and benefits (48.5%), and reviewing all treatment options (34.2%). PCPs who reported high confidence had increased odds of reporting more participation in all aspects of active surveillance treatment decision making: reviewing all treatment options (OR 3.11; 95% CI 1.82-5.32), discussing worry (OR 2.12; 95% CI 1.28-3.51), and reviewing the risks (OR 3.20; 95% CI 1.91-5.36) and benefits of active surveillance (OR 3.13; 95% CI 1.89-5.16).

CONCLUSIONS: The majority of PCPs reported having high confidence in engaging in low-risk prostate cancer treatment decision making and were also more likely to participate in four key aspects of active surveillance treatment decision making. With active surveillance being considered as a management strategy for other low-risk cancers (such as breast and thyroid), PCPs may be increasingly engaging in not only cancer treatment decision making, but also in management of their patients on active surveillance. Understanding factors influencing PCP involvement and their ability to provide coordinated care will be instrumental towards defining the optimal team-based care delivery model for low-risk cancers.

PROBLEMS WITH THE CMS MORTALITY MEASURES AND VALUE-BASED PURCHASING

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BACKGROUND: The Center for Medicare and Medicaid Services (CMS) publishes measures of risk- adjusted hospital mortality rates that are meant to and to contribute to Value-Based Payment (VBP) quality ratings used to redistribute up to $2 billion in Medicare payments annually. Despite the well-recognized association of comorbidities and complication codes (CCs) present on admission (POA) with risk of mortality, the CMS mortality rating method does not include POA CC diagnoses for risk adjustment, and only allows CC codes that occurred in the 12 months before the index admission. The VBP mortality measure includes 3 cohorts: Acute Myocardial Infarction (AMI), Heart Failure (HF), and Pneumonia (PN). Our objective was to examine if hospital mortality ratings, which account for 25% of Medicare's VBP ratings, could be improved by allowing POA CC codes to be used for risk adjustment. Addition of POA CC codes could make a hospital's actual to expected mortality ratio more accurate, which in turn could affect its VBP rewards or penalties.

METHODS: We used data for calendar year 2016 from the CMS Fee-for-Service claims file for diagnosis codes and admission dates and used the Medicare Master Beneficiary Summary File to identify all deaths within 30 days of hospital admission. There were 1.032 million admissions from the 3 VBP cohorts, of whom 116,315 died (11.3%). We excluded all transfer-in cases. We created 2 logistic regression models, in which the dependent variable was death within 30 days of admission, and the independent variables were the CC groups designated by CMS. Model 1 was based on the CMS method that only allows CCs recorded in the previous 12 months ("Lagged" Model), while Model 2 used CC codes

recorded as POA and did not include historical CC codes ("POA" model). We compared the number of times a CC diagnosis group was identified for each model for each of the 3 VBP cohorts. Also, for all 3 VBP conditions and both models, we calculated the coefficients for each CC group, which served as a measure of effect size, and calculated C-statistics.

RESULTS: There were dramatic differences between the POA and Lagged models, all of which contributed to increased predictive power for the POA model. The POA model identified many more CCs, ranging from 2 to 12 times as many as in the Lagged model. The estimated effect sizes for the CC groups were almost uniformly larger, ranging from 30% higher to 4 times as high in the POA model. C-statistics were higher for the POA model for all 3 VBP cohorts: 0.74 vs. 0.51 for AMI, 0.63 vs 0.54 for HF, and 0.71 vs 0.52 for PN.

CONCLUSIONS: The use of CC secondary diagnoses codes present on admission could substantially improve the accuracy of the CMS mortality rating component of VBP. Hospitals' reputations and sizeable payment distributions can depend upon publicly reported evaluations such as VBP. While the goal of evaluating hospitals based on their mortality outcomes is important, it is also important to reflect those differences accurately and fairly.

PROJECT CONNECTIONS: A LOW THRESHOLD BUPRENORPHINE MODEL FOR EXPANDING ACCESS TO BUPRENORPHINE TO MARGINALIZED POPULATIONS

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BACKGROUND: The opioid epidemic continues to disproportionately affect marginalized populations and people of color, particularly black men. Buprenorphine is a highly effective treatment for opioid use disorder, however, disparities in access to care remain, with lower rates for African Americans. The *Project Connections (PC)* program is a low-threshold treatment program operated by the Behavioral Health Leadership Institute that provides buprenorphine to the most marginalized and vulnerable populations in Baltimore City. The program also provides case management and peer recovery services to individuals who are unable to access the traditional health care system due to systematic barriers such as lack of insurance or ID and stigma. The population served by the PC program often have complex histories and comorbidities, including recent involvement with the criminal justice system, psychiatric disease and lack ID, insurance and stable housing. The goal of the program is to meet individuals where they are and engage them in low- threshold, high-quality buprenorphine treatment and eventually transition them to ongoing care throughout the community.

METHODS: The Project Connections program includes three sites that are co-located with community partners and Project Connections to Re-Entry (PCARE), a van located directly outside of the Baltimore City jail. Clinical teams at each site initiates buprenorphine and provides linkage to ongoing care. This analysis describes the demographics characteristics and initial follow-up and 30 day retention in treatment for individuals served through the PC program between November 2018 through October 2019.

RESULTS: Between November 2018 and October 2019, 290 patients completed an intake assessment across the PC sites and 242 (83.4%) began treatment with a buprenorphine/naloxone prescription. Those who initiated buprenorphine were primarily male (69.8%), African American (73.1%), had a mean age of 44.4 years (SD = 12.6), and a mean of 21.9 years (SD = 12.9) of opioid use. The majority had previous criminal justice involvement (72.7%), were unemployed (66.9%), and were unstably housed (73.6%). Over half of patients had reported a previous overdose event (52.1%). Of those who were initiated on buprenorphine, 90.9% returned to the treatment sites for a second visit, and 62.8% remained in treatment after 30 days.

CONCLUSIONS: The Project Connections program offers a viable treatment model to provide low- threshold treatment to vulnerable and marginalized populations, by addressing systematic barriers that typically can exacerbate health disparities, including providing access to African Americans and justice- involved individuals who are less likely to access care in traditional treatment models. Further work is needed to scale-up access to low threshold buprenorphine and develop sustainable funding mechanisms for these programs.

PROMOTING ACADEMIC WOMEN THROUGH RECOGNITION: NOMINATIONS ARE ESSENTIAL

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BACKGROUND: The majority of academic award recipients across medical specialties have been men, a phenomenon documented across multiple fields. Award recognition is critical to promotion, funding, and an indication of regional and national status. Therefore, gender disparities in awards may impact work place inequities. We evaluated gender distribution among award recipients at our hospital fater piloting an award nomination intervention to increase female awardees.

METHODS: For this pre/post evaluation we obtained historical lists from our Department of Medicine (DOM) and Biological Sciences Division (BSD) of award recipients and piloted a nomination intervention to identify eligible female nominees. Gender distribution among award recipients was compared pre- intervention and post-intervention years using chi square tests. To account for national trends of decreasing gender disparities, we conducted a sensitivity analysis limiting our pre-intervention period to the same number of years as the post-intervention period.

RESULTS: Historical awardee lists were available from 2006-2016 (DOM) and 2011-2017 (BSD). Pre-intervention, 39% (range=25-58%) and 38% (18-57%) of awardees were women in the DOM and BSD, respectively. The intervention was implemented in 2018 (DOM) and 2017 (BSD). The percent of women awardees significantly increased to 56% (25-50%; p=0.02) and 56% (55-65%; p=0.02), in the DOM and BSD post-intervention, respectively. Results remained significant when restricting to similar pre and post number of years (DOM pre-intervention: 33%, [29-37%], p=0.045) (BSD pre-intervention: 34%, [18-43%], p=0.02) in a sensitivity analysis.

CONCLUSIONS: We found that a simple, easily reproducible, low resource intervention significantly increased the number of deserving women receiving awards within our Department and Division. Because we only increased the number of nominated woman and did not implement any interventions with regard to the decision process, it is possible that the low proportion of women awardees prior to our intervention was due, in part, to qualified women being over looked, perhaps due to implicit bias. It is important to note, however, that implicit bias could still impede deserving women from receiving recognition for other awards, such as those that rely on clinical productivity and/or trainee evaluations. Future work can establish whether interventions can successfully address these factors. Since nomination bias, however, is likely pervasive, other programs, sections, departments, and/or divisions could easily develop low-cost, feasible nominating processes at their institutions.

PROMOTING COLLABORATIVE GOAL SETTING FOR CANCER PREVENTION AMONG PRIMARY CARE PATIENTS: PILOT TESTING A NEW APPLICATION

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BACKGROUND: Evidence suggests up to 80% of the cancer burden is related to modifiable lifestyle behaviors, such as diet, exercise, smoking cessation, and maintaining a healthy weight. Yet we lack primary care interventions that promote cancer prevention behaviors. In this pilot study, we evaluate the feasibility, acceptability, and preliminary effectiveness of a mobile application to engage primary care patients in cancer prevention goal setting, tracking, and progress sharing with known and unknown social ties.

METHODS: For 8 weeks we provided primary care patients (n=41) with a cancer prevention mobile app that allowed them to choose and track cancer prevention goals, as well as share goal progress and encouragements with others. We recruited non-Hispanic black patients, as the application was conceived to help reduce the disproportionate cancer burden in racial and ethnic minority communities. We conducted semi-structured interviews to assess cancer prevention knowledge and behaviors at baseline and after the study. Exit interviews also assessed app usability and acceptability, using the validated System Usability Scale (scored 0 to 100) and open-ended questions. We captured app use data including the frequency of participant weekly check-ins, goal selections, whether participants achieved their goals, and whether participants shared their goal progress with known and/or unknown users.

RESULTS: The mean age of participants was 51 (SD: 12) and 31 (76%) were women. App use data was captured for all participants and 35 (85%) completed the exit interview. On average, participants checked in with the app during 59% of all weekly opportunities (SD: 30%). Thirty-one participants (76%) checked in during at least 4 of the 8 weeks. The mean goal achievement rate was 53% (SD: 29%). Participants selected diet goals most frequently (35%), followed by weight tracking (28%), physical activity (25%), and smoking cessation (13%). Regular users (n=31) on average set 2.1 goals during the 8 weeks. Thirty-four (82%) opted to share their goal progress with invited social ties and 18 (44%) opted to share progress with all app users. The median SUS score was 90 (IQR 77.5-95), indicating a highly acceptable app. Cancer prevention knowledge, a 0 to 4 score indicating people's understanding of how behaviors can reduce cancer risk, improved (2.35 to 2.65, p=0.17). User feedback illustrated a pattern of the app motivating behavior change, with comments including: "…had to really work on me to stop smoking but I did it;" "it helped me do new things that I would have never done…;" it kept me focused and looking forward to the check in…;" and "I saw I was losing weight… [The app] kind of changed my lifestyle."

CONCLUSIONS: The implementation of a mobile cancer prevention goal setting application in a primary care setting was feasible with high uptake and usability ratings. Cancer prevention knowledge increased and qualitative user feedback revealed an influence on healthy behaviors.

PROVIDER PERCEPTIONS OF MEDICATION FOR OPIOID USE DISORDER FROM QUALITATIVE INTERVIEWS IN ALLEGHENY COUNTY, PENNSYLVANIA

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BACKGROUND: Medication for Opioid Use Disorder (MOUD) has been shown to be safe, cost-effective, and lower the risk of opioid overdose. However, access to and use of MOUD, as well as expansion of MOUD prescribers, in Allegheny County, PA, has been limited. Our objective was to explore attitudes, opinions, and beliefs of MOUD among healthcare and social service providers.

METHODS: As part of an ethnographic study focusing on neighborhoods of Allegheny County with the highest opioid overdose death rates, we conducted semi-structured qualitative interviews with key stakeholders living or working in these communities. For this analysis, we focused on a subset of interviews with physicians, nurses, care managers, peer-support specialists, and other professionals who provide treatment for persons with opioid use disorders. We collaboratively developed a coding scheme using a grounded theory approach and subsequently validated results via data triangulation and investigator triangulation.

RESULTS: Thirty-eight provider interviews were included in our analysis. We identified the following major themes related to MOUD from the perspectives of our provider participants. Among concerns and challenges, participants noted: 1) lack of uniformity and quality control of MOUD, especially with respect to buprenorphine/naloxone treatment; 2) referrals to MOUD centers or providers is a "word of mouth insider system"; 3) lack of a centralized source for the public to navigate and assess county MOUD services; 4) challenges optimizing timing of MOUD service access with patient motivation for treatment, and 5) stigma as a barrier to MOUD care. Providers also described different opinions about the centrality and duration of MOUD; some providers believed that MOUD was a "tool" for achieving complete abstinence from opioid- containing substances, while others viewed it as a long-term treatment for a chronic medical condition.

CONCLUSIONS: Quality control of MOUD delivery and referrals to care is a major concern for healthcare and social service providers. The dissonance among providers regarding the centrality and duration of MOUD, as well as community stigma surrounding persons who use MOUD, may also contribute to the lack of uniformity among MOUD centers within Allegheny County. Understanding the structural barriers and community biases regarding MOUD will better inform the design of referral systems and delivery of MOUD in clinical practice.

PROVIDER PERCEPTIONS OF SOCIAL COMPLEXITY AMONG VA HOME-BASED PRIMARY CARE PATIENTS

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BACKGROUND: The U.S. Department of Veterans Affairs (VA) Home-Based Primary Care (HBPC) program is designed to provide Veterans with complex, chronic disease comprehensive primary care services in their homes using an interdisciplinary model. The objective of this research is to describe

HBPC providers' knowledge of social complexity among HBPC patients and how this knowledge impacts care delivery.

METHODS: This study utilizes a qualitative study design. The data-set includes 14 semi-structured interviews with HBPC providers representing multiple disciplines (nursing, medicine, physical therapy, pharmacy, psychology, and social work) and seven field observations of HBPC team meetings. Interview domains are: patient selection and care delivery patterns, core functions of HBPC, and barriers and facilitators to HBPC performance. All data have been coded and analyzed using a content-driven approach

RESULTS: Four thematic categories are identified. First, HBPC patients have dynamic overlapping layers of medical and social complexity that compromises their ability to utilize clinic-based care and additionally, are vulnerable and socially isolated. Second, HBPC providers having "eyes in the home" yields essential information that cannot be obtained in outpatient clinic visits. Third, HBPC fills in instrumental care gaps, many of which are not medical and are typically performed by families and caregivers in other contexts. Fourth, addressing social complexity requires flexibility in care design which the HBPC model can provide. Potential limitations to the current work include limited generalizability because data were collected from one HBPC site in the VA

CONCLUSIONS: Medical and social complexities overlap in unique ways among HBPC patients and HBPC, as a care model, functions as a proxy for social support for vulnerable, home-bound and nearly home-bound patients. The flexible nature of the HBPC program supports the ability of providers to tailor care and address needs beyond traditional scope of practice.

PROVIDING HIV PRE-EXPOSURE PROPHYLAXIS TO PATIENTS WITHIN AN OPIOID TREATMENT PROGRAM: A QUALITATIVE STUDY

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BACKGROUND: Although the US incidence of HIV is declining, infection rates remain high in certain risk groups, including people who inject drugs (PWIDs). Despite guidelines recommending use of HIV pre-exposure prophylaxis (PrEP) for HIV prevention among PWIDs, it remains underutilized. Opioid treatment programs may be an ideal setting to reach PWIDs for PrEP as individuals may not access routine primary prevention services elsewhere. The objective of this study was to qualitatively explore provider knowledge, attitudes, and practices regarding PrEP use for PWIDs among outpatient medication for opioid use disorder (MOUD) treatment providers in Pittsburgh, PA.

METHODS: We conducted semi-structured qualitative interviews with MOUD treatment providers in Pittsburgh, PA in the fall of 2019. The interview script was structured based on an implementation science framework and covered providers' knowledge of PrEP and barriers/facilitators to PrEP use within their practice. We inductively developed a codebook based on the content of the interviews, coded the interviews, and performed a thematic analysis. Preliminary themes were identified by the primary investigator and shared with co-investigators as a form of investigator triangulation.

RESULTS: A total of 13 MOUD providers (6 internal medicine, 2 family medicine, 2 psychiatry, 1 palliative care, 1 obstetric/gynecology, 1 nurse practitioner) from 5 MOUD practices in Pittsburgh, PA were included in the analysis. The majority of participants (n=11) prescribed buprenorphine while 2 prescribed both buprenorphine and methadone. All participants reported that their patient population was at high risk for HIV acquisition and all included harm reduction protocols (HIV screening, naloxone distribution, access to clean needles) within their practice. Few had considered prescribing PrEP within their MOUD practice, and only 2 individuals had prescribed PrEP for a patient receiving MOUD. Barriers to PrEP use included provider lack of knowledge of PrEP indications and guidelines, discomfort in discussing PrEP with this population (i.e. discussion of PrEP might undermine the recovery process), concern for patient adherence to once daily dosing, competing priorities (i.e. greater emphasis on hepatitis C screening and treatment) and lack of time and support to implement a PrEP program. Participants suggested facilitators to PrEP use would include integration of reminders into the electronic medical record, standardization of clinic protocols, and different formulations of PrEP (i.e. a long-acting injection would be preferable).

CONCLUSIONS: MOUD providers recognize the increased risk of HIV among their patient population, but lack knowledge and strategies for implementing PrEP within their practice. Interventions that increase MOUD provider knowledge of PrEP and strategies to easily implement PrEP use within a MOUD treatment program are needed to improve PrEP uptake and decrease risk of HIV acquisition among PWIDs.

PSYCHOMETRIC EVALUATION OF MULTI-ITEM SCALES ASSESSING BARRIERS TO CARE AND UNMET SOCIAL NEEDS AMONG HIGH-NEED HIGH-COST MEDICAID BENEFICIARIES

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BACKGROUND: High-need high-cost (HNHC) patients in Medicaid likely experience significant barriers to care and unmet social needs which may drive excess utilization. Survey instruments that are psychometrically sound are needed to assess these constructs. We used a multi-trait scaling analysis to evaluate barriers to care and unmet social need scales. The screening tool analyzed was used by a major health insurer to guide a community health worker (CHW) led intervention in a national program to improve the care of HNHC patients receiving Medicaid.

METHODS: HNHC patients were defined as those in the top 5% of spending by administrative claims. Beneficiaries were administered a health risk assessment survey at the time of enrollment into the CHW intervention. After completing the survey, patients were assigned a CHW to coordinate unmet medical, behavioral, and social needs. We grouped questions into two constructs: barriers to care (7 items) or unmet social needs (4 items). Item convergence within scales were summarized using coefficient alpha. Item discrimination across scales was assessed by comparing the correlation of each item with the scale it is hypothesized to represent against the other scale.

RESULTS: A total of 50,368 HNHC patients were screened, among which 43,344 had complete data on all 11 questions considered in the multi-trait scaling analysis. Patients screened had a mean (+/-SD) age of 51.5yrs (+/- 12.8), were more likely to be female (58%), and varied by race race/ethnicity (48% White, 21% Black, 7% Hispanic, 19% missing). The median within-scale correlation was 0.32 for barriers to care and 0.37 for unmet social needs (Table 1). Coefficient alphas were 0.52 for barriers to care and 0.62 for social needs. The two scales were significantly positively correlated (0.23, $p < 0.0001$).

CONCLUSIONS: The internal consistency reliabilities of the scales were low and item discrimination across scales was moderate. This

psychometric evaluation of the barriers to care and unmet social needs scales indicates a need for improvement in these survey measures. This represents an area of potential improvement in social need screening.

PUBLIC HEALTH CARE SYSTEMS PARTICIPATING IN CALIFORNIA'S GLOBAL PAYMENT PROGRAM ADOPTED DIVERSE STRATEGIES TO PROVIDE CARE TO THE REMAINING UNINSURED

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BACKGROUND: California's county-based Public Health Care Systems (PHCSs) implemented the Global Payment Program (GPP) to provide more cost-effective and higher-value care to California's uninsured. GPP is structured with strong financial incentives to shift the focus of care for the uninsured toward primary and preventive services and expand service-use related to prevention, mental health, patient education, and non- traditional services (e.g., nurse advice-lines).

METHODS: We surveyed GPP-implementation teams at the 12 participating PHCSs in February 2018 and February 2019 about infrastructure investments and implementation strategies to achieve goals across six domains of care transformation: data collection and tracking, coordination of care, access, staffing, team- based care, and the delivery system. Survey items were identified through review of documents describing health system changes relevant to GPP and other safety net initiatives.

RESULTS: The six domains aggregate 49 individually assessed strategies with generally high reliability: Cronbach's alpha was >0.90 for four domains; 0.88 for data collection/tracking, and 0.78 for the delivery system. Each PHCS adopted a combination of the 49 strategies spanning all domains. Across the 12 PHCSs, the mean number of strategies adopted within domains ranged from 4 to 10. Across the two years, the total number of strategies used ranged from 57 to 98. The two most frequently used domains were improving coordination of care (88% of strategies in 2018; 95% in 2019), and improving data collection and tracking (88% and 91%, respectively). The two domains found to be most successful in achieving GPP goals were: (1) improving team-based care (including new positions or roles and delivery of more non-traditional services and (2) collecting and tracking data.

CONCLUSIONS: Although GPP provides flexible funding streams to PHCSs to transform practice, it leaves the mechanism of practice change to each health care system to decide how to provide better care for the remaining uninsured. PHCSs reported using a wide range of strategies across the six domains to improve care for their remaining uninsured. The large variability of specific strategies implemented by PHCSs within the given domains suggests that PHCSs are considering their unique contexts, such as baseline capacities, local resources, costs and benefits associated with strategy implementation, and patient needs as they strive to achieve GPP goals. PHCS-reported adopting multiple, diverse strategies for improving infrastructure to support cost-effective and higher-value care to California's remaining uninsured. GPP's payment policies that provide flexibility in how resources can be used, allowed PHCSs to pursue both statewide goals and local needs/priorities. These findings support the notion that transformation of care delivery and practice may entail more than a singular focus area of improvement.

PUBLIC HEALTH INSURANCE, GESTATIONAL DIABETES, AND THE RISK OF TYPE 2 DIABETES IN PAROUS WOMEN

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BACKGROUND: A history of gestational diabetes (GDM) increases the risk of type 2 diabetes (T2D). Prior studies have shown that public health insurance is associated with reduced postpartum diabetes screening in women with GDM. We assessed the relationship between GDM and T2D in parous women with different types of health insurance. Our study was conducted in Massachusetts, where near universal health care coverage was implemented in 2006.

METHODS: We conducted a retrospective cohort study in 17,154 women who delivered infants at an academic medical center between 1998 and 2016. Women were free of T2D during the index pregnancy (the last pregnancy in the dataset) and for at least 1 year postpartum. We included women who were followed for >1 year after delivery in any affiliated primary care practice. Pregnancies with GDM (Carpenter-Coustan criteria) were identified using laboratory data. T2D diagnosis at least 1 year after delivery was ascertained with a validated algorithm using laboratory and administrative data (sensitivity 0.99, specificity 0.93). We excluded a small number of women with limited (N=797, 4.3%) or no insurance (N=494, 2.9%) from subsequent analysis. We used Cox-proportional hazard models to evaluate the association between insurance type at the time of pregnancy and incident T2D. We adjusted for GDM, age, race, body mass index, language, marital status, parity, and education. Women were censored at their last primary care visit. We tested for effect modification of the association between GDM and T2D by insurance type, using a GDM-insurance interaction term and insurance type-stratified models.

RESULTS: Of 15,923 included women, 32% had public insurance and 68% had private insurance, each with a mean of 7.8 and 8.1 years of primary care follow up since delivery, respectively. Women with public insurance were more likely to have GDM in the index pregnancy than those with private insurance (6.4% vs 4.0%, P<0.001). In follow up, 383 women developed T2D. Both public insurance and GDM were independently associated with increased risk of T2D (Public Insurance: HR 1.60 95% CI 1.25-2.06, GDM HR 8.85 95% CI 7.05-11.12) in adjusted models. There was a significant interaction between insurance type and GDM on the risk of T2D (P-interaction= 0.02). GDM appeared to have less effect on T2D risk among women with public insurance (Public: HR 6.98 95% CI 5.07-9.63, Private: HR 11.40 95% CI 8.19- 15.87). In a post-2006 sensitivity analysis, both public insurance and GDM remained independently associated with T2D diagnosis (Public Insurance HR 1.91 95% CI 1.26-2.89, GDM HR 11.45 95% CI 8.44-16.29).

CONCLUSIONS: In parous women, having public health insurance is associated with an increased risk of T2D, independent of GDM history. Differences in the effect of GDM on T2D risk in women with different insurance types may be due to disparate screening practices.

QUALITATIVE STUDY ON HEALTHCARE PROVIDERS PERSPECTIVES ON PERSONALIZED TRIALS AMONG MINORITY PATIENTS: A PILOT STUDY

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BACKGROUND: Personalized (N-of-1) trials, one-person studies conducted to determine the best treatment for that individual, are increasingly used to inform the treatment decisions for providers and patients in primary care. Patients from racial and ethnic minority backgrounds have historically been underrepresented in research trials and they face unique challenges in the healthcare system such as mistrust. Understanding the viewpoints of minority patients and their providers regarding participation in N-of-1 trials is imperative as we design and implement these studies in clinical practice.

METHODS: We conducted 3 focus groups of health care providers in the Division of General Internal Medicine at a large academic medical center in the northeast. Providers included multidisciplinary team members: physicians, pharmacists, nurses and a clinical psychologist. They were asked questions about how they think minority patients would respond to personalized trials in the following domains: priority conditions for this population, benefits, barriers, and strategies for improved communication. Transcripts were audio recorded, professionally transcribed and manually analyzed for major themes. We used inductive analysis to identify themes across the three focus groups.

RESULTS: We uncovered the following themes regarding racial and ethnic minority patient views on personalized trials. Chronic conditions such as type 2 diabetes mellitus, hypertension, hyperlipidemia and symptoms of pain and GI upset would be priority to study. Benefits include patients feeling more empowered by having a choice in the final decision and the tailoring of treatment. Barriers for participating include mistrust, language (for non-English speakers) and lengthy travel outside of the United States. Other considerations for racial and ethnic minority participants are inclusion of family/friends and/or caregivers in the trial, desire for non-evidence based treatments, and the role of cultural foods in the outcomes and disease being studied. Use of telehealth in data collection was frequently mentioned but also the need to ensure adequate and appropriate familiarity with smart phone technology in collecting data. Mindfulness of patient's level of health literacy and awareness of the research process are other factors to consider. Providing dedicated education about their disease and treatment options were noted as strategies to engage minority patients in participation of personalized trials.

CONCLUSIONS: Personalized trials have the potential to change the way we deliver primary care. It is essential to consider racial and ethnic minority patient perspectives in the design and conduct of these trials as they have the potential to improve disparities by improving patient adherence and trust in the treatment decision process.

QUANTIFYING THE BURDEN OF HOSPITALIZED DAYS IN MEDICARE BENEFICIARIES WITH MULTIMORBIDITY

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BACKGROUND: Multimorbidity impacts several downstream health consequences including physical, cognitive, and social functioning and mortality risk. Multimorbidity is also associated with greater healthcare utilization based on a simple disease count. We aimed to study the association between multimorbidity and healthcare burden using a patient-centered multimorbidity measure that weights conditions by their impact on physical functioning.

METHODS: Health and Retirement Study participants were continuously enrolled in Medicare Parts A and B 1-year before and after the 2012-2013 HRS interview. Medicare claims were used to compute the ICD-coded multimorbidity-weighted index (MWI-ICD) by summing physical functioning-weighted conditions. The outcome was number of hospitalized days per year. Given the excess observations of zero hospital days (78.1%), we used zero-inflated Poisson regression to examine the association between multimorbidity and hospitalized days. First, logit models predicted membership into the zero-coded "no hospitalizations" group. Second, Poisson models predicted hospital days for participants not in the zero-coded group. We converted adjusted regression coefficients to odds ratios to report odds of zero hospitalized days. To compare model fit between MWI-ICD and simple disease count we used the Akaike Information Criterion (AIC). Models were adjusted for age, sex, race/ethnicity, education, household net worth, and living arrangement/marital status.

RESULTS: The final sample of 5,201 participants had mean ± SD age of 77.6 ± 11.6 years, MWI-ICD score of 16.5 ± 11.6, and 1.9 ± 6.0 (range 0-90) hospitalized days. Each 1-point increase in MWI-ICD was associated with a 4.3% decreased odds of zero hospitalized days (OR = 0.96, 95% CI: 0.95-0.96) and 2% increased number of expected hospitalized days (IRR = 1.02, 95% CI: 1.01-1.03) over one year in adjusted models. MWI-ICD had a lower AIC than simple disease count.

CONCLUSIONS: Among Medicare beneficiaries, multimorbidity using a new validated ICD-coded multimorbidity-weighted index is monotonically associated with an increased risk of hospitalized days and greater number of expected hospitalized days. Multimorbidity contributes greatly to patient burden through increased hospitalization and is better captured through an index weighting conditions to physical functioning. MWI-ICD appears to be a valid measure of multimorbidity that embeds physical functioning and thus presents an opportunity to incorporate functional data into administrative claims.

QUANTIFYING THE PROBLEM: PENICILLIN ALLERGY TESTING AT THE SAN FRANCISCO VETERANS AFFAIRS MEDICAL CENTER

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BACKGROUND: Penicillin has been instrumental in combating bacterial infections since its discovery in 1928. Yet, a significant proportion of patients do not receive penicillin, or other β-lactam antibiotics, as first-line therapy due to a documented penicillin allergy. 6-25% of patients in the U.S. are labeled with a penicillin allergy, however, it is estimated that 90% of these patients can receive the drug safely (NEJM, 2019).

The clinical implications of a penicillin allergy are numerous: increased rate of nosocomial and antibiotic resistant infections, increased clinical failure and mortality when treating bacteremia, increased surgical site infections, and increased cost to patients and health systems.

The San Francisco Veterans Affairs Medical Center (SFVAMC) currently lacks a CDC recommended protocol for evaluating and diagnosing false penicillin allergies. Before implementing a testing program, it was important to measure the number of SFVAMC patients with allergies to penicillin and other β-lactam antibiotics who could potentially benefit from antibiotic allergy testing.

METHODS: We performed a retrospective chart review of patients admitted to the SFVAMC inpatient medicine service during September 2019. For each patient with a β-lactam allergy, we noted the name of the drug, the nature of the reaction, the antibiotic history, and whether the allergy was observed by the documenting provider or self-reported by the patient (i.e. historical). We also defined each patient's eligibility for allergy testing (low-risk, medium-risk, or high-risk) using previously published, peer-reviewed protocols for penicillin allergy testing.

RESULTS: In September 2019, 32/207 (15.4%) admitted patients at the SFVAMC had a documented β-lactam allergy. Only 1/32 (3.1%) β-lactam allergies were observed by the documenting provider while the other 31/32 (96.9%) allergies were historical. 29/32 (90.6%) patients were allergic to penicillin or its derivatives, while the remaining 3/32 (9.4%) patients were allergic to a carbapenem, cephalosporin, or clavulanic acid. Notably, 6/29 (20.7%) patients with a penicillin allergy had previously received a penicillin derivative while hospitalized, suggesting these patients had tolerated penicillin in the past, even with a persistently documented allergy.

For patients with penicillin allergies, 18/29 (62.1%) patients had an unknown reaction or rash with no other symptoms (low-risk of anaphylaxis upon allergy testing), 7/29 (24.1%) patients had urticaria, angioedema, dyspnea, and/or gastrointestinal symptoms (medium-risk), and 4/29 (13.8%) patients had anaphylaxis or abnormal liver enzymes (high-risk). Overall, 25/29 (86.2%) patients would be eligible for a testing protocol, with eligibility defined as being low-risk or medium-risk.

CONCLUSIONS: There is sufficient eligibility (86.2% of patients) to justify implementation of a penicillin allergy testing protocol at the SFVAMC, with the goal of de-labeling false penicillin allergies and improving antibiotic stewardship.

RACE AND SEX DIFFERENCES IN SOCIAL DETERMINANTS OF HEALTH AMONG PATIENTS ON CHRONIC OPIOID THERAPY FOR NON-CANCER PAIN

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BACKGROUND: Epidemiologic surveillance of the opioid crisis has demonstrated that race/ethnicity, gender, age, family composition, socioeconomic status, family stress, social isolation are correlates of substance use, misuse and mortality. In addition to safe opioid prescribing practices, providers must assess social determinants of health (SDoH) and tailor case management to mitigate risks.

METHODS: This retrospective observational study examined race and sex differences in SDoH among chronic opioid users within an integrated delivery health system in Louisiana. The cohort included patients on opioid therapy for non-cancer pain seen within the health system between January 2017 and November 2019. Chronic opioid use was defined as have been prescribed an opioid for three of the last four months. Patients are included in the chronic opioid health maintenance registry if they are age 18 and older and do not have cancer or enrolled in hospice or palliative care. Registry patients with the SDoH questionnaire completed within Epic electronic health records and opioid prescriptions documented within 12 months of joining the registry were included in the data analysis. Chi-squared tests for association between questionnaire items by race and sex were conducted.

RESULTS: Among 27,747 registry patients, 1,644 were included in the analysis. Among the 1644, most patients were white, non-Hispanic (76%), female (69%) with an average age of 56.6 years; had depression (41%), anxiety (44%), or substance abuse disorder (19%); 18% were prescribed high-dose opioids with an average morphine equivalent daily dosage >50; and 21% were co-prescribed benzodiazepines. A larger proportion of black patients compared to whites reported major financial strain (9% vs 5%), worry about food insecurity (10% vs 7%), have medical transportation needs (15% vs 8%) and have phone communications relatives/friends more than 3x/week (74% vs 61%, all P<0.001). Among white patients, a higher percentage of females compared to males reported financial strain (7% vs 3%), food insecurity (8% vs 5%), medical transportation needs (9% vs 5%), and frequent phone communications (65% vs 55%, all P<0.02); however, among black patients, there were no statistically significant sex-related differences in SDoH. Compared to all other groups, a higher proportion of black females reported difficulties with financial strain (10%), food insecurity (10%) and transportation needs (16%) but reported more frequent social connection with relatives/friends through phone communication (77%).

CONCLUSIONS: This study confirmed race and sex differences in SDoH among patients on chronic opioid therapy for non-cancer pain within a single healthcare institution. To combat the opioid crisis, it is imperative that health systems collect measures of SDoH to inform risk mitigation and population health management strategies.

RACE AND THE PRECLINICAL MEDICAL CURRICULUM: A CONTENT ANALYSIS

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BACKGROUND: Implicit bias in medicine has recently attracted growing attention. The role that medical education plays in perpetuating or instilling biases is yet to be understood. The objective of this study was twofold. First, to analyze the medical school preclinical curriculum content to characterize the presentations and discussions of race/ethnicity. Second, to develop evidence-based recommendations to correct inaccurate uses of race/ethnicity.

METHODS: We did a content analysis of the course materials within the preclinical medical curriculum at one academic institution to identify and characterize errors in the use of race/ethnicity. We analyzed the lecture and case-based learning materials for key terms relating to race/ethnicity. Uses of race/ethnicity were flagged as errors when content deviated from evidence-based terminology or failed to adequately reflect the current evidence base. If necessary, we reviewed recorded lectures for additional context or to capture lecturer's intention. The team jointly analyzed 20% of the content to develop a codebook. All identified errors were then coded and classified by theme with some errors identified within multiple themes.

RESULTS: There were 115 errors, categorized into 5 themes, that were identified across 20 courses. We describe the following five themes in order of prevalence: 1) The presentation of racial/ethnic disparities in disease prevalence without adequate explanation thus implicating genetic susceptibility as the sole etiology for observed differences (n=74). 2) The use of inaccurate semantics, where imprecise and non-biological terms were used to convey biological information (n=57). 3) Among diseases where there is a strong genetic predisposition based on ancestry, a lack of discussion of antecedent risk factors and exceptions, which can perpetuate harmful diagnostic bias resulting in diagnostic errors (n=15). 4) Pathologizing race by either using dehumanizing language or by unnecessarily drawing attention to an increased disease burden in Black or African-American patients, perpetuating the notion that these groups are inherently predisposed to disease (n=5). 5) Presentation of disputed race-based clinical guidelines, without discussion of the consequences of and evidence-based challenges against them (n=4).

CONCLUSIONS: Our analysis aimed to reveal the extent and nature of the misuse of race in a preclinical medical curriculum and we found that the misuse of race in medical education is common. The analysis of these errors and the themes generated can be applied by medical schools to evaluate and optimize their curricula. Correcting such errors may contribute to combating implicit biases amongst medical students and, as a consequence of that, potentially attenuate health care disparities.

RACIAL/ETHNIC DIFFERENCES IN UNCONTROLLED TYPE 2 DIABETES MELLITUS AMONG PEOPLE WHO TAKE DIABETES MEDICATION

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BACKGROUND: Racial/ethnic minorities have a disproportionately higher burden of diabetes prevalence and have a greater prevalence of uncontrolled diabetes compared to White patients. This may reflect access to care or cultural norms of diet and activity. Less is known about uncontrolled diabetes among patients taking diabetes medication. Our objective was to examine factors associated with uncontrolled type 2 diabetes (T2D) among adults taking at least one diabetes control medication in a national sample.

METHODS: We performed an analysis of the National Health and Nutrition Examination Survey (NHANES) 2011-2016 cohort, limited to non-pregnant persons aged ≥18 years with T2D who reported using at least one prescription diabetes medication.

The outcome of interest was uncontrolled diabetes, defined as a HbA1c ≥ 8%. Race/ethnicity was categorized as non-Hispanic Whites, non-Hispanic Blacks, non-Hispanic Asians, Hispanics, and other. Covariates included age, sex, body mass index, educational attainment, income, birth country, health status, health insurance status, and having a routine place for medical care.

Multivariable logistic regression analysis was performed to estimate the odds of having uncontrolled diabetes despite medication as a function of race/ethnicity, adjusted for socio-demographic characteristics, health status, and health care access (model 1). In a second model, we also adjusted for healthy eating (index) and physical activity (METS). Analyses were conducted using Stata 14.2 and accounted for complex survey design.

RESULTS: There were 1806 people with T2D who reported taking a diabetes medication; 31% had uncontrolled diabetes with a mean HgA1c of 9.6%. Among those with uncontrolled diabetes on medication, the majority were male (55%) with a mean age of 57 years old and mean BMI of 34 kg/m2. Fifty-three percent were White patients, 21% were Hispanic, 17% were Black, 4% were Asian, and 5% were other race/ethnicity.

Having health insurance and self-reporting good/very good/excellent health status were significantly associated with lower odds of uncontrolled diabetes on medication. After adjustment for these factors in model 1, Hispanic patients were more likely to have uncontrolled diabetes than Whites (OR 1.72; 95% CI 1.09, 2.72). After adjustment for healthy eating and physical activity, this association disappeared. Asian patients were less likely to have uncontrolled diabetes than Whites (OR 0.44; 95% CI 0.21, 0.95). There was no association with Black race and uncontrolled diabetes.

CONCLUSIONS: Hispanics taking diabetes medication are more likely to have uncontrolled diabetes, and this appears due to diet and sedentary lifestyle, affirming the need for culturally tailored nutrition and physical activity approaches for diabetes education and treatment.

RACIAL/ETHNIC VARIATIONS IN DISCHARGE DESTINATION AFTER INPATIENT CARE: A RISK-ADJUSTED ANALYSIS OF A LARGE REGIONAL DATASET

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BACKGROUND: While there are many well-documented factors for racial/ethnic variation in discharge destination, less is known about the role hospital processes play. We hypothesize that variation in hospital processes -defined as the patient length of stay (LOS) adjusted for known confounders - explains racial/ethnic variation in discharge destination.

METHODS: We used the 2014 New York State Inpatient Database from the Healthcare Cost and Utilization Project merged with the 2014 American Hospital Association Annual Survey, which contained all inpatient discharges, their demographic, clinical characteristics and some social characteristics. We excluded patients under 18 years, those with LOS of zero, patients who are homeless, those who died in hospital, those admitted to critical access hospitals, and patients from hospitals that lacked sufficient number of minority patients. We used a generalized linear model with gamma link function to create an in-hospital risk-adjusted average LOS (RA-LOS) by modelling the relationship between the interaction of race and discharge destination with LOS, controlling for known confounders such as patient socio-demographic factors, disease characteristics, and time, DRG and hospital fixed-effects.

RESULTS: There were 1,668,675 observations from 165 hospitals. Mean age of patients was 57.25 years, 57.95 % were female; 58.24% were non-Hispanic white, 17.25% were Black and 11.30% were Hispanic; 43.84% had Medicare, 23.39% had Medicaid and 27.3% had commercial insurance. Patients had a mean 4.87 medical conditions. Almost 80% of patients were discharged home, 20.08% were discharged to non-home destinations

After adjusted analysis, White patients discharged had a 5.60 day RA-LOS regardless of discharge destination (95% CI: 5.59-5.61) while Black patient RA-LOS was 5.90 days (95% CI: 5.88-5.92), representing a significant 0.3 day difference (95% CI: 0.29-0.31, $p < 0.001$). Results were significant for Black compared to White patients discharged to non-home destinations (0.3 day difference in RA-LOS, 95% CI: 0.25-0.32, $p < 0.001$). However compared to White patients, Hispanic patients (5.59 day RA-LOS, 95% CI: 5.56-5.62) did not have a significant difference in RA-LOS overall (-0.01 days, 95% CI: -0.02-0.00) nor in non-home discharge destinations (difference in RA-LOS -0.02 days, 95% CI: -0.08-0.02).

CONCLUSIONS: We show a persistent difference in LOS by discharge destination between Black and White adult inpatients patients after controlling for between-hospital, disease and patient factors using New York 2014 discharge data. However, we saw no difference between Hispanic and White patients. LOS is a function of hospital processes and organizational structure, and is an important metric for hospital efficiency. This suggests a potential role for hospitals themselves to help reduce existing racial disparities in their inpatient processes.

RACIAL AND ETHNIC DIFFERENCES IN OPIOID PRESCRIBING ON HOSPITAL DISCHARGE FROM AN INTERNAL MEDICINE SERVICE

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BACKGROUND: Prior studies have found racial disparities in how patients are assessed for pain and prescribed opioids from emergency department and surgical settings. However, we do not know whether similar disparities exist among general medicine inpatients. We examined opioid prescriptions at discharge among adults admitted to the general medicine service at our medical center, with a focus on whether there were differences by race and ethnicity.

METHODS: We identified all adults hospitalized on the general medicine service from 2012-2018 at a 600- bed urban academic teaching hospital. Using electronic health databases, we identified two cohorts of

patients: first, patients who received opioids during their last 24 hours of hospitalization and second, all patients who were discharged with an opioid prescription, and collected data on their demographics, diagnoses codes, and medications. We excluded patients with diagnoses of cancer-related pain, sickle cell disease pain crises, patients discharged on hospice, or who were followed by palliative care. Patient self- reported race/ethnicity was categorized as White, Black, Hispanic (for patients who reported Hispanic ethnicity), Asian, or Other/Unknown.

We used multivariable logistic regression to examine the likelihood of receiving an opioid prescription at discharge based on whether they had received opioids in the 24 hours prior to discharge. We then developed a second multivariable linear regression model, this time examining disparities in the total opioid days prescribed at discharge, calculated as the total morphine milligram equivalents (MME) prescribed divided by the MME administered during the last 24 hours of hospitalization. Models were adjusted for patient demographics (age, gender, limited English proficiency status), hospitalization factors (including length of stay, intensive care unit management, opioids received during the total stay and in the last 24 hours), and medical diagnoses (including adjusted Elixhauser comorbidity index and cancer).

RESULTS: We identified 10,953 patients who received opioids during the last 24 hours of hospitalization and 5,541 patients discharged on opioids. We found statistically significant differences by race/ethnicity in mean opioid days prescribed at discharge, in both univariate and multivariable analyses. In unadjusted univariate analysis, Black patients were prescribed fewer opioid days (14.1 days) compared to White patients (17.6 days). Adjusting for covariates, Black patients were less likely to receive opioids on discharge (OR 0.77, 95% CI 0.64 to 0.91, p = 0.003) compared to White patients. Moreover, Black patients discharged on opioids received 2.5 fewer days of opioids (95% CI -4.5 to -0.1 days, p= 0.044).

CONCLUSIONS: We found Black patients were less likely to be prescribed opioids on discharge. Black patients discharged on opioids received fewer days of opioids compared to other racial/ethnic groups.

RACIAL AND ETHNIC DISPARITIES IN 7-DAY READMISSIONS FROM AN INTERNAL MEDICINE SERVICE

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BACKGROUND: Health equity will only be achieved when health care outcomes do not vary based on patient social characteristics, such as gender, race, ethnicity, geographic location, and socioeconomic status. Readmission is a significant outcome for patients and health systems, and 30-day readmission has been associated with racial disparities. However, less is known about disparities in 7-day readmissions. Previous studies have demonstrated that 7-day readmissions reflect a similar patient mix to 30-day readmissions, but that 7-day readmissions may be a better measure of hospital care. In the realm of health equity, studying 7-day, as opposed to 30-day readmissions, may better capture modifiable factors, diagnostic error, clinical decision making, and implicit bias from the provider.

METHODS: Using electronic health databases, we identified all adults discharged from the general medicine service between July 2016 and June 2019 from a 600-bed urban academic teaching hospital. Given the primary outcome of readmission, we excluded patients who died during hospitalization, were under observation status, or were transferred to a psychiatric facility. The primary predictor was self-reported race/ethnicity, categorized as White, Black, Hispanic, Asian, or Other/Unknown. The primary outcome was 7-day readmission back to the discharging hospital. Multivariable logistic regression was used to assess for factors associated with 7-day readmission adjusted for patient demographics (age, gender, Limited English Proficiency (LEP status), housing status, payor status), hospitalization and health system factors (including length of stay, intensive care unit management, teaching vs. hospitalist service, discharge disposition), and medical comorbidity index.

RESULTS: We identified a total of 18,808 patients in this dataset. A total of 1,297 (6.9%) of patients were readmitted within 7 days. We found a statistically significant association between race/ethnicity and 7-day readmission. Black patients (8.9%) and Asian patients (7.2%) had a higher 7-day readmission rate compared to White patients (6.4%). Using multivariable logistic regression, controlling for confounding variables, the Odds Ratio for 7-day readmission for Black patients was 1.35 (95% CI 1.15-1.58, p <0.001) and for Asian patients was 1.24 (95% CI 1.05-1.48, p = 0.014). The readmission odds for Hispanic and Other/Unknown patients did not differ significantly from White patients.

CONCLUSIONS: Black and Asian patients experienced higher rates of 7-day readmission than White patients, confirmed on adjusted analysis. Racial disparities in 7-day readmissions from general medicine services have not been previously characterized, but these findings align with known racial disparities in 30- day readmissions. Because 7-day readmissions may be more modifiable and impacted by factors like clinician bias, these results require further investigation into causal pathways and the development of tools to mitigate bias.

RACIAL AND ETHNIC DISPARITIES IN ANTICOAGULANT CHOICE FOR ATRIAL FIBRILLATION IN THE VETERANS HEALTH ADMINISTRATION: RESULTS FROM THE REACH-AF STUDY

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BACKGROUND: Atrial fibrillation (AF) affects nearly 1 million patients in VA, causing morbidity and mortality that disproportionately affects racial/ethnic minorities. Anticoagulation reduces stroke risk in AF, yet non-VA studies show that warfarin and safer, more effective direct oral anticoagulants (DOACs) are underused in minorities. We compared anticoagulant initiation by race/ethnicity for patients with AF in VA— which facilitates access to medications through a uniform national drug formulary.

METHODS: Using data from the VA Corporate Data Warehouse, we identified patients enrolled in VA from January 1, 2014 to December 31, 2018 with an outpatient diagnosis of AF and a confirmatory diagnosis ≦180 days of their initial (index) AF diagnosis. To restrict the cohort to incident AF cases, we excluded patients with an AF diagnosis or anticoagulant therapy in the 2 years prior to their index AF diagnosis. We excluded those with pre-existing valvular heart disease, receiving hospice care or who died within 180 days of index AF diagnosis, or had missing or "other" race/ethnicity. We categorized our independent variable as non- Hispanic white (NHW), non-Hispanic black (NHB), and Hispanic. Our primary outcome was receipt of any anticoagulant ≦180 days of index AF diagnosis; we also assessed the type of anticoagulant (warfarin, DOAC) initiated. We used logistic regression to compare these outcomes by race/ethnicity, adjusting for year of diagnosis, renal disease, and stroke risk with $CHADS_2VA_2Sc$ score (categorized as low risk; 0-1, or moderate to high risk; ≧2).

RESULTS: We identified 148,062 patients with incident AF: 8.6% were NHB, 3.4% Hispanic, mean age was 72.5 years, and 88.9% had a $CHADS_2VA_2Sc$ score ≧2. Overall, NHBs (57.7%) and Hispanics

(58.4%) were less likely than NHWs (61.4%) to initiate any anticoagulant therapy (p <0.01), driven largely by lower DOAC initiation for minorities (36.8% NHBs, 36.5% Hispanics, 43.0% NHWs; p <0.01). Compared to NHWs, the adjusted odds ratios (AORs) for receiving any anticoagulant or DOACs were significantly lower for NHBs and Hispanics (Table); in contrast, AORs for receiving warfarin were significantly higher among minorities. As DOAC initiation increased from 16.8% (2014) to 60.3% (2018), disparities in initiation increased from 1.7 to 9.1% points for NHBs vs. NHWs and from 0.9 to 9.4% points for Hispanics vs. NHWs.

CONCLUSIONS: In a national incidence cohort of AF in VA, we identified significant racial/ethnic disparities in anticoagulant initiation, driven largely by growing disparities in DOAC initiation. Understanding the reasons for these differences is essential to improving outcomes in an increasingly diverse patient population with AF managed in the largest U.S. integrated health care system.

RACIAL DIFFERENCES IN MECHANICAL VENTILATION USE FOR PATIENTS WITH ADVANCED DEMENTIA OVER TIME

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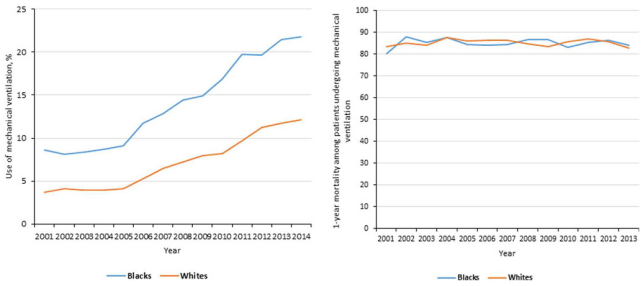
BACKGROUND: Racial/ethnic minorities are more likely than Whites to receive intensive care at the end of life. In patients with advanced dementia, use of invasive interventions such as mechanical ventilation may be burdensome without associated benefits in longevity. While use of feeding tubes in patients with advanced dementia has declined by 50% among both White and Black patients over the last decade, little is known about whether a similar reduction has occurred in use of mechanical ventilation.

METHODS: We conducted a retrospective analysis of Medicare beneficiaries with advanced dementia who were hospitalized between 2001 and 2014 for pneumonia and/or septicemia and had been in a nursing facility during the 120 days preceding hospitalization. The study sample was restricted to patients of Black or White race. Invasive mechanical ventilation (IMV) was identified by ICD procedure codes. We used multivariate logistic regression analyses to examine the association between race and the likelihood of receiving IMV, controlling for patients' demographics, function, and comorbidities. We used a fixed effect model to examine the association of race within a hospital and a robust clustering model to examine the overall association between race and IMV across hospitals.

RESULTS: A total of 301,925 nursing home residents with advanced dementia were hospitalized for pneumonia or septicemia between 2001 and 2014. Of these hospitalizations, 63,143 occurred for patients identified as Black and 216,874 for patients identified as White yielding a study sample of 280,017 hospitalizations. Use of IMV increased from 3.7% to 12.1% in Whites and from 8.6% to 21.8% in Blacks. Among those ventilated, one-year mortality rates remained high at 76.1% for Whites and 75.6% for Blacks dying in 2014. Compared to Whites, Blacks had a higher odds of receiving IMV in the fixed effect (within hospital) model (AOR 1.34; 95% CI 1.29-1.39) and in the robust clustering model (AOR 1.84 95% CI 1.71-1.97).

CONCLUSIONS: Use of IMV in patients with advanced dementia has substantially increased with Black patients having a larger increase than Whites despite no significant improvement in mortality. These racial differences are based, in part, on the hospitals where Black patients receive care.



RANDOMIZED TRIAL OF AN EMBEDDED RISK CALCULATOR FOR DETERMINING VTE PROPHYLAXIS IN HOSPITALIZED MEDICAL PATIENTS

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BACKGROUND: Venous thromboembolism (VTE) is a serious source of hospital morbidity and mortality. Chemoprophylaxis with heparin has been shown to reduce VTE, but it increases the risk of bleeding and heparin induced thrombocytopenia. It should therefore be reserved for patients at high risk of VTE. We conducted a randomized trial to assess the impact of a VTE risk calculator embedded in an electronic health record (EHR) on prophylaxis prescribing and patient outcomes.

METHODS: We embedded a locally derived and validated risk calculator in our EHR. Ten hospitals were randomized to implement the calculator (one per month) using a stepped-wedge design. Most calculator fields were autopopulated, but required physician confirmation. Physicians were encouraged to use the calculator but to prescribe prophylaxis according to their clinical judgment. We included all patients 18 years and older who were admitted to a medical service, including intensive care, but not observation status, between October 1, 2018 and February 28, 2019. We excluded patients not eligible to receive VTE prophylaxis because they were already receiving anticoagulation for another purpose, terminal patients receiving comfort care only, and surgical patients temporarily housed on a medical floor. Outcomes were determined through review of the EHR. Our primary outcome was proportion of patients receiving appropriate prophylaxis (high risk receiving + low risk not receiving/total patients). High risk patients were defined as those whose predicted VTE risk exceeded 0.6% at 14 days based on an updated risk calculator. Secondary outcomes included total proportion of patients receiving prophylaxis and rate of VTE among high risk patients at 14 and 45 days after admission. Outcomes were compared using mixed-effect models to account for the stepped-wedge design.

RESULTS: The final sample included 32,560 patients (13,413 prior to the intervention and 19,147 during the intervention). Of these, 29% were high risk for VTE. During the intervention phase, physicians used the calculator for 13% of high risk and 12% of low risk patients. Physicians prescribed prophylaxis to 73% of patients designated high risk and 28% designated low risk by the calculator. Appropriate prophylaxis was prescribed to 41% of patients pre-intervention and to 45% of patients during the intervention ($p<0.001$). The total proportion of patients receiving prophylaxis declined from 61% pre-intervention to 54% during the intervention ($p<.001$). The rate of VTE among high risk patients was 3.1% in the pre-intervention phase and 2.3% in the intervention phase ($p=0.13$) at 14 days and 4.9% vs. 4.0% at 45 days ($p=0.43$). Overall rates of VTE at 14 and 45 days also did not differ between the groups.

CONCLUSIONS: A locally validated risk calculator embedded in the EHR was used infrequently, but improved the rate of appropriate prophylaxis and decreased overall use of prophylaxis without impacting the rate of VTE among high risk patients.

RATES OF LABOR AND DELIVERY COMPLICATIONS IN PATIENTS WITH ANXIETY AND DEPRESSION

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BACKGROUND: Depression and anxiety are complex, overwhelming diagnoses and influence many aspects of a patient's life and health care. Maternity has not escaped this influence. This study aims to elucidate the impact of specific mental health diagnoses on maternity. Particularly, we analyzed the connection between depression and anxiety on labor and delivery complications.

METHODS: This retrospective cohort study used the Nationwide Inpatient Sample to identify patients from 2012-2015 admitted for labor and delivery. ICD-9 codes were then used to identify patients who also carried a diagnosis in the categories of depression or anxiety. Chi-square was used to analyze rates of labor and delivery complications in these patients including premature rupture of membranes (PRROM), obstetrical pulmonary embolism, retained placenta or membranes without hemorrhage, postpartum hemorrhage, obstructed labor, umbilical cord complications, and other complications not elsewhere classified including maternal distress, material shock, maternal hypotension syndrome, acute kidney failure, as well as mortality.

RESULTS: A total of 2,540,087 patients with a labor and delivery diagnosis were identified. Of those patient encounters, 147,270 also carried a diagnosis within the categories of depression or anxiety. When compared to deliveries without a concurrent mental health diagnosis, these patients had increased rates of complication diagnoses including obstetrical pulmonary embolism (13.7% vs. 5.8%, $p<0.0005$), PRROM (7.3% vs. 5.7%, $p<0.0005$), retained placenta or membranes without hemorrhage (7.9% vs. 5.8%, $p<0.0005$), postpartum hemorrhage (7.4% vs. 5.7%, $p<0.0005$), and other complications not elsewhere classified including maternal distress, material shock, maternal hypotension syndrome, acute kidney failure. (9.6% vs 5.8%, $p<0.0005$). Additionally, there was an increase in mortality (6.9% vs. 5.8%, $p<0.0005$). There was no statistically significant difference in rates of umbilical cord complications, and obstructed labor was diagnosed 0.2% more often in women without concurrent mental health diagnosis. (5.8% vs 5.6%, $p=0.002$)

CONCLUSIONS: This analysis is the first to examine rates of these complications for pregnant patients with depression or anxiety between the years 2012-2015. It serves to support previous research on maternal depression and identify more specific statistical correlations. Maternal depression is negatively effecting delivery and labor outcomes. Future research should attempt to develop methods for identifying pregnant patients who may need greater intervention and support in order to decrease rates of complications and give them their best chance at beginning a life.

READMISSION RELATED HEALTH CARE UTILIZATION AND FACTORS ASSOCIATED WITH HOSPITAL READMISSION IN PATIENTS WITH COCAINE RELATED DISORDER: A US POPULATION COHORT STUDY

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BACKGROUND: Cocaine related disorders (CRD) are a growing burden on the US Healthcare system. We aim to identify factors associated with 30-days CRD related readmission and to evaluate its impact on health- care utilization.

METHODS: This is a retrospective cohort study using the 2016 and 2017 National Readmission Database. Inclusion criteria were: patient age >18 and urgent admissions with principal ICD-10 codes for CRD. A readmission was defined as the first admission to any hospital for any non-trauma diagnosis within 30 days of the index admission. Independent risk factors for readmission were identified using multivariate cox regression analysis.

RESULTS: CRD disorder most common in males, age group 50-65 years with a mean age of 43, Insured by Medicaid, has lower comorbidity burden and being treated at large, urban teaching hospital.

The total number of index CRD admissions were 18,167, of which 3,026 (16.7%) were readmitted within 30 days. Most Common cause of readmission: Major Depressive disorder (4.9%), Schizoaffective disorder (bipolar type,3.8%, Unspecified,3.1%), Schizophrenia (3.3%), Cocaine dependence with mood dosorder(3.0%), and Bipolar disorder(2.6%). The in-hospital mortality rate (0.3% vs. 0.1%, $p<0.001$), mean cost of hospitalization ($6,279 vs. $5,570, $p<0.001$) for readmitted patients was higher than that in index admissions with no difference in length of stay(LOS). The total in-hospital economic burden associated with readmission was $ 19 million. Table-1 shows independent predictors of 30 days readmission.

CONCLUSIONS: We found that 16.7% of hospitalized patients with CRD were readmitted within 30 days. Readmissions had higher in-hospital mortality, and resource utilization compared to index admission and was associated with a significant health-care burden with total hospitalization cost of $ 19 million. We identified risk factors associated with 30-days readmission. Patients with known risk factors to cause readmission needs special attention to improve outcomes and provide optimum care.

Table 1:- Independent Predictors for 30-day Readmission for Cocaine Related Disrder(CRD)

Variables	Adjusted Hazard ratio	P value
Age Group		
18- 30 years	reference	reference
30-40 years	1.14 (0.93- 1.39)	0.18
40-50 years	1.02 (0.77 – 1.33)	0.88
50-65 years	0.96 (0.74- 1.25)	0.80
>65 years	0.45 (0.24 – 0.84)	0.01
Female	0.79 (0.67 – 0.93)	0.005
Length of Stay		
<3 days	reference	reference
3-7 days	1.11(0.97- 1.27)	0.09
>7 days	0.99 (0.82 – 1.19)	0.93
Insurance Status		
Medicare	reference	reference
Medicaid	0.88 (0.72 – 1.08)	0.23
Private	0.63 (0.46 – 0.84)	0.002
Uninsured	0.68 (0.53 – 0.87)	0.003
Charleston Co-morbidity score		
<1	reference	reference
2	1.31 (1.04 – 1.65)	0.01
>3	1.51 (1.27 – 1.81)	<0.001
Co-morbidity		
Anxiety	0.82 (0.70- 0.97)	0.02
Schizophrenia	1.15 (0.93 – 1.42)	0.18
Chronic pain syndrome	0.88 (0.70 – 1.11)	0.31
Obesity	1.12 (0.89 – 1.41)	0.32
Alcohol	0.92 (0.80 – 1.06)	0.27
Pulmonary Hypertension	2.0 (0.93 – 4.3)	0.07
Smoking	0.95 (0.84 – 1.07)	0.42
Obesity	1.12 (0.89 – 1.41)	0.32
Hypertension	1.04 (0.91 – 1.20)	0.51
Cannabis dependent	0.94 (0.83 – 1.06)	0.34
Median House-Hold Income		
$1 – $38,999	reference	reference
$39,000- $47,999	0.82 (0.72- 0.94)	0.005
$48,000- $ 62,999	0.87 (0.73 – 1.03)	0.12
>$63,000	0.77 (0.61 – 0.96)	0.02
Patient residence		
Large metropolitan areas with at least 1 million residents	reference	reference
Small metropolitan areas with less than 1 million residents	0.90 (0.76- 1.07)	0.25
Micropolitan areas	0.69 (0.49- 0.97)	0.03
Not metropolitan or micropolitan (nonurban residual)	0.69 (0.33- 1.44)	0.33
Hospital Level Variables		
Teaching Hospital	1.06 (0.85 – 1.31)	0.57
Hospital bed size		
Small	reference	reference
Medium	1.14 (0.87 – 1.5)	0.31
Large	1.14(0.89- 1.46)	0.28
Hospital Volume quintile		
1(lowest)	reference	reference
2	1.22 (0.73 – 2.04)	0.43
3	1.31 (0.84 – 2.06)	0.22
4	1.69 (1.11- 2.56)	0.01
5(Highest)	1.89 (1.25 – 2.8)	0.002
Treatment level Variable		
Individual Counseling	0.62 (0.43- 0.89)	0.01
Group Counseling	0.69 (0.49 – 0.97)	0.03
Discharge Level variable		
Routine	reference	reference
Transfer to short term hospital	1.83 (1.13 – 2.96)	0.01
Other transfer, including skilled nursing facility, intermediate care, other facility	0.82 (0.61 – 1.12)	0.22
Home Health Care	1.10 (0.68- 1.78)	0.69
Against medical	1.43 (1.16 – 1.75)	0.001

REDUCING HIGH-RISK GERIATRIC POLYPHARMACY VIA ELECTRONIC HEALTH RECORD NUDGES

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BACKGROUND: Inappropriate polypharmacy, prescribing more drugs than clinically necessary, is highly prevalent among geriatric patients and is associated with adverse drug events (ADE). Our objective was to develop and pilot test electronic health record (EHR) clinical decision support (CDS) alerts using behavioral economics informed strategies to nudge clinicians toward safer prescribing for older patients.

METHODS: This pilot study occurred during February-May 2019 within three primary care clinics affiliated with an integrated academic health system. Alerts were triggered for patients aged 65 or greater who had ≥ 5 medications, at least one of which was on the Beers list, met Screening Tool of Older Persons' Potentially Inappropriate Prescriptions (STOPP) criteria, or was targeted by the National Action Plan for ADE Prevention. Participating clinics (all attributed clinicians) were randomized to one of three arms to receive CDS alerts when triggering criteria were met within the chart: (1) a 'commitment nudge' which offered prescribers a chance to create an EHR reminder to commit to addressing high-risk polypharmacy at the next patient encounter, (2) a 'justification nudge' which asked clinicians to write a justification or reason for ordering medications when high-risk polypharmacy was present, or (3) to receive both the 'commitment' and 'justification' nudges. We developed and validated seven measures of high-risk polypharmacy and extracted data from the EHR analyzing data from before and after the study period. Pilot clinics, for each measure, had between 4 and 1197 patients prescribed high-risk polypharmacy for each measure.

RESULTS: On average, physicians (n=70) received 1.6 commitment nudges per week and 0.6 justification nudges per week. Justification nudge frequency fell from 1.2 nudges per week in the first four weeks to below 0.5 nudges per week in the later weeks of the intervention period. No physicians asked to leave the pilot. All seven measures of polypharmacy either decreased during the study period (e.g., increased fall risk and prescribed drug associated with increased falls rate from 32.8% to 31.6%) or remained stable (e.g., heart failure and NSAID use rate from 3.6% to 3.5%).

CONCLUSIONS: This pilot study shows that two EHR-based nudges to address high-risk polypharmacy are feasible to implement in a commercial EHR and were tolerated by practicing primary care physicians. The observed decline in justification nudge firing frequency suggests that this nudge might have begun to influence prescribing, despite the short duration of the study. We plan to evaluate the effectiveness of these nudges with a large randomized controlled trial.

REDUCING NIGHTTIME INTERRUPTIONS AND IMPROVING SLEEP FOR HOSPITALIZED PATIENTS BY RESTRUCTURING NIGHTTIME CLINICAL WORKFLOW

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BACKGROUND: Noise and interruptions at night negatively impact the experience of hospitalized patients. We prospectively implemented a change in nighttime clinical workflow for hospitalized patients and determined the impact on disruptions and sleep of this new intervention.

METHODS: We administered surveys to hospitalized patients on a 23-bed general medical ward at the CT VA Hospital. The survey asked the following questions about the sleep in the hospital the night before: time to fall asleep; number of times of waking up; reasons for waking up; and overall quality of sleep in the hospital compared to that of sleep at home. The first round of surveys (Feb to Mar of 2018) measured the baseline level of interruptions. Two major sources of interruptions were identified: blood pressure (BP) check at 4 am for telemetry patients and medication administration before 6 am (most commonly heparin SQ injection 4:30 - 6 am for DVT prophylaxis). The clinical workflow was restructured to eliminate these disruptions: 4 am BP check was moved to 6 am and the heparin SQ Q8H order which had prompted an injection between 4:30 and 6 am was replaced with daily 9 am enoxaparin injection order. The impact of these changes was assessed in a second round of surveys (July to Aug of 2019). Comparisons between pre and post-intervention groups were made by using the Z-test.

RESULTS: 149 pre-intervention surveys completed by 97 patients (of whom 32 surveyed twice and 10 thrice) confirmed frequent interruptions and excessive noise at night. The most common interruptions were BP check [56% of surveys (84/149)], medication administration [40% (59/149)], hallway noise [39% (58/149)] and phlebotomy [35% (52/149)]. 39% of patients reported taking longer to fall asleep in the hospital than at home, while 46% reported waking up more frequently in the hospital.

44% of patients reported sleeping worse in the hospital than at home. After restructuring the nighttime clinical workflow (see Methods), 99 post-intervention surveys were completed by 55 patients (of whom 24 surveyed twice and 10 thrice). Medication administration as a cause of nighttime disruption decreased significantly from 40% (59/149) pre- to 4% (4/99) post-intervention ($p < 0.01$). BP check became a less frequent cause of interruption [56% (84/149) pre vs 42% (42/99) post, $p = 0.033$]. Fewer patients reported taking longer to fall asleep in the hospital vs home (39% pre vs 25% post, $p = 0.021$). Similarly, fewer patients woke up more frequently in the hospital vs home (46% pre vs 32% post, $p = 0.036$). Finally, fewer patients reported sleeping worse in the hospital (44% 39% pre vs 39% post, NS) though not statistically significant. No adverse outcome has resulted from checking BP 2 hours later at 6 am and changing from heparin to enoxaparin for DVT prophylaxis.

CONCLUSIONS: Nighttime interruptions in hospitalized patients frequently interfere with sleep. Restructuring the clinical workflow significantly reduced interruptions and improved sleep.

REDUCING NO CARDS AND IMPROVING TRANSITIONS IN CARE AT HOSPITAL DISCHARGE

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BACKGROUND: Given the complexities of current healthcare systems, transitions of care at discharge are crucial to ensure appropriate standard of care. Follow up with primary care providers is a major component of care transition from the inpatient setting, though this can be challenging to arrange. Our institution utilizes a dedicated team, dubbed "Gold Card" (GC), to assist in securing follow up appointment scheduling, who are contacted through the use of an order in the EHR. Unfortunately, if the GC group is not engaged at discharge, this may result in patients not having a follow up visit scheduled. We wanted to better characterize this process and hypothesized there was opportunity for improvement to more reliably secure follow up appointments for our patients in this crucial care transition period.

METHODS: We examined discharges from a general medicine ward for 1 month to evaluate frequency of usage of the GC at discharge. Patients who were discharged without a GC were further examined for appropriateness. It was considered a "no card," if there was no appropriate reason for not placing a GC for discharge follow up. Appropriate reasons included patients discharging to hospice or skilled facility, patients who had follow up previously scheduled or scheduled through other means, and patients who passed away. Subsequently, the GC order was added to the default discharge order set and 1 month of discharges were examined. Finally, a "hard stop," that would not allow providers to proceed without selecting whether or not the patient needed a GC at discharge was added and an additional 1 month of discharges were examined from the same unit for comparison in "no cards."

RESULTS: In the initial month of observation, there were 127 patients discharged, of these, 14 (11%) were "no cards," with no appropriate reason for not ordering follow up at the point of care transition. In the month after the GC order was added to the discharge order set, there were 121 discharges, with 22 (18%) identified "no cards." Finally, following the addition of the hard stop, there were 144 patients discharged in the subsequent month, of these, 4 (2%) were "no cards," representing a significant decrease ($p<0.0001$).

CONCLUSIONS: The addition of a hard stop in a default discharge order set prompting providers to consider securing discharge follow up has the potential to improve care transition follow up and patient outcomes. Through our intervention we were able to dramatically reduce the number of patients that were not engaged for follow up scheduling. This benefit was not observed without prompting direct consideration by the discharging provider.

RE-FRAMING HEPATITIS C DECISION-SUPPORT ALERTS: A PILOT PROJECT IN HUMAN- CENTERED DESIGN

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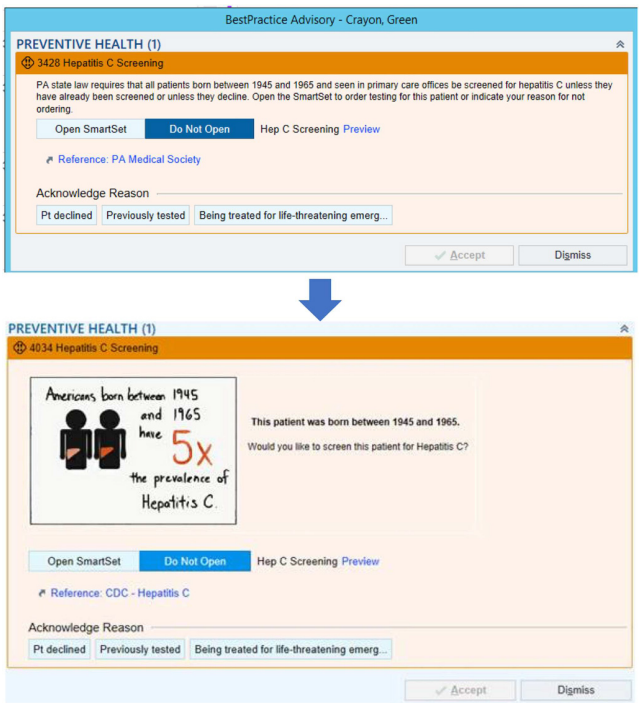
BACKGROUND: Decision-support alerts (DSA) within electronic health records (EHRs) have become a common way to remind physicians to comply with regulatory and quality mandates, but they are often ignored. Hepatitis C (HCV) is known to be five times more prevalent among people born between 1945 and 1968, and PA state law requires PCPs to offer their patients screening. In the University of Pittsburgh Medical Center EHR (EpicCare), a DSA prompts physicians to screen for HCV among this population. A majority of physicians ignore this DSA. We hypothesized that a DSA designed with a human-centered approach would be more effective.

METHODS: We designed a new DSA by refocusing the message to emphasize clinical rather than regulatory purpose, streamlining the text to make it easier to read, and inserting a graphic. We identified ambulatory medical practices that had 10 or more ignored alerts over a one-month period (n=132) and randomly assigned the new DSA to 62 of these practices without changing the DSA for the rest. We used the Mann-Whitney test to compare mean percent action taken on the old versus new DSA. Pre and post analyses are ongoing and will include a difference-in-differences analysis.

RESULTS: 12,290 old DSAs and 6,551 new DSAs were deployed over two months. There was no stastically significant difference between mean percent action taken by practices assigned to the old versus new DSA by Mann-Whitney test (23.6% and 27.6%, respectively). Within the intervention group, there was an increase in action after the new DSA was deployed ($p<0.001$; paired Wilcoxon signed rank test). This needs to be validated using a difference-in-differences analysis.

CONCLUSIONS: There may be a small increase in action taken on DSAs designed with a human-centered approach, but if present, the difference is modest. Physicians' interactions with DSAs are complex. More mixed-methods studies are needed to better understand the effect of DSAs on medical practice and inform health information system decisions.



REJECTION OF PATIENTS WITH OPIOID USE DISORDER REFERRED FOR POST-ACUTE MEDICAL CARE BEFORE AND AFTER AN ANTI-DISCRIMINATION SETTLEMENT IN MASSACHUSETTS

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BACKGROUND: Patients with opioid use disorder (OUD) may be referred to post-acute medical care facilities for ongoing care following an acute hospitalization. Massachusetts Department of Public Health guidelines prohibit facilities from rejecting patients on the basis of treatment with medications for opioid use disorder (MOUD). Furthermore, in May 2018 the United States Attorney reached a discrimination settlement with a Massachusetts facility for violating the Americans with Disabilities Act by rejecting patients due to MOUD. We are unaware of studies which systematically evaluate this practice. Our objective was to determine how commonly individuals with OUD at a safety net hospital in Boston were rejected due to substance use or treatment with MOUD and if practices changed following the United States Attorney's settlement.

METHODS: We linked electronic referrals to private Massachusetts post-acute medical care facilities from Boston Medical Center in 2018 with clinical data. These referrals frequently include electronically transmitted comments from facilities detailing reasons for rejecting a referral. We restricted the cohort to hospitalizations for individuals with OUD, which we identified using ICD-10 diagnostic codes or inpatient or discharge MOUD receipt. Two reviewers assessed comments for substance use or MOUD content as reasons for rejection and classified these as discriminatory. We used segmented regression to assess for changes in proportions of referrals rejected for any reason and rejected explicitly due to substance use and MOUD before and after the settlement.

RESULTS: In 2018, 219 OUD-associated hospitalizations resulted in 1648 referrals to 285 facilities, an average of 7.5 referrals per hospitalization; 81.8% of referrals (1348) were rejected. Hospitalized individuals referred to private post-acute medical care facilities had a mean age of 50.2, were mostly male (71.7%), white (54%) or black (29%), English speaking (92%), insured by Medicaid (53%), and treated with MOUD (87.7%). Among hospitalizations, 37.4% (82) received at least one discriminatory rejection. Among rejections, 15.1% (203) were discriminatory (105 for MOUD and 98 for substance use). Among facilities, 29.1% (83) had at least one discriminatory rejection. We found no differences in the proportion of OUD referrals rejected for any reason or explicitly due to MOUD or substance use before and after the settlement.

CONCLUSIONS: Individuals hospitalized with OUD frequently experience explicit discrimination when rejected from post-acute care despite federal and state protections. Amidst rising morbidity and mortality associated with OUD and OUD-associated hospitalizations, there is increased need for high-quality and equitable post-acute medical care. Enhanced enforcement of anti-discrimination laws, regulations, and policies and efforts to identify and address barriers to post-acute medical care for patients with OUD are needed to achieve this goal.

RELIGION AND WORKFORCE BURNOUT

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BACKGROUND: Prior research suggests that spirituality and religious beliefs may protect against burnout. This effect may be due to the guidance from the world's religions regarding our work lives. We compare burnout across major religions in the workforce in all English Trusts.

METHODS: Our data source was the National Health Services (NHS) Staff Surveys, available for all English hospital Trusts from 2012 to 2018. Burnout was measured with "During the last 12 months have you felt unwell as a result of work-related stress." The analysis focused on the year 2018, but trends were confirmed across all years. Prevalences and heterogeneity in burnout across religious groups were measured with a random-effects model. Modulators of burnout were explored with meta-regression. In addition, an individual-level dataset was recreated and analyzed by logistic regression.

RESULTS: In 2018, there were 471,886 respondents. The pooled rate of burnout across all religious affiliations was 39% with substantial heterogeneity (I^2 = 100%). After excluding the 6% of staff who withheld a response, the rates of burnout among staff reporting any versus no religious affiliation were 37% versus 40%. The rate of burnout among Hinduism, 29%, was statistically lower than in all other religions surveyed. For all years surveyed, Hindus had the lowest burnout. This significance remained after using logistic regression to control for the presence of any religion, a western religion, or a Dharmic religion. Regarding harassment or discrimination as modulators, while these rates varied significantly across religions (I^2 > 99%) and the rates for harassment tended to correlate with rates of burnout across religions, the associations did not reach statistical significance.

CONCLUSIONS: Religious affiliation is associated with lower burn out in the NHS workforce. Among the world's major religions, Hinduism is associated with significantly less burn out compared to other religions. The substantial heterogeneity in rates of workforce burnout suggests an opportunity for mutual learning across religions.

REMOTE GLUCOSE MONITORING LEADS TO HEMOGLOBIN A1C REDUCTION AT 12 MONTHS, INDEPENDENT OF SOCIODEMOGRAPHICS, AND SUSTAINED UP TO 18MONTHS AMONG LOW-INCOME ADULTS WITH DIABETES

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BACKGROUND: Evidence suggests that remote patient monitoring (RPM) improves short-term diabetes control. We seek to determine whether RPM of glucose, with provider engagement to allow for medication changes in the intervisit period, will produce sustained improvements in hemoglobin A1c (A1c) over 12 and 18 months. Additionally, we examine the impact of patient-level variables on A1c change in the setting of RPM participation.

METHODS: Over 800 underserved patients with an A1c of 8% or higher have been enrolled in an RPM program, transmitting home glucose and blood pressure readings to a secure server for healthcare provider review. Enrolled patients agreed to participate for 12 months, and those who continued to transmit data were invited to extend to 18 months. Providers were encouraged to adjust treatment plans based on incoming glucose data.

Baseline demographic and clinical variables are obtained at enrollment. A1c measurements are repeated 6, 12, and, for extended patients, 18 months after enrollment and compared to baseline values via paired t-tests. Two multivariable regression models were developed with primary outcomes of a) A1c change at 12 months and b) absolute 12 month A1c accounting for the RPM intervention and demographic variables.

RESULTS: Compared to baseline, RPM was associated with an A1c reduction of 1.8% at 6 months, 1.3% at 12months, and 2.0% at 18months (Table 1). A significant reduction in A1c was achieved at 6 and 12 months for all clinic types: academic, FQHC, and free/volunteer (Table 1).

Our regression model for A1c change showed no statistically significant difference for patient age, gender, race, household income, insurance, or clinic type. A higher baseline A1c was associated with a greater reduction at 12 months (β= -0.64; $p < 0.01$). In a pre- and post-intervention regression model, the RPM intervention was associated with an A1c reduction of 1.29 ($p < 0.01$). Increasing age was associated with a slightly lower A1c at baseline and 12 months (β= -0.04; $p < 0.01$), while male gender was associated with a higher A1c ($\beta = 0.70$; $p = 0.02$).

CONCLUSIONS: RPM leads to improved diabetes control at 6 months, which is sustained at 12 months, yet to a lesser degree. Although subject to selection bias, extension data suggests the A1c reduction can be sustained to 18 months.

Our pre- and post-intervention regression model for hgbA1c confirms the A1c reduction that we find in our t-test comparison. Further, our regression model for change in A1c over time suggests that sociodemographic variables do not significantly alter the likelihood of patients to benefit from this type of technology.

RESIDENT OBESITY MANAGEMENT: COMFORT CORRELATES WITH ACTION

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BACKGROUND: The projected prevalence of obesity in the US is 50% by 2030. Little data exists on resident physician obesity management in their primary care clinics. We aimed to explore internal medicine (IM) resident comfort, knowledge, and treatment practice of obesity in primary care.

METHODS: IM residents at one academic medical center (N=125), at 5 primary care sites were anonymously surveyed about knowledge, comfort, and practice behaviors around obesity management. In this exploratory analysis, respondents self-reported comfort with lifestyle counselling and weight management medication (WMM) prescription on 4-point Likert scales; scores were combined into an overall Comfort Score (CS). Correlation analysis (Pearson's correlation) compared CS with the following Clinical Actions: referral to lifestyle specialists, lifestyle counseling, WMM prescription, and bariatric surgery referral.

RESULTS: The response rate was 70/125 (56%). Most residents (91%) reported discomfort with prescribing WMMs and most (84%) had never prescribed one. While most residents (81%) were "comfortable" or "somewhat comfortable" with lifestyle counseling, only 33% reported consistently providing it. Of the 31% of residents that correctly identified indications for bariatric surgery, only 9% reported referring appropriate patients for bariatric surgery. Notably, higher CS was significantly correlated with more frequent bariatric surgery referrals, lifestyle counselling, WMM prescription, and lifestyle specialist referral (Table 1). Reported barriers to lifestyle counseling were lack of time (93%), poor familiarity with resources (50%), and lack of training in motivational interviewing (36%). Barriers to WMM prescription were unfamiliarity with the medications (84%) and side effect concerns (61%). Finally, 90% desired more training in pharmacotherapy, and 77% wanted more information on referral processes for surgical and medical interventions.

CONCLUSIONS: Most IM residents surveyed do not feel adequately prepared to provide evidence-based management of obesity via conselling on lifestyle changes, WMM prescription, or specialty care referral. Comfort and knowledge of system processes/resources and WMMs are critical to resident management of obesity. These are potential targets for educational intervention in residency curricula that may improve care for patients with obesity.

RESIDENT PHYSICIAN PERSPECTIVES OF HEALTH DISPARITIES EDUCATION

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BACKGROUND: Health disparities within the United States are well-documented and continue to grow given the growing diversity of the population. The Accreditation Council for Graduate Medical Education has prioritized education on social determinants of health, health disparities, and health equity for all residency trainees. Prior to implementation of such a curriculum, we evaluated internal medicine trainees' background knowledge of these topics and performed a needs assessment to determine future directions of the curriculum.

METHODS: We conducted a web-based survey of categorical and preliminary internal medicine and medicine-pediatrics residents in an urban academic Internal Medicine residency program. Residents were asked demographic information, source and extent of prior knowledge of and education in health disparities, ability to define health disparities and related terms and future learning interests on this topic. Using a 5-point Likert scale, trainees were asked to rate their knowledge (1-not at all to 5-very knowledgeable) of various social determinants of health and opinions (1-strongly disagree to 5-strongly agree) regarding importance of factoring in these determinants into patient care. In fall 2018, the anonymous survey was e-mailed to 112 residents.

RESULTS: Survey response was 60% (n=68); 66% were male. Respondents identified as Caucasian (59%), 24% as Asian, 4% African American and 4% Arabic. 63% reported previous training in health disparities and social determinants of health, primarily in medical school (93%). Respondents rated themselves least knowledgeable about the relationship of physical/intellectual/sensory disabilities (2.69) and gender orientation (2.82) and health. Residents were least likely to rate gender (3.71) or race/ethnicity (3.96) as a healthcare determinant, and most likely to rate access to healthcare (4.74) and poverty (4.63) as determinants of health. Without looking up the definition, 41(60%) of respondents felt able to explain the concepts of health disparity and 18(26%) could explain health equity. 77% of respondents reported factoring healthcare disparities into their medical decision-making more than half of the time. Respondents were most interested in learning more about immigrant/refugee status (46%) and socioeconomic status (44%) affecting health.

CONCLUSIONS: Internists frequently care for patients negatively affected by health disparities and social determinants of health. We believe that the first step to helping patients attain health equity is to recognize that these disparities exist. Our survey indicated that many of our respondents have baseline knowledge in health disparities and social determinants of health, and desire further education on this topic, particularly relating to ethnicity and immigrants. We recommend a more standardized curriculum to address the needs of learners and the communities they will serve.

RESIDENTS VALUE FREQUENT AND STRUCTURED FEEDBACK FROM ATTENDINGS WHO HAVE OBSERVED MULTIPLE EPISODES OF CARE

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BACKGROUND: Residents report feedback as one of the most important components of their ambulatory care experience but remain highly dissatisfied with feedback provision. We hypothesized that resident satisfaction with feedback in a primary care clinic would increase with a structured intervention aimed to improve feedback frequency and attending continuity.

METHODS: In a university-affiliated internal medicine residency continuity clinic, we randomized residents to a control group (standard feedback process) and an intervention group. In the intervention group, resident and attending pairs were created based on frequency of overlapping clinic schedules. Prior to a clinic day with their matched attending, each intervention resident was requested by e-mail to identify a goal for improvement for their upcoming clinic day and to and seek observation and feedback around this goal from that attending. Participants were all asked to complete pre- and post-intervention surveys regarding satisfaction around feedback and clinic experience. Kruskal-Wallis tests were used to determine associations in survey questions.

RESULTS: 78 residents participated in the study with response rates of 76% and 75% for the pre- and post- surveys, respectively. There was increased satisfaction with overall feedback, usefulness of feedback, and frequency of feedback in the intervention resident group ($p < 0.001$, 0.02, <0.001, respectively). There was also trend towards greater satisfaction with overall clinic experience ($p=0.09$), and towards increased desirability of primary care as a profession ($p=0.05$) in the intervention resident group.

CONCLUSIONS: Implementation of frequent and structured feedback sessions with a focus on attending/resident continuity increases resident satisfaction with feedback in the outpatient continuity clinic setting. Our study suggests that this frequent, structured feedback by a paired attending might improve resident satisfaction with primary care clinic, likelihood of choosing primary care as a career, and could ultimately improve resident competency and

RESILIENCE AND BURNOUT AMONG PHYSICIANS AND THE GENERAL U.S. WORKING POPULATION

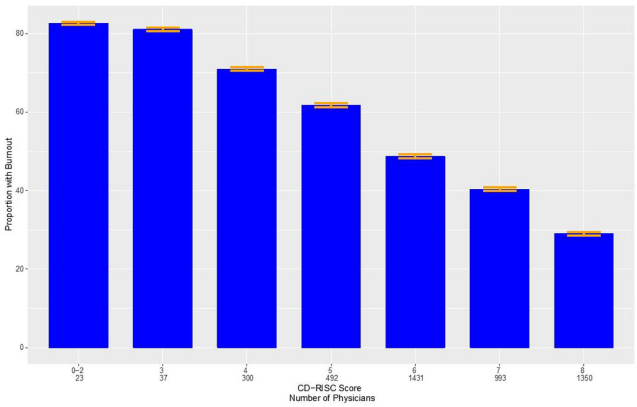
Colin P. West[1]; Liselotte Dyrbye[2]; Christine Sinsky[3]; Mickey Trockel[4]; Michael Tutty[5]; Laurence Nedelec[4]; Lindsey E. Carlasare[5]; Tait Shanafelt[4]. [1]Internal Medicine, Mayo Clinic, Rochester, MN; [2]Medicine, Mayo Clinic, Rochester, MN; [3]Professional Satisfaction, American Medical Association, Chicago, IL; [4]Stanford University, Palo Alto, CA; [5]American Medical Association, Chicago, IL. (Control ID #3382722)

BACKGROUND: The prevalence of physician burnout is well documented, and resilience training has been proposed as one means to support physician well-being. However, the resilience of physicians relative to that of the U.S. working population is not established, and the relationship between resilience and physician burnout is not well understood.

METHODS: Between October 2017 and March 2018 we conducted a national survey of U.S. physicians and a probability-based sample of the non-physician U.S. working population. Resilience and burnout were measured using the 2-item Connor-Davidson Resilience Scale and full Maslach Burnout Inventory, respectively. Multivariable regression models compared resilience scores of physicians with those of the employed general population, as well as the relationship between resilience and physician burnout, adjusting for sex, age, relationship status, hours worked per week, and burnout status.

RESULTS: 5445 physicians and 5198 members of the U.S. working population completed surveys. Resilience scores were higher among physicians (6.49 vs. 6.25 on the 0-8 scale, adjusted mean difference 0.25, 95% CI 0.19-0.32, p<0.001). Among physicians, resilience was strongly associated with burnout. Physicians without overall burnout had higher resilience scores than physicians with burnout (6.82 vs. 6.13, adjusted mean difference 0.68 points, 95% CI 0.61-0.76, p<0.001). Each 1-point higher resilience score was associated with a 36% lower odds of overall burnout (OR 0.64, 95% CI 0.60-0.67, p<0.001), with similar results for high emotional exhaustion and high depersonalization. More than 80% of physicians with resilience scores of 3 or less had burnout symptoms. However, 29% of physicians with the highest possible resilience score of 8 had burnout (Figure).

CONCLUSIONS: In this national study in the United States, physicians exhibited higher levels of resilience than the general working population. Resilience was inversely associated with burnout symptoms, but burnout rates were substantial even among the most resilient physicians. Although maintaining and strengthening resilience is important, physicians as a profession do not have a resilience deficit. Additional solutions, including efforts to address system issues in the clinical care environment, are needed to reduce burnout and promote physician well-being.



RESOURCED FOR RESPONSIVENESS: HOW RIMARY CARE INTENSIVE MANAGEMENT FOSTERED GOOD PAIN CARE

Karleen Giannitrapani[1,2]; Jesse Holliday[1]; Matthew McCaa[1]; Susan E. Stockdale[3]; Alicia Bergman[3]; Marian L. Katz[3]; Lisa V. Rubenstein[3]; Donna M. Zulman[3,2]; Evelyn T. Chang[3]. [1]U.S. Department of Veterans Affairs Palo Alto Health Care System, Menlo Park, CA; [2]Division of Primary Care and Population Health, Stanford University School of Medicine, Stanford, CA; [3]U.S. Department of Veterans Affairs Greater Los Angeles Healthcare System, Los Angeles, CA. (Control ID #3390372)

BACKGROUND: High-risk Veterans experience high rates of chronic pain and/or arthritis. In 2014-2018, the Veterans Health Administration (VHA) piloted a quality improvement program to augment standard primary care (Patient Aligned Care Team, or PACT) with PACT-Intensive Management (PIM) to improve management of high-risk patients.

METHODS: The PIM evaluation included 102 semi-structured interviews with stakeholders: including physicians, nurses, nurse practitioners, physician assistants, social workers, and patients participating in the PIM program. Text related to pain was subcategorized according to key stakeholder type: PACT providers/staff (21 pain mentions), PIM leaders (31 pain mentions) and PIM patient (37 pain mentions). Each of the three data sets were then evaluated using a consensus qualitative method to identify themes.

RESULTS: Themes varied across interviewee type. PACT providers themes: 1) WORKLOAD REDUCTION. PACT providers felt PIM provided a resource for the workload associated with providing pain care in

the context of mental illness and substance use. They also highlighted PIM's allowance of longer visits to accommodate needs of complex pain concerns. 2) ACCESS TO EXPERTISE. PACT providers described benefiting from access to expertise for complex patients, specifically how PIM helped strategize "creative processes" for minimizing risk of negative side effects and ER visits. PIM leader themes: 1) PAIN CARE COORDINATION IS AN APPROPRIATE FOCUS OF PIM. PIM providers indicated that pain is one of the reasons providers consider patients for PIM and that chronic pain management was an area they would emphasize if given more time with patients. In particular, navigating system complexity and coordinating chronic pain management is something PIM can help with. 2) FACILITATE TRYING NON-OPIOID APPROACHES. By creating a trusting relationship and "rapport building", PIM helped patients try non- opioid pain management strategies. 3) MITIGATE PROVIDER COMPASSION FATIGUE. PIM offered an extra level of support, which may be critical in mitigating compassion fatigue some providers experience when treating high-need patients with pain. PIM patient themes: 1) COMMUNICATION. Patients felt the PIM program reduced frustration by giving them someone to talk to about pain and quality of life. PIM helped with facilitating challenging communication around pain care and experience. 2) RESPONSIVE TO REAL TIME PATIENT PAIN CONSIDERATIONS. Patients reported PIM helped them navigate more timely access to pain care, receive "validation" of their pain experience, and develop a mutually agreed upon pain care plan.

CONCLUSIONS: An intensive management quality improvement program in primary care facilitated effective pain care for high-risk patients by offering access to clinicians with dedicated time and expertise to communicate effectively, build rapport, and address time-intensive and time-sensitive issues around chronic pain management.

RESOURCE USE AND CARBON FOOTPRINT OF INPATIENT STAYS IN A US HOSPITAL

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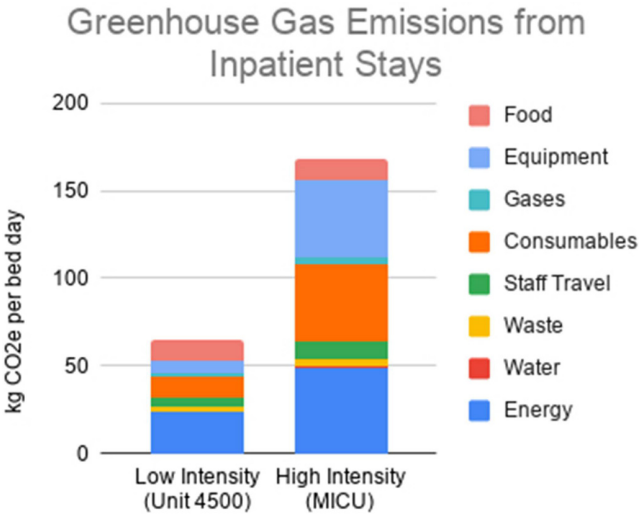
BACKGROUND: Environmental sustainability is a growing concern to healthcare providers, given the health impacts of climate change and air pollution and the sizable footprint of healthcare delivery itself. In 2017, 17.9% of the United States (US) Gross Domestic Product, or $3.5 trillion, was from the healthcare sector (1). In addition,10% of US greenhouse gas emissions (GHGs) and 9% of air pollutants that adversely affect the lives of the public(2,3) come from the healthcare sector. Though many studies have focused on environmental footprints of operating rooms, few have quantified emissions from inpatient stays.

METHODS: This study analyzes resources required for care activities of a regular inpatient unit (Unit 4500) with 49 beds and 14,427 bed days and a medical intensive care unit (MICU) with 12 beds and 2,536 bed days in a tertiary, private hospital in Brooklyn, NY, USA. Through the use of hybrid Environmental Life Cycle Assessment (LCA), average emissions associated with resource use in an inpatient setting for one calendar year and per bed day were quantified. Retrospective data collected included purchasing of supplies, pharmaceutical, utilities (gas, water, electricity), and linens used over a calendar year, and staffing levels in both units. A 5-day period of manual waste auditing in each unit was also conducted.

RESULTS: Unit 4500 generates 5.5kg of solid waste and 65kg CO2-e per bed day, shown in the Figure. The MICU generates 7.1kg of solid waste and 168kg CO2-e per bed day. Most emissions originate from purchase of consumable goods, building energy consumption, purchase of capital equipment, food services, and staff travel.

CONCLUSIONS: As expected, the MICU generates more solid waste and GHGs per bed day than Unit 4500. With resource use and emissions data, sustainability strategies, like energy efficiency upgrades, renewable energy sources, minimizing single-use consumables, and optimizing care pathways, can be effectively targeted and tested. Medical device and supply manufacturers should also aim to minimize life cycle waste and GHGs.



RETENTION OF WOMEN IN ACADEMIC MEDICINE AND EFFECTS OF MENTORSHIP

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BACKGROUND: Despite entering medical school and academic medicine at higher rates, rates of women faculty are not commensurate with men. Literature has shown that women leave or intend to leave academic medicine for multiple reasons. Gender leadership gaps in academic medicine are well documented in the literature more-so than gender gaps in retention. Lack of women in leadership roles equates to lack of female role models and potential losses related to organizational effectiveness given the importance of diversity within teams and organizations. To address the gender gaps in leadership in academic medicine, we must address the leaky pipeline. The goal of the study is to provide descriptive information regarding relationships between specific institutional factors and interventions and women's intent to remain in academic medicine.

METHODS: To better identify what factors are associated with women's retention or intent to remain in academic medicine, we surveyed women faculty with appointments in U.S. Departments of Medicine. The survey consisted of a series of questions rated on a Likert scale, demographic questions, and qualitative write- in questions derived from the literature. Participants voluntarily completed the survey by links posted on public listservs. Using the Statistical Package for the Social Sciences (SPSS), descriptive and discriminant analyses were performed.

RESULTS: At the close of the survey, 429 survey responses analyzed after removing incomplete surveys and respondents that that did not meet inclusion criteria. The sample included women faculty across all ranks, across all regions, and various ethnicities. The largest number of responses were from women in general internal medicine.

Of the participants, 43% were satisfied with the current level of mentorship provided at their institution. More participants agreed if there was a formal mentorship program at their institution, but rates were lower if it was through an outside program or formal peer mentorship. Institutional interventions to address gender inequities varied. A number of factors were found to have a positive association with intention to remain in academic medicine including opportunities to integrate work and life identities, flexible work options, paid parental leave, and professional development. Over 80% of women responding plan to stay in academic medicine over the next five years.

CONCLUSIONS: While gender bias training for leaders and committee members and faculty development programs may be important steps in addressing gender inequities in academic medicine, these initiatives alone are unlikely to fix the leaky pipeline. Despite the lower rates of women climbing the leadership ladder, most are satisfied with their current opportunities of formal mentorship and plan to stay in academic medicine over the next five years. Limitations of this study include selection bias as those opting to take the survey may be more engaged and proactive in seeking mentorship and retention in medicine.

RETENTION STRATEGIES FOR MEDICATIONS FOR OPIOID USE DISORDER IN ADULTS: A RAPID REVIEW

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BACKGROUND: Almost 50,000 Americans die annually from opioid overdose. While medications for addiction treatment (MAT) of opioid use disorder (OUD) effectively improve mortality, retaining patients in MAT programs remains challenging. Patients with OUD are adversely affected by social determinants of health that may make accessing traditional treatment settings difficult. Policymakers and research agencies have an interest in identifying potential interventions for further study and evaluation. The U.S. Agency for Healthcare Research and Quality, on behalf of the U.S. Department of Health and Human Services, commissioned a rapid evidence review on the effectiveness of interventions to improve MAT retention among adults with opioid use disorder.

METHODS: We searched MEDLINE and the Cochrane Library from February 2009 through June 2019. Systematic reviews and randomized controlled trials (RCTs) reporting retention in MAT for at least 3 months for the following interventions were included for analysis: care settings/logistical support, contingency management (CM), health information technology (HIT), extended-release (XR) MAT formulations, and psychosocial interventions. One investigator abstracted data; two investigators independently assessed quality.

RESULTS: Two systematic reviews and 39 primary studies were included. Interventions initiating MAT in soon-to-be-released incarcerated patients improved retention following release (1 prior review and 2 additional RCTs, n=1,062, positive). Integrating primary care services (3 RCTs, n=631, 1 positive, 2 no difference), or logistical interventions (4 RCTs, n=709, no differences) reported similar retention compared to usual specialty treatment. CM may improve retention on antagonist MAT (3 RCTs, n=140, all positive). Early trials suggest that retention in MAT may be no worse with HIT approaches than with in-person approaches (3 cohort studies, n=3965, 4 RCTs, n=1,688, no differences). Retention was comparable with implant or injectable XR buprenorphine compared with daily formulations (2 RCTs, n=605, no differences). Retention varied for XR naltrexone injection compared with daily buprenorphine (2 RCTs, n=729, no differences). Most psychosocial interventions did not improve retention (1 SR, n=3124, 9 RCTs, n=2483, no differences). There was limited data on harms and subgroups.

CONCLUSIONS: We found limited evidence suggesting MAT initiated in pre-release criminal justice populations and CM interventions with antagonist MAT may aid in MAT retention. HIT interventions may be equivalent to in-person MAT; similarly, integrating health services with MAT warrant further investigation. Most intervention types had few trials that reported retention outcomes. Studies lacked standard definitions of retention, had methodological shortcomings, and limited generalizability. Future research on interventions to improve MAT retention should focus on identifying and addressing the unique needs of the OUD population.

REWRITING THE RULES INSTEAD OF THE NOTES: IMPACTS OF CMS DOCUMENTATION UPDATES ON STUDENT CLERKSHIP NOTE WRITING

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BACKGROUND: In 2018, the Center for Medicare & Medicaid Services (CMS) updated their documentation regulations to expand utilization of medical student documentation. This study aims to evaluate the impact of this change on medicine clerkship student documentation.

METHODS: Medicine clerkship student documentation from the 2017 summer quarter (prior to the CMS regulation change) was compared to documentation during the 2018 summer quarter (after documentation changes were implemented) at a single site through assessment of electronic health record (EHR) data. Numbers of notes in the EHR, cosignature by attending physicians, and timing of note writing was assessed in both the inpatient and ambulatory settings during both time periods. Note quantity in each category was compared before and after the CMS documentation changes were implemented.

RESULTS: A total of 46 third-year medical students were included in this study (23 from 2017 and 23 from 2018). Over the 11-week medicine clerkship, the mean number of inpatient notes students wrote before and after implementation was similar (81 prior vs. 68 after, p=0.19). There was also no difference in the mean number of inpatient notes signed by attendings (51 vs. 36, p=0.045), H&Ps signed by attendings (3 vs 5.8, p=0.064) or progress notes signed by attendings (11 vs 17, p=0.33). The mean number of inpatient notes written between 6pm-4am was also unchanged (47 vs 39, p=0.32).

However, in the outpatient setting, the mean total number of notes written by medical students increased from 2 to 12 per student (p<0.001). In addition, the average number of notes signed by the attending increased from 1 to 5 (p<0.001) and the average number of notes written from 6pm-4am decreased from 48 to 7 (p<0.001).

CONCLUSIONS: After implementation of the new CMS medical student documentation regulations, more ambulatory notes were written by medical students and signed by their attendings. In the inpatient setting, the number of notes and those signed by attendings remained stable. Despite these changes, documentation after hours didn't increase. These documentation changes could lead to more integration of medical students into ambulatory clinical care and enhanced preparedness for ambulatory practice.

RIFAXIMIN IS EFFICACIOUS FOR THE TREATMENT OF IRRITABLE BOWEL SYNDROME WITH DIARRHEA IN PATIENTS RECEIVING CONCOMITANT ANTIDEPRESSANTS

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BACKGROUND: A high prevalence of comorbid psychiatric disorders, such as depression, has been reported in patients with irritable bowel syndrome (IBS). Rifaximin, a nonsystemic antibiotic, is indicated in the United States for the treatment of adults with IBS with diarrhea (IBS-D). In the current post hoc analysis, rifaximin for the treatment of IBS-D (TARGET 3 study) was assessed in a subgroup of adults receiving concomitant antidepressants.

METHODS: Adults diagnosed with IBS received placebo for 10 ± 3 days and completed a daily symptom diary during a single-blind screening phase. During the placebo screening phase, patients who rated their abdominal pain ≥3 (scale range, 0-10) and bloating ≥3 (scale range, 0-6) and had mushy/watery stool (Bristol Stool Scale [BSS] type 6/7) for ≥2 days in a week (ie, IBS-D) were eligible to receive open-label rifaximin 550 mg three times daily for 2 weeks. In the original protocol, patients could continue taking antidepressants if they were on a stable dose for ≥6 weeks before study entry. Efficacy response was defined using a composite as well as individual assessment of abdominal pain (≥30% decrease from baseline in mean weekly pain score) and stool consistency (≥50% decrease from baseline in number of days/week with BSS type 6/7) during ≥2 of the first 4 weeks post-treatment. Additional symptoms response assessments included bloating (≥1-point decrease in weekly average bloating score), bowel movement urgency (≥30% improvement in percentage of days with urgency), and daily global IBS symptoms (≥1-point decrease in weekly average IBS symptoms score) during ≥2 of the first 4 weeks post-treatment.

RESULTS: 500 of 2579 patients with IBS-D were taking stable doses of antidepressants during the 2-week rifaximin treatment phase; 2438 in the overall group and 473 patients in the concomitant antidepressant subgroup were evaluable for efficacy. A total of 44.1% (1074/2438) and 44.6% (211/473) of patients in the overall group and concomitant antidepressant subgroup, respectively, were abdominal pain plus stool consistency (composite) responders, 56.8% (1384/2438) and 61.3% (290/473), respectively, were responders for the individual component of abdominal pain, and 60.1% (1466/2438) and 57.9% (274/473), respectively, were responders for the individual component of stool consistency. In addition, 56.2% (1369/2438) and 57.5% (272/473) for the overall group and concomitant antidepressant subgroup, respectively, were bloating responders, 52.3% (1276/2438) and 56.4% (267/473), respectively, were bowel movement urgency responders, and 57.5% (1401/2438) and 61.5% (291/473), respectively, were daily global IBS symptom responders. Adverse events reported in ≥2.0% of patients in the concomitant antidepressant subgroup were sinusitis (2.8% [14/500]) and urinary tract infection (2.0% [10/500]).

CONCLUSIONS: A 2-week course of rifaximin 550 mg three times daily improved symptoms in adults with IBS-D taking concomitant antidepressants, and rifaximin was well tolerated.

RISK AND POTENTIAL MAMMOGRAPHY HARMS DISCUSSION IN BREAST CANCER COUNSELING: PERSPECTIVES FROM PATIENTS WITH LOW HEALTH LITERACY AND PRIMARY CARE PROVIDERS

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BACKGROUND: While breast cancer screening guidelines promote informed decision-making, how mammography information, especially personal risk and mammography harms, is perceived by those with low health literacy (LHL) is relatively unknown. This study: 1) Characterized breast cancer risk and potential mammography harm discussions among women 40-54 with LHL and primary care providers (PCPs); and 2) Explored perceptions of existing decision aid (DA) samples.

METHODS: Eligible women were ages 40-54; had LHL(<7 on the Health Literacy Skills Instrument-10); no mammogram within 9 months; and no prior breast cancer. Women were approached prior to a well-visit at an academic safety-net hospital. PCPs practicing at this site were eligible for PCP interviews. Qualitative interviews explored mammography counselling experiences, including discussions of breast cancer risk and potential mammography harms. Patient interviews included feedback on sample mammography DAs. Two individuals developed a codebook, independently coding 6 transcripts and establishing consensus. One individual coded remaining transcripts with second coder review. Thematic analysis identified themes related to breast cancer risk, mammography harms, and DA feedback.

RESULTS: Of 25 patients, 18 identified as black, 3 as Hispanic/Latina, 2 as non-Hispanic white, and 3 did not disclose. Average age was 46.5 years; 12 had a prior mammogram. Of 20 PCPs, 15 were female; 12 had practiced >5 years. Seven PCPs reported conducting risk assessment routinely during mammography counseling, 8 did so for suspected strong family history, and 5 did not assess risk. Most patients did not recall discussing their personal risk with PCPs, but cited family history as the primary breast cancer risk. In DA review, patients desired more details about other risk factors, simpler risk visualizations, and information about how personal risk is calculated. PCPs reported limited comfort with risk calculators; concern about patients' numeracy impeded their use. Three PCPs believed discussing harms would deter mammography and avoided addressing them. About half of PCPs reported discussing false positives, but found the concept challenging to describe. Patients expressed confusion about false positives after viewing DAs, but valued harms information. Both groups sought materials with simpler language, like analogies rooted in patients' daily life. PCPs recommended priming patients via interactive tools that elicited family history in waiting rooms to facilitate targeted discussions during clinic visits.

CONCLUSIONS: Breast cancer risk and mammography harms were challenging concepts for PCPs to describe and for patients with LHL to understand. Family history was the most cited breast cancer risk factor acknowledged by both patients and providers. Time-limited visits and complicated support materials impeded robust counseling. Interactive education and risk elicitation provided in the waiting room were suggested to facilitate in-clinic discussions.

RISK OF CARDIOVASCULAR EVENTS AND SERIOUS HYPOGLYCEMIA COMPARING PATIENTS WITH TYPE 2 DIABETES INITIATING A GLP-1 RECEPTOR AGONIST OR BASAL INSULIN: A PROPENSITY-SCORE MATCHED COHORT STUDY

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BACKGROUND: Prior head-to-head open label trials comparing selected GLP-1RA(s) versus basal insulin(s) did not evaluate cardiovascular outcomes.

3**METHODS:** Using 2 large U.S. commercial claims databases (Optum and Truven MarketScan) from 01/2012 to 12/2017, we assessed the risk of a composite cardiovascular outcome (MI, stroke) and serious hypoglycemia defined by validated claims-based algorithms comparing 26,308 patients with type 2 diabetes (mean age 58, mean HbA1c 8.6%) with prior or concurrent metformin therapy newly initiating an injectable GLP-1RA or basal insulin.

RESULTS: We estimated pooled incidence rates, meta-analyzed hazard ratios and 95% CI adjusting for >140 baseline clinical characteristics, including HbA1c. Baseline clinical characteristics were well-balanced in the two groups after 1:1 propensity score matching. In an as-treated analysis, the median follow-up was 148 days. Compared to basal insulin, initiating a GLP-1RA was associated with a lower risk of MI or stroke (HR 0.68 [95% confident interval (CI), 0.51 to 0.90]) and lower risk of serious hypoglycemia (HR 0.38 [95% CI, 0.25 to 0.57]).

CONCLUSIONS: These results support recent clinical treatment guidelines that recommend starting a GLP-1RA before basal insulin for patients with type 2 diabetes with inadequate glycemic control despite metformin.

Table: Baseline clinical characteristics and outcomes in a 1:1 propensity-score matched study comparing patients with type 2 diabetes newly initiating an injectable GLP-1RA or basal insulin.

	GLP-1RA (n=13,154)	Basal Insulin (n=13,154)	Stand. Diff.***
Pooled baseline patient characteristics*			
Age, mean(SD)	57.88 (4.44)	57.91 (4.91)	0.01
Gender female, n(%)	6,280 (47.7%)	6,324 (48.1%)	0.01
Ischemic heart disease, n(%)	2,066 (15.7%)	2,076 (15.8%)	<0.01
Acute MI, n(%)	116 (0.9%)	122 (0.9%)	<0.01
Stroke, n(%)	594 (4.5%)	595 (4.5%)	<0.01
CHF, n(%)	576 (4.4%)	639 (4.9%)	0.02
CKD 3**	659 (5.0%)	671 (5.1%)	<0.01
History of Hypoglycemia, n(%)	493 (3.7%)	507 (3.9%)	0.01
History of DKA, n(%)	42 (0.3%)	44 (0.3%)	<0.01
Sulfonylurea, n(%)	6,976 (53.0%)	6,993 (53.2%)	<0.01
DPP-4, n(%)	4,816 (36.6%)	4,852 (36.9%)	0.01
Baseline HbA1c, %, mean(SD)	8.64 (0.84)	8.63 (0.82)	-0.01
Pooled outcomes	**N events (IR/1000py)**	**N Events (IR/1000py)**	**HR (95% CI)*****
MI or stroke (primary)	61 (6.75)	82 (10.43)	0.68 (0.51-0.90)
Myocardial Infarction	36 (3.98)	43 (5.46)	0.69 (0.48-1.00)
Stroke	29 (3.21)	49 (6.23)	0.62 (0.40-0.95)
Serious hypoglycemia****	24 (2.65)	66 (8.40)	0.38 (0.25-0.57)

*Baseline characteristics were measured 180 days (6 months) before the index date (i.e. new prescription claim for a GLP1RA or a basal insulin).
**CKD 4 and 5 were excluded. We defined CKD 3 based on ICD-9 and ICD-10 diagnosis codes.
***Standardized difference <10% has been suggested to represent good balance between treatment groups.
****Serious hypoglycemia was defined as hospitalization or ED encounter with primary diagnosis of hypoglycemia.
*****HR = hazard ratio. Reference group = basal insulin.

RIVAROXABAN VERSUS WARFARIN FOR TREATMENT AND PREVENTION OF RECURRENT VENOUS THROMBOEMBOLISM IN AFRICAN AMERICAN PATIENTS

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BACKGROUND: African Americans have an increased risk of venous thromboembolism (VTE) and poorer outcomes vs other racial groups. Despite these race-based differences, African Americans have been under- represented in randomized trials evaluating anticoagulants for acute VTE treatment. We sought to evaluate the effectiveness and safety of rivaroxaban vs warfarin for treatment and prevention of recurrent VTE in African Americans.

METHODS: We performed a retrospective cohort analysis using Optum® De-Identified Electronic Health Record data from 11/1/2012-9/30/2018. We included African Americans admitted to the hospital, emergency department or observation unit for deep vein thrombosis or pulmonary embolism, who received rivaroxaban or warfarin as their first oral anticoagulant within 7-days of the acute event and had ≥1 provider visit in the 12-months prior. We excluded patients with another indication for oral anticoagulation. Differences in baseline characteristics between cohorts were adjusted using inverse probability-of-treatment weighting based on propensity scores (standard differences <0.10 were achieved for all covariates). Our primary outcome was the composite incidence of recurrent VTE or major bleeding at 6-months (intention-to-treat approach). Three- and 12-month timepoints were also assessed. Risk was compared using Cox regression and reported as hazard ratios (HRs) with 95% confidence intervals (CIs).

RESULTS: We identified 2097 rivaroxaban and 2842 warfarin users with incident VTE. At 6-months, no differences in the composite endpoint (HR=0.96, 95%CI=0.75–1.24), recurrent VTE (HR=1.02, 95%CI=0.76–1.36) or major bleeding (HR=0.93, 95%CI=0.59–1.47) were observed between cohorts. Analysis at 3- and 12-months provided similar findings (Table).

CONCLUSIONS: In African Americans experiencing an acute VTE, no significant difference in the incidence of recurrent VTE or major bleeding was observed between rivaroxaban or warfarin users.

	Rivaroxaban N=2,097 n (%)	Warfarin N=2,842 n (%)	HR (95%CI)
3-Month			
Composite	96 (4.58)	130 (4.57)	1.08 (0.82–1.42)
Recurrent VTE	74 (3.53)	96 (3.38)	1.07 (0.78–1.46)
Major Bleed	27 (1.29)	40 (1.41)	1.19 (0.72–1.97)
6-Month			
Composite	105 (5.01)	166 (5.84)	0.96 (0.75–1.24)
Recurrent VTE	81 (3.86)	115 (4.05)	1.01 (0.76–1.36)
Major Bleed	30 (1.43)	59 (2.08)	0.93 (0.59–1.47)
12-Month			
Composite	122 (5.82)	208 (7.32)	0.93 (0.74–1.16)
Recurrent VTE	89 (4.24)	140 (4.93)	0.95 (0.72–1.2)
Major Bleed	39 (1.86)	80 (2.81)	0.92 (0.62–1.36)

ROLE EXPANSION IS CULTURE CHANGE: LESSONS FROM EVALUATING THE VA'S NATIONAL IMPLEMENTATION OF THE LIFE-SUSTAINING DECISIONS TREATMENT INITIATIVE

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BACKGROUND: The Department of Veterans Affairs (VA) implemented the Life Sustaining Treatment Decisions Initiative (LSTDI) throughout all VA institutions in 2017. This policy was to encourage goals of care (GOC) discussions regarding life-sustaining treatments

among veterans with serious illnesses. A key component of the initiative was allowing nurses and social workers to participate in goals of care conversations. Level of implementation of the LSTDI varied among different sites. We conducted a secondary analysis of LSTDI implementation evaluation interviews to understand how sites facilitated newly expanded roles.

METHODS: We purposively sampled 31 interdisciplinary providers from 12 geographically diverse high and low performing sites in terms of implementation of LSTDI (defined as GOC conversation documentation via a structured note-template). We then used a combination of inductive and deductive approaches. Specifically, we first reviewed 6 transcripts to develop a code list based on role theory and provider descriptions of education and training about roles. We then applied codes to all transcripts and summarized higher-level themes.

RESULTS: 1) Initiative educational champions were key in readying providers for LSTDI implementation. "Turnover" and lack of educational champions slowed implementation. 2) A diverse variety of educational materials and approaches to training assisted in provider readiness for the implementation. 3) Leadership acknowledgement of role overload and its effect on role readiness helped facilitate implementation. Providers were "feeling overwhelmed, it was just one more thing on their plate", leadership had "been pretty supportive of it … [and] willing to give them an extra half hour to have the life-sustaining treatment discussion". 4) Development or expansion of existing roles was reinforced by initiative education and leadership alignment with implementation goals. This support readied providers to take GOC conversations as a "role specific versus person specific" task. 5) Role expansion to take on LSTDI components represents a culture change. "Our culture has been, and we have had many, many people tell our social workers you don't touch this DNR thing. You don't touch it. It's out of your scope, you have nothing to do with it. And they told the nurses the same thing … a really difficult thing for us and we still are working on that is how to get people to understand that this is everyone's job". Multiple high performing LSTDI sites successfully integrated non- clinicians for goals of care conversations into their teams' practice.

CONCLUSIONS: Role expansion is never straightforward and may benefit from being described as culture change. Fostering role readiness and expanding multidisciplinary roles was important to LSTDI implementation, and initiative educational training and leadership reinforcement facilitate successfully negotiating and undertaking expanded roles.

ROOM OF HAZARDS: AN INTERPROFESSIONAL EVALUATION OF SAFETY RISKS IN A SIMULATED PATIENT ROOM

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BACKGROUND: As many as 3.7% of patients experience preventable adverse events in health care facilities nationwide. The "Room of Hazards" is a simulation developed to assess knowledge of health care staff in identifying safety hazards in clinical settings. While prior studies focused on nursing and medical students, few have assessed its use for interprofessional health care professionals in a hospital setting. Our study aims to assess the use of this simulation among many different disciplines across the hospital.

METHODS: In our simulation, we set up a simulated inpatient hospital room with a patient mannequin and multiple safety hazards. Participants walked around the room, documenting all observed safety hazards. Answer sheets were analyzed, transcribed, and grouped into five hazard categories (patient, medications, equipment, environment, and care processes). Results were analyzed using ANOVA with a Tukey post hoc test (homogeneity of variance) or a Games-Howell test (no homogeneity of variance).

RESULTS: There were 115 participants in the simulation, including 70 nursing staff, 5 nursing students, 3 medical students, 11 physicians, 5 social workers, 6 pharmacists, 9 Certified Nursing Assistants (CNAs), 4 psychologists, and 2 others. On average, participants identified 20.8 out of 34 hazards: 2.9/6 in patient, 3.4/5 in medications, 5.8/9 in equipment, 6/8 in environment, and 2.7/6 in care processes. There was a significant difference among different professionals in how many hazards they identified in each category: environment ($p=0.020$), equipment ($p<0.001$), medications ($p=0.003$), patient ($p=0.041$), and total hazards identified ($p<0.001$). Within the medications category, nurses and pharmacists identified more hazards than CNAs (3.86 vs. 1.67, $p=0.018$; 4.83 vs. 1.67, $p=0.025$). In the equipment category, nurses identified more hazard than social workers (7.01 vs. 1.80, $p=0.002$), pharmacists (7.01 vs. 1.17, $p<0.001$), or physicians (7.01 vs. 4.00, $p=0.019$), and CNAs identified more hazards than pharmacists (5.67 vs. 1.17; $p=0.044$). In the environment category, nurses identified more hazards than medical students (6.31 vs. 3.67, $p=0.018$). Overall, nurses found more hazards than medical students (23.30 vs. 12.67; $p<0.001$) or pharmacists (23.30 vs 14.33, $p=0.045$). Nursing students also identified more hazards than medical students (21.00 vs. 12.67, $p=0.042$).

CONCLUSIONS: While all participants identified hazards in all categories, there were significant differences among health care professionals in ability to identify safety hazards from different categories. This finding suggests that each professional's unique training and job responsibilities can result in varying degrees of ability to identify different types of safety hazards. To maximize identification of patient safety hazards in our health system, interdisciplinary teaching and collaboration is crucial. Our study provides a starting point to include a diverse group hospital staff members in safety training with simulation techniques.

RURAL VS URBAN HOSPITAL LOCATION AND THE IMPACT ON SURGICAL COMPLICATIONS AND IN-HOSPITAL OUTCOMES FOR PATIENTS UNDERGOING APPENDECTOMY

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BACKGROUND: It is well-known that patients in rural areas are more likely to have poorer outcomes than those in urban areas due to a variety of reasons including access to care and quality of care. However, most studies in this area focus on long-term complications and health outcomes for these patients and little is known about the in-hospital outcomes. An appendectomy is one of the most frequently performed surgical procedures and is known for being a lower-risk procedure. This study aimed to elucidate if patients in more rural areas had worse in-hospital outcomes and more frequent surgical complications than those who live in urban areas.

METHODS: This retrospective cohort study utilized the Nationwide Inpatient Sample (NIS) to identify patients from 2012-2015 who had undergone an appendectomy as coded for by ICD-9. Next, patient location data was dichotomized into two categories, those living in an area with 250,000 or more people (urban) or an area with less than 250,000 people (rural). Independent t-tests assessed length of stay (LOS) and total charges. Chi-squared analyses assessed mortality and surgical complications. Patients missing data for any of these variables or under the age of 18 at admission were excluded.

RESULTS: We identified a total of 90,351 patients who underwent an appendectomy during this time period. 19,960 of these patients had their

surgeries in a rural area and 70,391 of these patients had their surgery in an urban area. Those in a rural area had statistically significant increases in mortality (12.5% vs 7.64%, p <.0005) and LOS (3.4 days vs 3.14 days, p <.0005) as compared to patients who underwent an appendectomy in an urban area. Patients who underwent an appendectomy in an urban area had statistically significantly more charges ($41,897 vs $34,307, p<.0005). Those in rural areas also were statistically significantly more likely to have a surgical complication specifically related a pulmonary issue (1.3% vs .95%, p<.0005), the digestive tract (5.35% vs 4.13%, p<.0005), an infection (.67% vs .55%, p=.028), or a complication during the surgery itself (.63% vs .45%, p=.001). Between the two groups, there were no statistical differences regarding systemic, mechanical wound, cardiac, and urinary complications.

CONCLUSIONS: This study's results support previously published literature focused on long-term outcomes for patients in rural areas. Those in rural areas who underwent an appendectomy were much more likely to experience a surgical complication, had longer lengths of stay, and higher rates of mortality even in a routine surgical procedure such as an appendectomy. Physicians should investigate ways to alleviate this problem in areas where access and quality of care are an issue. Additionally, further studies should try and elucidate why outcomes were worse and length of stay was longer for patients in rural areas but total charges were decreased.

SAFE PRESCRIBING PRACTICES AMONG CLINICAL PROVIDERS IN A LARGE NY STATE ACADEMIC CENTER

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BACKGROUND: New York State (NYS) implemented a safe prescribing law (SafeRx) that requires translation of prescription labels to non-English languages for limited English proficiency (LEP) patients. Few studies have assessed provider awareness of this law, LEP documentation practices in the medical record, or LEP communication to pharmacies. This study sought to assess awareness of SafeRx and provider practice regarding LEP documentation that impacts their safe-prescribing practices for LEP patients.

METHODS: From October to November 2018, we invited 935 prescribing providers (physicians, physician assistants and nurses) across specialties within Northwell Health to complete a 38-item cross-sectional online survey regarding preferences for mode of interpretation, practices regarding LEP status documentation, communication with pharmacists on patients' LEP status, and awareness of safe prescribing laws. We performed descriptive statistics and chi-square analyses.

RESULTS: We received responses from 113 participants (12.1%). Most respondents were in training programs, having graduated professional schooling less than 5 years previously (52.8%) and reported English as their first language (86.7%), but spoke more than one language (54%). The majority had not had any training on providing linguistically appropriate care within the past 5 years (69%). In the past year, 91% had used interpreter services. Bilingual in-facility professional interpreters were most preferred (46.9%) and were perceived to be the most accurate by over half of respondents (55.8%). Though telephonic interpretation was used most frequently (60.2%), it was considered to be the most time consuming (62.8%). Respondents were largely unaware of New York State SafeRx policies (74.8%). Though 44% reported "always" and 51% reported "sometimes" documenting LEP status in the chart, 71% reported they "never" notify pharmacists of patients' LEP status and cited time as the most limiting factor for doing so.

CONCLUSIONS: A large proportion of providers are unaware of the NYS safe prescribing law that allows prescription labels to be printed in non-English languages. Though this was a pilot study at a single institution with a low response rate, the results suggest the need to improve provider awareness of this legislation while employing an efficient system to increase non-English medication labeling. Though SafeRx is intended to help LEP patients access better care, poor implementation of this policy reduces its impact. In the long term, improved execution would have benefits for both team-based communication and medication adherence for a vulnerable population.

SAFETY AND EFFECTIVENESS OF INTRAUTERINE CONTRACEPTION COMPARED TO LAPAROSCOPIC TUBAL LIGATION FOR PREGNANCY PREVENTION AMONG CALIFORNIA MEDICAID CLIENTS

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BACKGROUND: Many couples appreciate the convenience of long-acting contraception. However, real- world data on the comparative safety and effectiveness of contraceptive options is limited, and misconceptions are common among patients and some clinicians. In the US, laparoscopic tubal ligation remains more common than use of intrauterine contraception (IUC), particularly among low income women.

METHODS: We conducted a retrospective cohort study of California Medicaid claims for contraceptive procedures performed for women aged 18-50 years, between January 2008 and August 2014. We excluded procedures performed within 4 weeks of birth. We identified pregnancy-related claims after index contraceptive procedures, as well as claims for procedural complications.

RESULTS: We identified 24,228 women who underwent laparoscopic tubal ligation, 35,714 women who had a hormonal IUC placed, and 23,700 women who had a copper IUC placed. Within the year following the contraceptive procedure, rates of pregnancy were similar for women who had tubal ligation and those who had a hormonal IUC placed (p=0.78). Rates of pregnancy at 12 months post-procedure were significantly higher following placement of a copper IUC than a hormonal IUC or tubal ligation, but still low (3.34% vs. 2.70% vs 2.66%, respectively).

Complications were significantly more common following laparoscopic tubal ligation than IUC placement (either copper or hormonal), both on the day of the procedure and over the next 12 months. Specifically, on the day of procedure, acute hemorrhage affected 3.76% vs. 0.007%, anesthetic complications affected 0.24% vs. 0.0001%, an abdominal injury affected 1.25% vs. 0.0009%, and infection affected 0.52% vs. 0.0004% of those who had laparoscopic tubal ligation compared to IUC placement. Hysterectomy occurred for 3.97% vs. 0.000% of those having a tubal ligation or IUC placement. Acute myocardial infarction or cerebrovascular accident complicated 0.06% of tubal ligation procedures vs 0.0000% of IUC placements. Although risks of complications following tubal ligation decreased with time since surgery, they remained significantly higher than those among women who had an IUC placed for over one year of follow up.

CONCLUSIONS: Laparoscopic tubal ligation incurs significantly greater risk of complications than placement of an IUC, both on the day of procedure and over 1 year of follow-up. Women considering permanent contraception should be counseled about the potential advantages of an IUC, which offers similar contraceptive effectiveness in the first year of use.

SAFETY REPORTING IN RANDOMIZED CONTROLLED TRIALS

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BACKGROUND: Physicians rely on accurate reporting of both efficacy and safety in randomized controlled trials (RCTs). Completeness of results and their unbiased framing are critical to accurate estimates of potential benefits and harms that inform clinical decision-making. Poor reporting of safety data in the form of adverse events (AE) has been described, but studies have not evaluated the framing of AE information in relative vs. absolute terms. We set out to evaluate current patterns of reporting efficacy and AEs in high- impact RCTs and to determine the influence of funder, region, clinical area, or intervention type. We hypothesized that AE reporting would be less complete than efficacy reporting and more likely to use absolute terms.

METHODS: We identified all RCTs published within the first three months of 2019 in the 10 highest impact medical journals. We included phase III-IV RCTs of efficacy with sample size > 50 patients, and ≥2 treatment arms. We classified each RCT by clinical area and treatment type (drug, therapeutic procedure, other) and collected information on primary region and funder(s). Chi-square and Fisher's exact tests were used to examine univariate associations between AE reporting and study characteristics. A multivariate logistic regression was used to examine the relationship between complete AE reporting and funder and clinical area.

RESULTS: We identified 121 studies. Most were from Europe (53%) followed by N America (40%); 64% evaluated drugs and 26% evaluated procedures. Funding was from industry (35%), government (31%), or others (34%). Hematology/oncology (31%), cardiology (15%) and infectious diseases (15%) predominated. Nearly all specified a 1° efficacy outcome (99%) and reported efficacy in both absolute and relative numbers (96%). In contrast, only 21% specified a 1° safety outcome and most reported AEs using absolute numbers only (68%). AE reporting was complete in 17% of studies; 24% reported only severe AEs, 20% only common AEs, and 12% did not quantify AEs. There was a significant univariate association between AE reporting and funder (p<.001), but this association did not hold in multivariate analyses (p=0.28). AE reporting did not differ meaningfully based on region, clinical area, or treatment type.

CONCLUSIONS: Efficacy outcomes are well reported in RCTs, while safety reporting is inconsistent and complete in only 17% of studies, regardless of funding, region, specialty, or type of intervention. Presentation of AE data often focuses on absolute event rates while efficacy data is presented in absolute and relative terms, which may bias clinical interpretation. More transparent safety reporting in RCTs is needed to enable clinicians to accurately perceive and describe the balance of benefits and harms.

SAME-DAY VS. DELAYED BUPRENORPHINE TREATMENT AND PATIENT RETENTION IN AN OFFICE-BASED BUPRENORPHINE TREATMENT PROGRAM

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BACKGROUND: Buprenorphine is a safe and effective treatment for opioid use disorder (OUD), yet a small fraction of people with OUD receive it, and rates of retention in treatment are suboptimal. Drop-out most commonly occurs within 30 days of treatment initiation. Therefore, investigating modifiable factors contributing to early drop-out is critical. Requiring multiple visits for evaluation prior to providing an initial buprenorphine prescription (delayed prescription) may lead to excess early drop out when compared with prescribing at the first medical visit (same-day prescribing). Our objective was to determine whether same-day (vs. delayed) buprenorphine prescription was associated with 30-day retention in treatment.

METHODS: This is a retrospective cohort study of 220 patients who initiated buprenorphine treatment at an urban federally qualified community health center (FQHC) between June 1,2015 and December 31,2017. We measured prescription delays by determining the time between patients' first request for buprenorphine treatment (by calling, presenting to the FQHC in-person, or requesting treatment during a visit) and when buprenorphine prescriptions were written. We examined whether patients who received same-day prescriptions had different sociodemographic and clinical characteristics than patients who received delayed prescriptions. We built a multivariable logistic regression model to evaluate the independent association between same-day vs. delayed prescription receipt and odds of 30-day retention in treatment.

RESULTS: 220 patients were included in the study. The mean age was 46 (SD 10.4). The majority were Hispanic (n=159, 72%), male (n=173, 79%), and publicly insured (n=164, 75%). The majority of patients experienced delayed buprenorphine prescription receipt (n=127, 58%). The median delay was 3 days (IQR 0-8). Compared to those with same-day prescription receipt, a larger percentage of those with delayed prescription receipt were white (11% vs. 2%, p<0.05) and had a history of alcohol use (43% vs. 24%, p<0.05) and/or benzodiazepine use (22% vs. 10%, p<0.05). Same-day prescription receipt was not significantly associated with 30-day treatment retention in the primary analysis (AOR 1.93, 95% CI 0.90-4.14) after adjusting for age, race, sex, and benzodiazepine use.

CONCLUSIONS: In this cohort, there were differences between patients who received buprenorphine prescriptions on the same day as their initial evaluation and those who received delayed prescriptions; however, same-day prescription was not significantly associated with higher 30-day treatment retention after adjustment for these differences. Nonetheless, given that same-day prescription was not associated with worse retention, it is reasonable to avoid delays in buprenorphine prescription. Prospective studies of same- day vs. delayed buprenorphine receipt would elucidate the association between delays and retention more definitively.

SCOPE OF PRACTICE REGULATIONS AND NURSING HOME VISITS BY NURSE PRACTITIONERS: 2012-2017

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BACKGROUND: Nurse practitioners (NPs) have been recommended as a way to address care delivery challenges in settings that struggle to attract physicians. This is especially relevant for nursing homes (NHs), which face physician shortages. Our objective was to evaluate the impact of state scope of practice (SOP) regulations on NP practice in NHs.

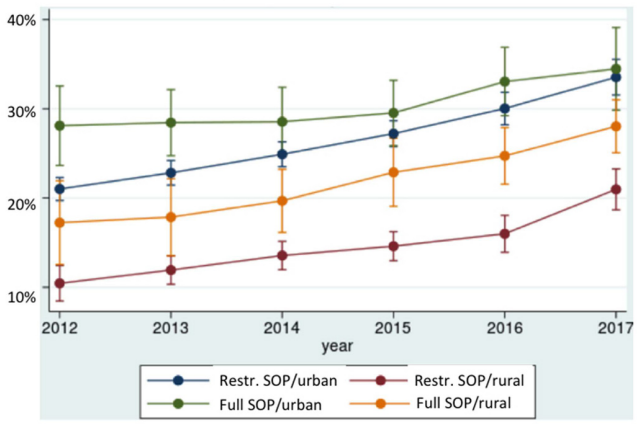
METHODS: We used Medicare Physician/Other Supplier Public Use Files, containing all Part B fee-for- service billings, to identify internal medicine, geriatrics, general practice, or family medicine physicians and

NPs who provided NH visits in 2012-2017. NH visits are excluded from "incident-to" billing and must be submitted under the performing clinician's identifier. Thus, we capture all visits provided by NPs to patients in NHs. For each county, we calculated the proportion of NH visits performed by NPs vs. physicians. Written collaborative agreement with a physician was required for practice in restrictive SOP states; no agreement was required in full SOP states. Using linear regression, we estimated the proportion of NP-delivered care in NHs as a function of state SOP regulations interacted with year, including state fixed effects and year indicators. Other county-level variables included were demographics and an indicator for rural location. We also tested whether the effect of SOP differed in rural vs. urban counties. Confidence intervals were clustered at the state level.

RESULTS: Billings for 40,670 clinicians in 2,680 counties were analysed: 47.8% were NPs and 52.2% physicians. The proportion of NH visits by NPs increased from 2012 to 2017 (Figure). Nine states adopted full SOP regulations during the study period. The adoption of full SOP regulation was associated with a 1.6 percentage point higher proportion of NH visits by NPs (from 21.2% to 22.8%; 95% CI -0.5%-3.7%, p=0.13). Compared to urban counties, rural counties in full SOP states had a slightly greater increase in the proportion of NP-delivered NH care (1.3% vs. 1.9%, respectively).

CONCLUSIONS: The lower proportion of NH visits by NPs in restrictive SOP states may be due to the barriers caused by SOP regulations. However, removing regulations that limit NP practice might not produce significant increases in NPs' practice in NHs.

Figure. Trends in the Proportion of Nursing Home Visits Conducted by Nurse Practitioners by Scope of Practice for Rural vs. Urban Counties



SCOPING REVIEW: THE SCIENCE OF PHYSICIAN CARING

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BACKGROUND: The physician's ability to care for patients is often limited by onerous job demands, external economic and regulatory factors, and information technology. The study of this problem, and the creation of evidence-based solutions, requires the use of strong conceptual models. Our goal is to identify existing conceptual models, frameworks, and research definitions of physician caring in clinical practice.

METHODS: We defined physician caring as having concern for or commitment to a patient's well-being while using one's experience and resources to promote the patient's health. We searched PubMed and Embase using 32 key words, Medical Subject Headings (MeSH), and EMTREE terms for articles that focused on three domains: 1) caring in clinical practice, 2) conceptual models and frameworks, and 3) physicians and clinicians. We included articles on physician, physician trainee, or advanced practice provider roles, perspectives, and experiences with caring. We excluded articles focused on patients' experience of caring or perceived care needs. We excluded studies focused on related, distinct constructs (e.g., empathy, compassion, humanism, patient-centered care, shared-decision making, etc.) that were clearly-defined. A pilot title and abstract screen of 500 randomly selected articles from 1966-2019 was performed by four authors to test the appropriateness of our inclusion and exclusion criteria, and results were discussed with all authors. Four reviewers then screened and discussed titles and abstracts of articles from 1990-1999 and 2017-2018 for inclusion. Articles that met inclusion criteria, and key references within those articles, were reviewed in full.

RESULTS: Out of 1,976 articles, 72 met inclusion criteria and were reviewed in full; 16 of these articles had conceptual models, frameworks, or research definitions of caring in the medical profession. The Moral Intuitionist Model of Virtuous Caring was used in three articles. Caring models from nursing literature (e.g. models by Gilligan, Nodding, Kohlberg) were used in three articles. Three articles proposed frameworks that had new conceptualizations of caring. Three offered research definitions ("concern for another's well-being," "conveying individualized or person-to-person concern or regard through a specific set of behaviors," "caring reflects the extent to which the respondent sees the patient's expectations, feelings, and life circumstances as critical elements in the treatment process"). Four articles incorporated physician caring into an adapted version of previously defined constructs (e.g., humanism).

CONCLUSIONS: There are a variety of models, frameworks and research definitions of caring in medical literature. The concept of physician caring can be further explored and developed as an aspect of clinician-patient interactions in clinical medicine.

SCREENED SOCIAL NEEDS AND ACCEPTABILITY OF SCREENING AMONG CANCER PATIENTS IN PHILADELPHIA UNDERGOING TREATMENT

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BACKGROUND: Despite having a cancer diagnosis, patients miss potentially life-saving outpatient treatment appointments. Reasons for missed appointments may be related to patients' social determinants of health (SDOH) as treatment costs are financially destabilizing with nearly 30% of cancer survivors facing long-term financial hardships. Missed appointments are strongly associated with worse cancer treatment outcomes. How often patients encounter SDOH challenges while undergoing cancer treatment and whether patients believe social needs screening is acceptable during a tenuous phase of their life are understudied questions. To fill this research gap, we are screening patients undergoing cancer treatment for social needs and measuring the acceptability of screening.

METHODS: Since October 2019, we have an ongoing cross-sectional survey of adults age 18 or older, diagnosed with any type of cancer, and

receiving systemic cancer therapy or radiation treatment from two outpatient cancer centers in the University of Pennsylvania Health System (UPHS). To date, 65 patients have been individually approached to complete the survey and 54 patients have consented (response rate: 83%), with a target goal of 500 patients. The survey consists of a 9-question, pilot-tested, social screening tool adapted to our cancer-specific populations, covering the following domains: food insecurity, unaffordable utilities, housing instability, lack of neighborhood safety, caretaker burdens, transportation challenges, social isolation, and financial concerns. Participants were additionally surveyed about the appropriateness of screening cancer center patients for social needs, their own comfort with being screened, and their expectations of clinical staff who are made aware of patients' social needs.

RESULTS: Of the 54 patients who completed the survey, the five domains most commonly reported included future financial concerns (41%), social isolation (35%), current financial strain (30%), housing instability (20%), and unaffordable utilities (13%). The majority of patients undergoing cancer treatment felt neutral (54%) or thought that being screened for social needs was appropriate (39%). Most patients were neutral (41%) or felt comfortable (50%) with being screened for social needs. Many patients wanted cancer center staff to be aware of social needs (55%) or expected staff to connect them to resources (34%).

CONCLUSIONS: Cancer patients are a vulnerable population, clinically, financially, and socially. We identified key social needs among patients undergoing cancer treatment and the majority of patients felt the social screening tool was appropriate, they felt comfortable with the assessment and wanted staff to be aware or connect them to resources. Our findings are a critical first step for policymakers, payers, and provider organizations as they continue to imagine interventions for identifying and addressing social needs experienced by vulnerable patient populations.

SCREENING FOR HEPATITIS C REINFECTION AMONG PATIENTS WITH ONGOING RISK AFTER ACHIEVING SUSTAINED VIROLOGIC RESPONSE IN A PRIMARY CARE HEPATITIS C TREATMENT PROGRAM

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BACKGROUND: Patients with chronic hepatitis C (HCV) infection who achieved sustained virologic response (SVR) can be reinfected if they are re-exposed to the virus. The current guideline recommends annual testing for HCV reinfection among individuals with ongoing risk, such as injection drug use. Existing literature on the screening rate for HCV reinfection among patients with ongoing risk in a primary care setting is limited. The goal of this study is to understand the population at risk of reinfection and assess the current state of retesting HCV after achieving SVR for those at risk within an urban, hospital-based primary care HCV treatment program.

METHODS: We reviewed the electronic medical records of all living patients who had achieved SVR in the Adult Primary Care HCV treatment program at Boston Medical Center (BMC) from January 1, 2015 to July 1, 2018. BMC is the largest safety-net hospital in New England. We identified patients at risk of reinfection by reviewing urine toxicology (UTOX) results obtained after achieving SVR. We considered patients to be at risk if the UTOX was positive for non-prescribed opiates, fentanyl or cocaine. We determined that retesting was done if there was a follow up HCV viral load completed after achieving SVR.

RESULTS: 235 patients achieved SVR during the study period. The mean age of these patients was 52 years (standard deviation 13.0) with majority of patients being male (67.2%), non-Hispanic black (42.6%), and with a diagnosis of substance use disorder (80.9%). 19.6% (n=46) of patients were identified as at risk of re- infection based on positive UTOX after achieving SVR. Among patients identified at risk of reinfection, 43.5% (n=20) had a follow up HCV viral load, and 17.4% (n=8) had the retesting done within the recommended 1-year period after achieving SVR. Of those who were retested, 15.0% (n=3) had detectable HCV viral load, indicating reinfection.

CONCLUSIONS: About a fifth of patients who have achieved SVR at the Adult Primary Care HCV treatment program at BMC are known to be at risk of reinfection due to illicit substance use based on UTOX, but the rate of retesting is low. We estimate that the actual number of patients at risk of reinfection may be higher since not all patient returned to BMC or had a UTOX done. In addition, a positive UTOX result does not confirm that the drugs were used via injection. It is imperative to develop and implement a system that can provide guideline concordant HCV reinfection monitoring.

SCREENING FOR INTERPERSONAL VIOLENCE: POTENTIAL HARM OF MODIFYING TOOLS

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BACKGROUND: HITS, the Hurt Insult Threat Scream tool, was developed to detect intimate partner violence (IPV) in primary care settings. CMMI modified the tool to screen more broadly for interpersonal violence—rather than restricting to IPV—and integrated it into a multidomain social risk screening tool in an ongoing national demonstration project. HITS includes 4 questions: 1 on physical abuse and 3 on verbal abuse. The physical abuse question asks: "How often does anyone, including family and friends, physically hurt you?" The 3 verbal abuse questions ask about being insulted, threatened, or screamed at, respectively. Questions are scored based on frequency (1= "Never"; 5= "Frequently"). Scores range from 4 to 20. A scoring system for the original tool was validated in adult female survivors of IPV, with a score ≥11 signaling a safety concern. In the current demonstration, CMMI recommends using the original HITS scoring cutoff, despite having broadened the scope of the questions. The objective of this study was to evaluate the use of the original scoring system for detecting rates of reported physical and verbal interpersonal violence.

METHODS: Cross-sectional survey analysis of a convenience sample of adult English and/or Spanish speaking/reading patients or caregivers of pediatric patients at 7 primary care and 4 emergency department settings across 9 states. Descriptive analyses using chi-square with 2-sided Fisher's exact.

RESULTS: Of 1,014 participants, 66 (6.5%) screened positive for any frequency of physical abuse. Using the recommended score cutoff of ≥11, 12/66 (18.2%) screened positive for a safety concern. Of those with scores <11, 3/54 participants (5.6%) reported experiencing physical abuse "fairly often" or "frequently" and 14/54 (25.9%) "sometimes." 394/1014 participants (38.9%) screened positive for any frequency of verbal abuse; 344/

1014 (33.9%) screened positive for verbal abuse without physical abuse. 18/394 (4.6%) scored ≥11; 3/394 (7.6%) had total scores <11 and reported "sometimes" or "often" being threatened with harm, while 286/394 (72.6%) reported "rarely" or "sometimes" being insulted or screamed at.

CONCLUSIONS: Using the original scoring criteria for the modified HITS, patients reporting physical violence often did not reach the recommended score cutoff to signal a safety concern. Patient abuse disclosure that lacks adequate follow-up may result in or exacerbate patient mistrust in the health care system, in addition to being a safety risk for patients. Screening for interpersonal violence should at a minimum identify patients experiencing abuse. Identifying patients at risk for abuse can enable interventions to prevent escalation. Given that over 30% of patients in this study reported verbal abuse in the absence of physical abuse, and each question is scored with equal weighting, a more nuanced scoring system may be necessary to identify patients at highest risk. More stakeholder input is needed on how to best score the modified HITS to improve patient safety.

SCREENING FOR SOCIAL AND BEHAVIORAL DETERMINANTS OF HEALTH IN CLINICAL SETTINGS: PATIENT SCREENING RATES, COMFORT LEVEL, AND VIEWS ON APPROPRIATENESS 5 YEARS AFTER THE NATIONAL ACADEMY OF MEDICINE'S RECOMMENDATIONS

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BACKGROUND: In 2014, the National Academy of Medicine (NAM) endorsed screening for and documenting several social and behavioral determinants of health (SBDOH) in clinical settings. We investigated rates of screening 5 years later, whether patients feel uncomfortable being screened, whether they feel comfortable having their SBDOH information recorded in their electronic health record (EHR), and whether they think it is appropriate to be screened.

METHODS: Cross-sectional survey of 251 adults recruited from 3 primary care clinics in San Francisco, Chicago, and Boston. Patients were asked whether they were screened for the following NAM-endorsed domains in healthcare settings during the past year: race/ethnicity, education, financial strain, stress, social isolation, mood, smoking, alcohol, and safety. Surveys also asked whether they were uncomfortable being screened for each domain, how comfortable they were having SBDOH information in general documented in their EHR, and whether or not it was appropriate to be asked these questions in clinical settings. Rates of prior SBDOH screening, discomfort with screening (yes/no), comfort (completely uncomfortable, somewhat uncomfortable, neither comfortable nor uncomfortable, somewhat comfortable, completely comfortable) having SBDOH information recorded within the EHR, and appropriateness (very appropriate, somewhat appropriate, neither appropriate nor inappropriate, somewhat inappropriate, very inappropriate) were calculated.

RESULTS: The majority of patients were between the ages of 35-64 (54.2%), female (68.9%), and Hispanic (31.1%). Rates of SBDOH screening varied by domain (Table), ranging from 12.7% (financial strain) to 38.9% (stress); only 2.8% of patients were screened for all domains in the last year. Few patients felt uncomfortable with being asked about SBDOH domains, ranging from 1.2% (smoking) to 6.4% (race/ethnicity). Overall, 84.5% of reported no discomfort with screening for *any* SBDOH. While 24.1% felt uncomfortable having this information documented in the EHR, most patients (79.8%) thought asking SDBOH questions was appropriate.

CONCLUSIONS: Screening rates of the NAM-endorsed SBDOH domains are low despite patients generally feeling comfortable with screening, and that screening is appropriate.

SCREENING FOR SOCIAL RISK FACTORS: A COMPARISON OF TWO MULTI-DOMAIN SOCIAL RISK SCREENING TOOLS

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BACKGROUND: Amidst growing interest in identifying patients' social risks in the context of health care delivery, many organizations have developed recommendations for social risk screening. A 10-item instrument developed by CMMI includes 6 questions on material hardship (housing stability and quality, food security, transportation access, utilities security) and 4 on interpersonal violence. A set of measures recommended by the National Academy of Medicine (NAM) includes 1 question on financial strain (difficulty paying for basic needs) and 4 on intimate partner violence (IPV), in addition to behavioral topics like smoking and stress. We field tested both the CMMI and NAM measures to compare: 1) rates of screening positive for material hardship, financial strain, personal safety; and 2) patient acceptability.

METHODS: Cross-sectional study comparing responses to surveys with the CMMI versus NAM questions in a convenience sample of adult English and/or Spanish speaking/reading patients at 3 participating primary care clinics in San Francisco, Chicago, and Boston. Descriptive analyses were done using chi-square with two-sided Fisher's exact tests.

RESULTS: Of 457 respondents, 56.2% (127/226) screened positive for any material hardship on the CMMI tool; 51.1% (118/231) screened positive for the single comparative NAM question on financial strain (p=0.302). Using the recommended screening rubrics from each agency, 1.3% screened positive on the CMMI interpersonal violence measure vs. 10.0% on the NAM IPV measure (p<0.001). More patients indicated interest in assistance with material hardship compared to those indicating interest in assistance for financial strain (38.7% vs. 21.2%, respectively, p<0.001). Differences in interest in assistance with safety did not reach statistical significance (1.8% vs. 5.2%, p=0.072). There were no statistically significant differences in the perceived appropriateness of screening (85.8% vs. 79.3%, respectively, p=0.072). Patient comfort incorporating social risk factor results into the electronic health record was also similar (65.6% vs. 63.4%, p=0.631). Few patients reported discomfort answering specific questions on either questionnaire: 4.9% reported discomfort answering questions about material hardship vs. 5.7% reported discomfort with the question about financial strain (p=0.841). Similarly, 1.6% reported discomfort answering the CMMI safety measure vs. 2.9% on the NAM (p=0.544).

CONCLUSIONS: Acceptability of the CMMI and NAM recommended social risk factor measures was high. Rates of positive screens for socioeconomic risks were similar, though more patients indicated interest in assistance when answering the CMMI items asking about specific social risks. There were significantly lower rates of positive screens for personal safety using the CMMI tool. More research is warranted on the validity and comparative validity of each set of measures. Measure selection should depend on the population served, screening goals and resources available.

SCREENING FOR UNDIAGNOSED ATRIAL FIBRILLATION IN PRIMARY CARE: PRIMARY CARE PHYSICIAN PERCEPTIONS ABOUT CURRENT AND FUTURE PRACTICE

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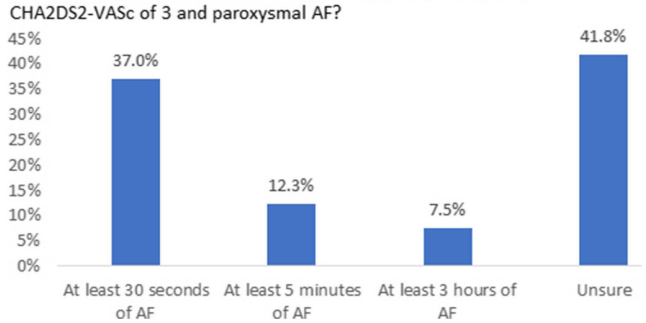
BACKGROUND: Atrial fibrillation (AF) is the most common cardiac arrhythmia and is associated with a 5-fold increased risk of stroke. AF may be asymptomatic, so screening for undiagnosed AF is appealing. Pulse palpation by primary care providers (PCPs) during clinic visits is common, but hand-held devices represent an opportunity for more systematic screening. The U.S. Preventive Services Task Force found insufficient evidence to support electrocardiogram (ECG) screening, while European and Australian/New Zealand guidelines recommend screening.

METHODS: We conducted a large (n=35,309) pragmatic cluster-randomized trial (VITAL-AF, ClinicalTrials.gov NCT03515057) in a U.S. primary care network to assess the efficacy of population-based AF screening in older patients using a handheld single-lead ECG as part of routine care. Following the trial, we surveyed PCPs about how they assessed heart rhythm and opinions about AF screening.

RESULTS: The survey response rate was 76% (81% intervention; 71% control) among 170 physicians and 28 nurse practitioners. Intervention and control responses were similar, so were combined except as noted. 93% of PCPs reported routinely assessing pulse pattern at visits, for ≤ 10 seconds (66%). Most PCPs (85%) believe AF screening should be done during primary care visits. Intervention PCPs exposed to use of a handheld ECG during the trial favored this as a screening method (86%), while control PCPs favored pulse palpation (65%). PCPs were less certain whether screening should be done outside of office visits with patch monitors (17% yes, 36% no, 47% unsure) or consumer devices (22% yes, 24% no, 54% unsure). Of PCPs who support screening with personal devices, 71% believed patients should be able to share results via a patient portal. PCPs were uncertain about the burden of AF required to treat paroxysmal AF with anticoagulation, though many had a low threshold (Figure).

CONCLUSIONS: Clinic-based AF screening, which will largely detect undiagnosed persistent AF, is widely supported by PCPs. PCPs exposed to a handheld ECG device strongly preferred it over pulse palpation. PCPs appear less certain about screening done outside of clinic visits with patch monitors or personal devices. In part, this may be due to recognition that more paroxysmal AF may be detected and the burden of AF at which to recommend oral anticoagulation is unclear.

Figure: What is the minimum duration of a single AF episode that would lead you to recommend oral anticoagulation (OAC) for a patient with a CHA2DS2-VASc of 3 and paroxysmal AF?



SECURE AND INTEGRATED: ENHANCING THE EDUCATIONAL EXPERIENCE OF MEDICAL STUDENTS THROUGH ELECTRONIC MEDICAL RECORD (EMR) SECURE CHAT

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BACKGROUND: Both messaging applications and texting are used in communicating with and educating medical students. However, these platforms present patient privacy concerns. Additionally, students are frequently absent from care coordination conversations. Secure messaging can be used to include students on these conversations and enhance team involvement. Integration into the EMR and availability on devicess such as smartphones presents an opportunity to investigate secure messaging impact on medical education.

METHODS: Between July through December 2019, we performed a mixed methods study to investigate 3rd and 4th year medical student perceptions of secure messaging effect on their internal medicine (IM) rotation. Study components included a pre and post-rotation survey. The third component was a review of secure message threads and categorization of content to evaluate use of secure messaging with students.

RESULTS: A total of 19 students completed the pre-rotation survey, and 15 completed the post-rotation survey between July and December 2019. Ten (53%) students reported the quality of communication with faculty was good or very good prior to IM rotation versus 13 (87%) at IM rotation conclusion. A total of 5 (26%) reported the same towards ancillary staff prior with increase to 10 (67%) at end of rotation. Additionally, 11 (73%) students noted secure messaging either somewhat or significantly improved communication with ancillary staff on their IM rotation. On other rotations, students reported using direct communication and texting most frequently; whereas, direct communication and secure messaging were most frequently used on IM. Fourteen (93%) students reported that secure messaging resulted in either somewhat or significantly improved ease of communication, and 13 (87%) felt it improved their educational experience on IM. On review of 512 secure message threads, 203 (40%) contained logistical communication. Daily management (29%), admissions (12%) and discharge (11%) communications were the next most frequent. Other categories together (20%) included education, clerkship activity and scholarly activity conversations.

CONCLUSIONS: Our mixed methods study suggests that integrated EMR secure messaging is a promising medium to enhance medical student education and team communication and involvement. Additional study should focus on how we can promote faculty use of this tool for educational purposes and to continue to work to ensure students are included on important patient communications.

SELF-ACTUALIZATION SKILLS IN YOUNG ADULTS WITH AUTISM TO IMPROVE QUALITY OF LIFE

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BACKGROUND: Young adults with autism spectrum disorder (YAASD) often lack the skills needed for successful adult living and subsequently achieve lower quality of life in adulthood. Therefore, the purpose of this project is to develop a framework to support resilience and improve quality of life in YAASD and use this framework to generate a life-skills curriculum for YAASD.

METHODS: We conducted in-depth semi-structured interviews with YAASD, parents of YAASD and service providers recruited from

agencies that serve YAASD. We focused our interviews on supports and skills needed to enhance quality of life in adulthood. We performed a multi-step qualitative analysis process including coding, development of categories, and development of a theoretical code.

RESULTS: A total of 23 individuals (over age 19) were interviewed. We developed the major theoretical code of "self-actualization skills in young adults with autism to improve quality of life". This code recognized the neurodiversity of YAASD as well as comorbid intellectual disability and mental health needs, which often were a barrier to achieving life goals. We identified the need for YAASD to develop skills to facilitate both independence and greater insight, including self-care, self-awareness, self-advocacy, and social integration. This also included the concept of personal safety while developing social skills, and the ability to identify one's interests, goals, and strengths. Factors identified that would facilitate development of self- actualizing skills included resources that promote structure in an unstructured adult world. YAASD struggled in developing resiliency skills, which improve adaptation to a constantly changing environment common in adult life. Communication between family and service agencies was considered a critical aspect to support YAASD skill development. Finally, the need for technologies that could facilitate social and vocational engagement across the spectrum of YAASD (e.g. communication assistance) was also highlighted.

CONCLUSIONS: Self-actualization for adults requires skills for independence, self-care, decision making, and effective communication. Unfortunately, most adult programs for YAASD emphasize vocational and simple task performance and focus less, if at all, on these key areas. YAASD need support to develop ways to cope with demands inherent in living as adults in the community. Our framework identifies domains that facilitate self-actualization skills which, though challenging to teach and support, promote health and wellness to enhance quality of life for YAASD.

SELF-EFFICACY AND READINESS TO CHANGE AMONG WOMEN WITH RECENT GESTATIONAL DIABETES ENGAGING IN A WEB-BASED LIFESTYLE INTERVENTION: THE BALANCE AFTER BABY INTERVENTION TRIAL

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BACKGROUND: Women with gestational diabetes (GDM) have a 30-70% risk for developing type 2 diabetes (T2DM). Postpartum weight loss and physical activity reduce the risk for developing T2DM, however, few evidence-based programs exist to help mothers reduce their risk in the critical postpartum period. Self-efficacy is the belief in one's ability to succeed at a task despite encountering obstacles. We sought to characterize the change in perceived self-efficacy for change in physical activity and diet, and perceived readiness to change among women with recent GDM participating in a web-based diabetes prevention program.

METHODS: Women with recent gestational diabetes were randomized at ~6 weeks postpartum to engage in a 12-month web-based lifestyle intervention with support from a lifestyle coach (BABI group) or to a control website (control group). At the baseline postpartum study visit we administered behavioral questionnaires, including the Self-Efficacy Survey for Diet and Exercise Behaviors and the Readiness to Change Questionnaire. We obtained questionnaire data at 12 and 24 months postpartum. Questionnaire data consisted of 5-point Likert scale questions that were averaged to obtain a mean score for self-efficacy and readiness to change, with 5 the highest. Our study included 181 women (mean 33±5.3 years; 48% White, 22% Asian, 17% African-American, 13% other race, with 35% Hispanic).

RESULTS: The baseline 6-week mean self-efficacy survey scores for physical activity for the BABI vs. control group were 3.6 (SD 0.9) and 3.8 (SD 0.8), respectively. The self-efficacy for diet scores at baseline for BABI vs. control were 4.4 (SD 0.7) and 4.4 (SD 0.5), respectively. The baseline readiness to change mean scores in the BABI vs. control group were 3.1 (SD 0.6) and 3.1 (SD 0.5), respectively. Using a mixed effects model, women in the BABI group experienced a larger increase in reported self-efficacy for physical activity scores compared to the control group at 12 months (difference between groups 0.23, 95% CI: -0.06 to +0.52, p=0.13) and significantly at 24 months (difference between groups 0.38, 95% CI: 0.06 to 0.69, p=0.02). There was no significant difference between groups for increase in self-efficacy for diet at 12 months (difference between groups 0.09, 95% CI: -0.14 to +0.32, p=0.44) or at 24 months (difference between groups 0.07, 95% CI: -0.16 to 0.29, p=0.57). The change in readiness to change was not significantly different between groups at 12 months (difference between groups of 0.09, 95% CI: -0.12 to +0.30, p=0.43) or at 24 months (difference between groups 0.06, 95% CI: -0.19 to +0.30, p=0.66).

CONCLUSIONS: At 24 months postpartum, women randomized to the web-based Balance After Baby intervention program demonstrated a greater change in self-efficacy for exercise than those randomized to the control website. Further analysis will address the relationship between self-efficacy and readiness to change and the adoption of healthy lifestyle behaviors and weight loss.

SEXUAL HARASSMENT AND REPORTING FOR PHYSICIANS (SHARE): USING INCIDENT REPORTING TO UNDERSTAND THE CHARACTERISTICS, RESPONSE AND IMPACT OF INCIDENTS WHERE PHYSICIANS ARE SEXUALLY HARASSED BY PATIENTS

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BACKGROUND: Previous studies have shown a third of physicians encounter sexual harassment from patients, with these rates nearly double for women. Sexual harassment of women in the workplace, including by patients, has been identified as a challenge to the recruitment and advancement of women physicians. The nature of these encounters has not been previously described. Using incident reporting, we aimed to characterize encounters where physicians were sexually harassed by patients.

METHODS: The anonymous SHARE tool used a web-based questionnaire for physicians to report incidents of sexual harassment by patients. The questionnaire included structured questions about respondent traits, incident characteristics, individual and institutional response to the incident, and impact on respondent. Respondents also described the incident in free text which was coded inductively.

RESULTS: As with all incident reporting, data collection is ongoing. *Respondent traits:* 36 respondents from 10 states and seven medical specialties initiated the survey. 30 respondents were women. *Incident traits:* Nineteen occurred in the outpatient setting, 11 inpatient and four in the emergency department. Seventeen had met the patient on at least one prior incident. Most harassment was verbal (n=25), which included inappropriate or flirtatious remarks (i.e. commenting on the physician's

attractiveness or breast size, asking the physician on a date or to engage in sexual activity). There were five incidents of physical harassment, including inappropriate touching or exposure. Three reported stalking or threats from patients. *Physician Response:* Ten respondents ignored the harassment, nine addressed the patient directly, eight told a supervisor or colleague and six formally reported the incident. Many did not formally report because they felt their experience was not significant enough to report (n=17). Others feared negative repercussions (n=9), felt shame about the experience (n=9) or uncertain about the reporting process (n=18). *Institutional/Supervisor response:* 6 patients were reassigned or dismissed from the clinic, two addressed the behavior with the patient, two normalized or minimized the patient's behavior, two discouraged formal reporting and there was one instance of retaliation after reporting. *Physician Impact:* 21 said the incident negatively impacted their mental health, 12 said they withdrew from an aspect of their job or organization as a result of the incident, nine had decreased job satisfaction and three changed their behavior (dressed differently or took a different route to work).

CONCLUSIONS: Sexual harassment of physicians is common with a wide range of incidents. Many do not formally report despite having negative experiences that impacted their ability to perform their job. When reported, many institutional/supervisor responses were inadequate. Next steps include helping physicians, supervisors and institutions better address and prevent incidents of physician sexual harassment by patients.

SHORTER WAIT TIMES FOR BEHAVIORAL HEALTH APPOINTMENTS ASSOCIATED WITH SIGNIFICANTLY HIGHER RATES OF APPOINTMENT ATTENDANCE

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BACKGROUND: In any given year, mental health conditions affect about 20% of primary care patients. Due to this high demand for behavioral health services and the nationwide shortage of behavioral health care providers, most patients referred for these services wait for many months before they initiate care. However, long wait times for behavioral health services may increase the rates of cancellations and no shows further exacerbating lack of access to behavioral health services.

METHODS: We examined referrals from the University of Chicago Medical Center internal medicine/internal medicine-pediatrics clinic to psychotherapy and psychiatry services in the Department of Psychiatry for a 3-year period (March 1, 2016-February 28, 2019). We used multivariate logistic regression to analyze the association between the wait time (i.e., time interval between behavioral health referral and the scheduled appointment) and attendance at the appointment. Age, gender, race/ethnicity (non-Hispanic/Latinx white (white), non-Hispanic/Latinx black (black), Hispanic/Latinx, non-Hispanic/Latinx Asian (Asian)), and insurance type were included as covariates.

RESULTS: During the study period, 1587 behavioral health referrals were scheduled. Seventy-two percent (n=1148) of referred patients were women, 55% (n=868) were black, and 31% (n=494) were white. Over half (55%, n=867) of referred patients attended their first scheduled appointment. In multivariate analyses, appointments scheduled for less than one week after the referral date were associated with 87% higher odds of attendance compared to appointments with a longer than one week wait time (OR, 1.87; 95% CI, 1.30-2.72). A waiting time of one month or less was associated with a 61% higher odds of attendance compared to a wait of more than a month (OR, 1.61; 95% CI, 1.22-2.15). A similar increase in attendance was associated for a wait of 3 months or less compared to a more than 3-month wait (OR, 1.62; 95% CI, 1.30-2.03). Among covariates across models, black patients and Hispanic/Latinx patients had consistently lower odds of attendance compared to white patients (e.g., 1 week, black: OR, 0.38; 95% CI, 0.29-0.50. Hispanic/Latinx: OR, 0.63; 95% CI, 0.40-0.99). Other covariates were not consistently associated with attendance.

CONCLUSIONS: We found that a shorter waiting time between a behavioral health referral and the scheduled appointment was associated with significantly higher rates of attendance. Scheduling patients with short waiting times decreases administrative work and provides greater value to patients. Developing alternative resources for excess behavioral health referrals and implementing strategies to triage patients would provide better value to patients and the healthcare system than scheduling patients with long wait periods. Additionally, resources for black and Hispanic/Latinx patients that encourage behavioral health appointment attendance may be important to reduce inequities in access to mental health care.

SIGNIFICANCE OF ADVERSE SOCIAL DETERMINANTS OF HEALTH ON THE DIAGNOSIS AND CONTROL OF DIABETES AND HYPERTENSION: NHANES 2011-2014

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BACKGROUND: Individual social determinants of health (SDH) have been associated with health outcomes. For example, food insecurity and low educational attainment have been associated with poorly controlled diabetes and hypertension. However, few studies have simultaneously examined multiple domains of SDH and their significance in disease diagnosis and control. This study examines the significance of multiple adverse SDH in diagnosis and control of diabetes and hypertension. Among diabetic patients, we further examined associations between adverse SDH and diabetic standards of care.

METHODS: We conducted a retrospective, cross-sectional study of the National Health and Nutrition Examination Survey 2011-2014 that included 9,609 adult respondents with non-missing responses to key surveyed measures, including blood pressure and hemoglobin A1c (HbA1c) levels. The primary outcomes were diagnosis and control of diabetes and hypertension. We examined seven domains of adverse SDH, which are low education, low income, lack of health insurance, food insecurity, poor housing, unemployment or underemployment, and limited English proficiency (LEP), and their associations with the primary outcomes. For diabetic participants, we additionally examined having a diabetic foot examination, a pupil dilation examination, daily glucose level check, and/or measurement of HbA1c level within the past year.

RESULTS: The presence of food insecurity, poor housing, and LEP were associated with undiagnosed diabetes (p-values<0.05). Prevalence of low income (26.4% vs 23.4%), a lack of health insurance (16.5% vs 12.3%), and food insecurity (31.6% vs 26.4%) were higher among those with uncontrolled diabetes compared to those with controlled diabetes (p-values<0.05). In multivariable logistic regression models, low education (OR = 0.56 [0.34-0.93]), low income (OR = 0.36 [0.28-0.57]), and lack of health insurance (OR = 0.35 [0.21-0.59]) were associated with decreased odds of having an HbA1c test in the past year. Having food insecurity (OR =0.59 [0.40-0.86]) or poor housing (OR=0.73 [0.54-1.00]) was associated with decreased odds of having a dilated pupil exam in the prior year. Respondents with multiple adverse SDH (3 adverse SDH OR=0.18 [0.11-0.29] and 5+ adverse SDH OR=0.16 [0.05-0.51]) had lower odds of

having HbA1c checked in the past year compared to those with one adverse SDH (OR=0.49 [0.27-0.88]), adjusting for covariates.

CONCLUSIONS: We found adverse SDH to have a significant role in the diagnosis and control of diabetes but not hypertension. This suggests that adverse SDH have varying roles in diagnosis and management, depending on medical conditions. Presence of multiple adverse SDH had an inverse relationship with having a dilated pupil exam, HbA1c level measured in the past year, and checking a daily glucose level. For diseases that are associated with adverse SDH, disease process measures could potentially serve as tools to examine the success of interventions addressing adverse SDH.

SIMULTANEOUS COCAINE AND ALCOHOL USE IN WOMEN USING MULTIPLE SUBSTANCES IS ASSOCIATED WITH ELEVATIONS IN BLOOD PRESSURE WHILE INDIVIDUAL SUBSTANCES ARE NOT

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BACKGROUND: The impact of polydrug use on traditional cardiovascular risk factors has not been well characterized among homeless women. This population is especially high risk with high rates of polydrug use and cardiovascular events being a leading cause of death. We evaluated associations between substances and blood pressure in a cohort of homeless and unstably housed women in San Francisco.

METHODS: We recruited 245 women from San Francisco community venues, including homeless shelters, free meal programs, low-income hotels and street encampments, to participate in a prospective study examining the influence of toxicology-confirmed polydrug use on cardiovascular health. Participants completed six monthly visits between 2016 and 2019, including vital sign assessment, interview, and lab testing to assess drug use. We used linear mixed models to determine longitudinal associations of substances used with log-transformed diastolic and systolic blood pressure over time.

RESULTS: The median participant age was 53 years and 74% were women of color. At baseline, the prevalence of toxicology-confirmed substance use included cocaine (52.7%), methamphetamine (30.2%), heroin (2.0%), tobacco (69.0%) and alcohol (29.0%). Prior myocardial infarction or stroke were reported by 8.2% and 11.5%, respectively, and 60.4% had systolic blood pressure ≥ 140mm Hg or diastolic ≥ 90 mmHg at baseline. Systolic blood pressure was independently associated with older age (1.03-fold increase per 10 years; 95% CI: 1.02-1.05), African American race (1.11-fold vs Whites; 95% CI: 1.05-1.16) and the presence of cocaethylene (1.05-fold; 95% CI 1.00-1.11). Diastolic blood pressure was independently associated with LDL cholesterol (1.03-fold per SD increase; 95% CI 1.01, 1.05), HDL cholesterol (1.02-fold per SD increase; 95% CI 1.00, 1.04), the presence of cocaethylene (1.05-fold; 95% CI 1.10, 1.11), and the presence of methadone (0.95-fold; 95% CI 0.91, 0.99).

CONCLUSIONS: Cocaethylene is a metabolite created from simultaneous use of cocaine and alcohol within the same hour. Among homeless and unstably housed women, cocaethylene showed a significant effect on blood pressure while individual substances like cocaine, ethanol, methamphetamine, and nicotine did not. Acknowledging that alcohol and cocaine co-use increases cardiovascular risk more than individual substances may improve risk stratification in this population, prompting providers to assess patients for co- use of alcohol and cocaine. While abstinence is often the ultimate goal, for those who have difficulty achieving long-term cessation, counseling against simultaneous use of cocaine and alcohol may reduce blood pressure and overall cardiovascular morbidity.

SINGLE CENTER REVIEW OF APPROPRIATENESS AND UTILIZATION OF UPPER ENDOSCOPY IN DYSPEPSIA

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BACKGROUND: Dyspepsia is estimated to cost the US health care service over $18 billion per annum and the majority of the cost is due to endoscopies performed. ACG published new guidelines in 2017 for the management of dyspepsia which clearly laid down non interventional, effective and affordable steps to undertake before undergoing endoscopy, as the endoscopy was found to be of low yield in true dyspepsia patients.

METHODS: Using administrative data, we retrospectively studied the charts of all adult patients who were referred for Esophagogastroduodenoscopy (EGD) from 3 health clinics with dyspepsia as the primary indication for the study in 2018. Dyspepsia was defined by Rome III criteria. We excluded patients who had pathological diagnosis made on a previous endoscopy. Steps for Dyspepsia management undertaken before performing the endoscopy were recorded. These were compared to the ACG guidelines and appropriateness of EGDs was classified into two categories: Likely Appropriate and Probable Overuse.

RESULTS: Out of the 122 EGDs performed for dyspepsia, 30 of them (24.5%) were performed in patients > 60 years of age. Out of the remaining 92 patients <60 years of age, only 13 (14.1%) patients had undergone both H. pylori test-and-treat and proton pump inhibitor for at least a month before undergoing endoscopy. Of this group <60 years of age, 19 of them had alarm symptoms (13 weight loss, 3 malena, 1 early satiety, 1 dysphagia), 3 had documented family history of gastric cancer and none had any information on belonging to a high risk region. In total, only 30 procedures (24.5%) were deemed to be appropriate per ACG guidelines. 30 patients (25%) had H. pylori testing, out of which 12 (10%) were positive and 6 completed treatment before undergoing endoscopy. 72 patients (59%) were trialed on PPi, but 24 had treatment for less than one month. 26 patients (21.3%) had positive findings on endoscopy, which included gastritis (N=20), Barrett's esophagus (N=2) and celiac disease (N=1). 11 patients tested positive on endoscopic biopsies for H. Pylori. None of the patients had gastric/esophageal cancer detected on EGD.

CONCLUSIONS: Our study shows that there is a high rate of overutilization of EGDs for management of dyspepsia. The rate of inappropriate UGI endoscopy is higher than some of the recent studies, likely because of the stricter use of EGD in patients <60 years wherein ACG guidelines recommends that endoscopy is of high yield in this patient group if they have a family history of gastric cancer or spent their childhood in a high risk region, mainly east asia. Only one in eight patients underwent H. Pylori testing and trial of Ppi for a month, which have been shown to be higher yield than EGD for management of dyspepsia. There were no cases of gastric cancer, which is the primary concern for performing EGD in dyspepsia patients.

SMOKING CESSATION IN THE DIGITAL AGE: EVALUATING THE USABILITY AND APPEAL OF TWO CESSATION APPS AMONG YOUNG ADULTS WITH SERIOUS MENTAL ILLNESS

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BACKGROUND: Young adults with serious mental illness (SMI) are over twice as likely to smoke than the general population, and are less likely to seek treatment or achieve abstinence. Scalable interventions such as smartphone apps created with evidence-based content by the National Cancer Institute (NCI; QuitGuide – QG, or quitSTART – qS) could increase access to behavioral treatment for this group, but have yet to be tested.

METHODS: We enrolled 22 daily smokers with SMI, aged 25-35, who were stable in community mental health treatment in 2019. We conducted five focus groups to identify facilitators and barriers to app use for smoking cessation, as well as desirable and undesirable app features. Three members of the research team coded transcriptions of the focus groups using thematic analysis.

Twelve participants were randomly assigned to use QG or qS on their smartphone and were evaluated using a laboratory-based task-completion protocol, the System Usability Scale (SUS), and semi-structured interviews at baseline (V1) and after two weeks of unstructured app use (V2). Qualitative analysis and descriptive statistics were completed.

RESULTS: Focus Groups: Participants were 45% female, and 41% were diagnosed with psychotic disorders. Facilitators to app use included convenience and ability to self-pace cessation activities. Barriers to app use included busy lifestyle, lack of accountability, and limited phone storage. Desirable app features included cigarette and money tracking functions, distraction tools, and motivational messages. References to cigarettes were perceived as undesirable, as they could trigger smoking.

Usability Testing: Participants were 42% female, and 42% were diagnosed with psychotic disorders. Participants smoked 17±7.3 cigarettes per day, and 80% used smartphone apps at least twice daily. While task completion rates remained high for QG at both V1 and V2 (96%), SUS scores decreased from V1 to V2 (66 to 60). In contrast, both task completion rates and SUS scores for qS improved from V1 to V2 (79% to 84%; 55 to 64). Qualitative feedback supported the SUS scores: initial interest in QG at V1 diminished by V2; initial difficulty navigating qS at V1 resolved by V2, with a corresponding increase in appeal. Participants using both apps were challenged by 4 tasks at both visits: tracking cigarettes, setting a quit date, uploading a photo, and connecting to social media. Participants rated these tasks as important, and stressed the importance of tracking daily cigarette use to their ongoing interest in the apps.

CONCLUSIONS: Young adults with SMI indicated that mobile apps are an appealing vehicle for tobacco treatment, but their concerns about lack of accountability suggest that clinical support for app use is warranted. While overall usability of both apps was high by Visit 2, several desirable features in both apps remained difficult to use. Teaching smokers how to use the apps may be necessary to promote initial engagement.

SOCIAL AND DEMOGRAPHIC PATTERNS OF HEALTH RELATED INTERNET USE AMONG ADULTS IN THE UNITED STATES: AN ANALYSIS OF THE HEALTH INFORMATION NATIONAL TRENDS SURVEY

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BACKGROUND: National surveys of U.S. adults have documented significant increases in health-related internet use (HRIU), but there are disparities by race/ethnicity, SES, age, gender, urbanicity. Objective: The study aims to identify social and demographic patterns of HRIU among U.S. adults.

METHODS: Data for this study came from the HINTS 4 cycle 3 and HINTS 5 cycle 1. To assess differences in eHealth usage, we used 8 eHealth tasks are divided into 3 domains relevant to health communication: use of internet for healthcare purposes; health information seeking for oneself or someone else; and use of social networking sites to access health information, participate in a health-related support group, or maintenance of an online health diary. Primary predictors of interest were gender, race/ethnicity, age, education, income, and nativity with adjustments for smoking, health insurance, and survey year. We conducted multivariable logistic regression models to identify independent predictors of eHealth usage, with all analyses weighted to provide nationally representative estimates.

RESULTS: Of the 4,817 respondents, 44% of participants had used the internet to look for a healthcare provider and 22% had used the internet to purchase medicine vitamins online. 80% of respondents have used the internet to seek health information for themselves, while 67% have used the internet to seek health related information for someone else. The user generated content domain was less frequently reported among participants.

In multivariable models, in the healthcare use domain, participants 35 years and older were significantly less likely to use the internet to look for a healthcare provider when compared to those in the 18-34 range. Non-Hispanic Blacks were 44% less likely to report purchasing medicine or vitamins online when compared to non-Hispanic Whites (adjusted OR = 0.56, 95% CI 0.38, 0.84). In the health information seeking domain, women were significantly more likely to look for health information for others when compared to men (adjusted OR = 1.74, 95% CI 1.39, 2.18). In the social media and user generated content domain, women were nearly twice as likely to visit a social networking site to read and share health information (adjusted OR = 1.93, 95% CI 1.43, 2.60) and also more likely to participate in an online social support group when compared to men (adjusted OR = 1.62, 95% 1.05, 2.50).

CONCLUSIONS: Given the potential of the internet to increase health disparities due to evidence of the digital divide, this study has important implications for modifying health-related information and the methods by which it is shared to particular groups of the U.S. adults. Understanding how the internet is used by the populations most difficult to reach provides insight into potential targets for health communication.

SOCIAL DETERMINANTS OF HEALTH AND 30-DAY READMISSIONS AMONG ADULTS HOSPITALIZED FOR HEART FAILURE IN THE REASONS FOR GEOGRAPHIC AND RACIAL DIFFERENCES IN STROKE (REGARDS) STUDY

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BACKGROUND: Researchers and policy makers are increasingly interested in the role that social determinants of health (SDOH) have on post-discharge outcomes in heart failure (HF), since these factors may determine which patients are most vulnerable to readmission. We examined the association of SDOH with 30-day readmission after a HF hospitalization.

METHODS: REasons for Geographic and Racial differences in Stroke (REGARDS) Study is a national longitudinal cohort study of black and white adults ≥ 45 years. Baseline interview and in-home visit data were collected between 2003-2007 and follow-up is ongoing. We examined Medicare-linked REGARDS participants discharged alive after a first adjudicated HF hospitalization. Guided by the HealthyPeople 2020 Framework, we assessed 9 SDOH: race, education, income, social

isolation, social network, high poverty residential area, Health Professional Shortage Area (HPSA), rural residence, and state public health infrastructure. The primary outcome was all-cause 30-day readmission, assessed through Medicare claims. For each SDOH, we calculated incidence per 1000-person years and multivariable-adjusted hazard ratios of readmission.

RESULTS: Over 11 years, 690 participants were hospitalized for HF of whom 155 (22.4%) were readmitted within 30 days. Overall, participants had a median age of 76 years (IQR 71 – 82) and 44.3% were female, 36% were black, 24% had low educational attainment, 63% had low income, 21% had zip code-level poverty, 43.5% resided in HPSAs, 39.3% lived in states with poor public health infrastructure, 13% were socially isolated with poor social networks, and 10% lived in rural areas. Except for HPSA, the incidence of 30-day readmission did not differ by any of the SDOH examined. In a model that adjusted for all SDOH, demographic, clinical, and hospitalization factors, none of the 9 SDOH were independently associated with readmission risk

CONCLUSIONS: In this national cohort, none of the 9 SDOH we examined were associated with 30-day readmission after a HF hospitalization. Our findings suggest that other factors, not assessed here, may be more influential and that policies or interventions that broadly target SDOH alone after a HF hospitalization among Medicare beneficiaries are unlikely to reduce readmission rates.

SOCIAL DETERMINANTS OF HEALTH AND GENETICS IN THE UK BIOBANK

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BACKGROUND: Social determinants and genetics are considered independent categories when examining the broad set of influences on health. The sequencing of large populations, however, allows for investigation of the interplay between these sets of determinants. Recent studies, for example, have shown the influence of education on blood pressure levels in genetically similar populations. The UK Biobank (UKB), a database of 500,000 people with extensive phenotypic and genetic information, is an excellent resource in which to examine other potential interactions between genetics and social determinants of health.

METHODS: We performed genome wide association studies (GWAS) for phenotypes that were part of the UKB's category 76 "Indices of Multiple Deprivation." Higher scores in all categories meant more deprivation. We used the publicly available imputed genotype dataset of all UKB participants. We focused on potential loss-of-function variants that were associated with a specific gene and reached genome-wide significance ($p<=10^{-8}$).

RESULTS: Few phenotypes showed associations that met our criteria; however, certain associations were both significant and biologically plausible, particularly in rare variants. For example, Income Score was associated with a missense mutation in MYH8, a gene associated with skeletal muscle development as well as a rare Mendelian disorder. Additionally, Crime Score was associated with a missense mutation in CCR2, a gene associated with inflammation that has also been shown to mediate the effects of juvenile stress on adult immune responses. Variants in two oncogenes (MACC1, DENND1A) were negatively associated with the Living Environment score (not the expected direction).

CONCLUSIONS: Data from the UKB revealed some preliminary findings linking genetic variants to an increased risk of deprivation, but these are generally due to an increased risk of disease states that may increase one's social risk (e.g. muscle diseases and the ability to work). The UKB is mainly a European population, so findings may not be applicable across other ethnicities who are generally over-represented in more deprived areas. One must consider that associations do not prove causation, and that the findings are preliminary and would require confirmation through both replication in other datasets and further exploration of the biology they represent. Genetics do not explain social determinants of health, but may begin to explain how they affect different people or populations or how those populations react to or adapt to adverse social situations. Sequencing larger and more diverse populations should help make these explanations clearer.

SOCIAL DETERMINANTS OF HEALTH IN A FEDERALLY QUALIFIED HEALTH CENTER: SCREENING, IDENTIFICATION OF NEEDS, AND DOCUMENTATION OF Z CODES.

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BACKGROUND: Payors are increasingly recognizing that social determinants of health(SDH) impact on health outcomes and healthcare costs. Z codes can be used to document and stratify patients into risk pools according to SDH. We report on the impact of SDH screening implementation in a federally qualified health center network on the use of Z codes to document SDH. In this study, we describe the prevalence of SDH screening by department, the prevalence of documented SDH, and the prevalence of documented Z codes for each SDH.

METHODS: In October 2017, we initiated SDH screening throughout, but focusing on the internal medicine and women's health departments of a large FQHC network (12 service delivery sites) using the OCHIN tool embedded in the elecrtonic health record. In November 2019, we retrieved the following variables from record: % of all patients who were screened, number of patients screened annually by department, % of positive screens (+ response to any question), % abnormal screens(response that triggers a best practice alert to the treating provider), and documentation of a Z code for positive or abnormal screens.

RESULTS: There were 624,007 encounters over a 2 year study period; 2,844 patients were screened: 194 in 2017, 1068 in 2018;1644 in 2019. Overall, there were 3052 screening events (some patients received multiple screens). The majority of screening events occurred in women's health [1961(64%)], followed by adult medicine[874(29%)]. Overall, 2350(77%) of screens were "positive", of which 433 had no "abnormal" results and hence did not trigger a best practice alert. Of these 433, the most common positive items were: social isolation(63%), stress(44%), financial resource strain(8%), moved 2+ times(7%). There were 1923(63%) abnormal screens. The top 10 abnormal items in Women's Health and Adult Medicine were: Education less than high school(36% and 37%), physical activity <140 minutes(23% and 25%), hard to pay for medicine/medical care(13% and 26%), hard to pay for utilities(14% and 23%), hard to pay for food(13% and 21%), hard to pay for health insurance(11% and 22%), concerns about housing quality(3% and 9%), hard to pay child care(5% and 5%), exposure to violence(4% and 3%), never get together with family/friends(3% and 3%). Overall, encounters with an SDH screen were more likely to have a documented Z code:26% vs. 1%. Z codes were documented for the following documented needs: insufficient social insurance(53%); lack of access to health care(51%), homelessness(49%), inadequate family support(40%), lack of physical exercise(37%), underachievement in school(34%), personal history of abuse(31%), lack of assistance for care at home(29%), inadequate food supply(1%).

CONCLUSIONS: Presence of a documented SDH screen was associated with documentation of Z codes, however documentation was missing more than half the time for most documented needs. The drivers of Z

code documentation deserve further exploration. Qualitative interviews and focus groups with providers may be useful.

SOCIAL DETERMINANTS OF HEALTH PREDICT HEALTH CARE UTILIZATION AND QUALITY OF CARE AMONG INSURED PATIENTS.

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BACKGROUND: Social determinants of health (SDoH) have been associated with worst clinical outcomes prompting calls for health systems to collect and address social risk. There is less evidence on the impact that SDOH have on health care utilization and quality of care among insured patients. The purpose of this study is to fill these knowledge gaps and assist in the understanding of how health systems could address SDoH.

METHODS: We conducted a retrospective cohort study of insured patients seen at a primary care clinic at UHealth University of Miami Health System who answered a SDoH survey between September 2016 and April 2019 and had at least 12 months of follow up data. The survey included SDoH domains recommended by the AHA position statement and by the National Academy of Science, including demographic variables, education, financial strain, stress, social isolation, health literacy, health behaviors. We collected clinical and health care utilization variables from the UHealth data warehouse. Using co-factorial analysis and linear regression we calculated a SDoH score that included survey and zip code-based income data and divided the score into quartiles. We used linear regression adjusted for age, gender and charlson score to evaluate the relationship between the SDoH score and mean hospital admissions, mean number of no shows, outpatient visits in 12 months, length of stay, HbA1C, and blood pressure.

RESULTS: The table below summarizes the results amongst the 7,226 UHealth patients who met eligibility criteria. In adjusted models, increasing social risk was independently associated to belonging to a racial/ethnic minority, to higher number of hospital admissions and longer length of stay and to higher probability of no showing for outpatient visits. In addition, the SDoH score was associated to quality of care metrics for diabetes and blood pressure control.

CONCLUSIONS: Conclusions: Increasing social risk score is associated to being female, being a racial/ethnic minority, to underutilize outpatient services and to overutilize in-patient services. The SDoH score identifies patients at risk of poor quality of care. Future analyses should continue to evaluate the mediators of poor health care utilization amongst patients with high social risk.

SOCIAL FACTORS CONTRIBUTE MORE MORTALITY THAN GENETIC OR CLINICAL FACTORS

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BACKGROUND: Cardiovascular diseases are prevalent and costly. To develop a preventive strategy it is imperative to identify the contribution of the different factors. There is paucity of data combining clinical, social and genetic factors. Our aim was to evaluate the contribution of cardiovascular risk, social and genetic factors on all-cause mortality.

METHODS: We conducted a retrospective cohort study of primary care patients from a large academic institution. At baseline we estimated the census-based area deprivation index (ADI) as a measure of social risk, genome wide association studies to calculate a coronary artery disease polygenic risk score and measured prevalent cardiovascular disease as well as traditional cardiovascular risk factors. Our primary outcome was all-cause mortality defined as a death flag from the electronic health record or social security death index. We calculated the relative hazard (RH) of each factor in a multivariate model adjusted for prevalent cardiovascular diseases.

RESULTS: We included a total of 38,322 primary care patients with a mean age of 64+/-11 of whom 62% were female and 20% were Black. Increasing ADI was associated with high probability of being Black, having prevalent heart failure and coronary artery disease ($p<0.01$) and increasing cardiovascular risk factors ($p<0.05$). Increasing ADI was associated with a higher polygenic risk score. The table shows the RH and corresponding 95% confidence interval (CI), the ADI was associated with the highest RH of all cause mortality compared to clinical and genetic factors.

CONCLUSIONS: Social factors play a more significant role on all-cause mortality when compared to genetics and clinical factors.

SOCIAL NETWORK CHARACTERISTICS OF PRIMARY CARE PATIENTS ASSOCIATED WITH TOBACCO USE

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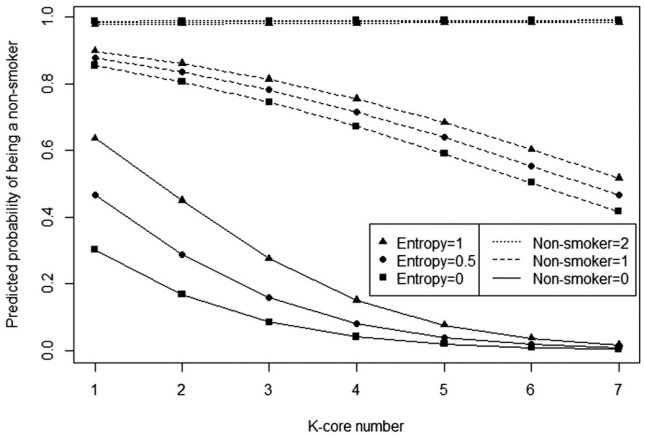
BACKGROUND: Tobacco use is the single most preventable cause of death and is susceptible to social influence. There remains a need to better understand how social network structure relates to tobacco use. This study examined how network measures relate to tobacco use among primary care patients.

METHODS: We conducted enrolled 55 primary care patients (egos) and 153 of their nominated friend/family (alters) through respondent driven sampling. We assessed their demographic and socioeconomic characteristics, the nature and structure of their social ties, self-efficacy, perceived social supports, social norms, and tobacco use. We calculated network metrics for each participant based on their reported network: density, maximum k-core number, and entropy of communication frequency between social ties. Low entropy and high k-core number collectively indicate a network structure that exhibits high cliquishness. We fit a generalized estimating equation, clustered on a participant's original recruiting ego, to estimate whether a participant *did not smoke*.

RESULTS: Participants nominated an average of 5.7 alters (SD=3.1) and 0.87 (SD=1.0) of an ego's enrolled alters, on average, self-identified as smokers. We observed significant effects of k-core number (OR = 0.6 95% CI: 0.5,0.8), entropy (OR = 1.9 95% CI: 1.1,3.5), and the number of alters self-identified as non- smokers (OR = 4.4 95% CI: 2.1,9.4). When we include interactions between k-core number and entropy with the number of non-smokers we find that all three main effects disappear, and both interaction effects are significant. We find that when one nominates two or more alters who are non-smokers, entropy and k-core number does not affect the likelihood of being a non-smoker. However, when one nominates 1 or 0 non- smokers, increasing k-core number and decreasing entropy are strongly associated with a decreasing likelihood of being a non-smoker.

CONCLUSIONS: Having two or more ties to non-smokers, protects one from smoking. When one has 1 or more ties to smokers, one's susceptibility to smoking can be overcome by having a less-cliquish social

network. Network characteristics may help identify individuals at-risk of smoking as well as inform interventions that leverage network structure to promote smoking cessation.



SOCIAL SUPPORT IS ASSOCIATED WITH LOWER ODDS OF HCV-COINFECTION AMONG PEOPLE LIVING WITH HIV WITH POOR RETENTION IN CARE IN LOS ANGELES

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BACKGROUND: Social support is a social determinant of health that can mitigate adverse effects of other risk factors for health. Hepatitis C virus (HCV) coinfection affects up to a quarter of people living with HIV (PLWH) in the US as they share multiple predisposing factors such as substance use and material deprivation. It results in increased morbidity and low antiretroviral therapy adherence. We assessed whether social support may be associated with lower risk of HCV co-infection among a diverse and vulnerable cohort of PLWH in Los Angeles.

METHODS: We analyzed cross-sectional data collected in the CHAMPS cohort from adult PLWH experiencing poor retention in care (defined as having viral load >200 copies/mL and three or fewer routine HIV care visits in 12 months) in community-based clinics in Los Angeles County between 2016 and 2018. We assessed (1) social support using a validated scale and (2) whether the participant had been diagnosed with HCV per participant report. We used multivariable logistic regression to estimate the association between HCV co-infection and social support, adjusting for sociodemographics, substance use, competing needs, and SF12 mental health composite score.

RESULTS: Of 567 participants, 457 (81%) identified as cisgender men, 80 (14%) as cisgender women, 23 (4%) as transgender women, and 3 (0.5%) as transgender men. Mean age was 49 (SD 11.7), 210 (46%) identified as Black/African American and 185 (40%) identified as Latino/Hispanic, 189 (34%) reported any substance use and 9 (2%) reported injection drug use. Ninety-six (17%) reported HCV co-infection. Participants reported a mean social support score of 2.8 (SD 1.2) and mean of 1.3 (SD 0.6) out of five competing needs. In the adjusted model, those reporting higher social support scores were less likely to have HCV co-infection (aOR=0.77, 95%CI=0.62 – 0.97).

CONCLUSIONS: Among racially/ethnically diverse PLWH experiencing poor engagement in care, those reporting higher social support were less likely to be co-infected with HCV. Our results suggest that social support may be a critical component for prevention and management HIV/HCV co-infection and has implications for HCV-related comorbidities, including cirrhosis and end stage liver disease.

SOCIODEMOGRAPHIC AND HEALTH DIFFERENCES OF MONOLINGUAL AND BILINGUAL MEXICAN AMERICANS

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BACKGROUND: One in three Latinos living in the United States (US) are not fluent in English and consider themselves Spanish speakers only. Lack of English proficiency has been recognized as a factor associated with decreased access to health care, poorer reported health outcomes and increased mental health issues. The objective of this study was to examine social, demographic and health differences among Mexican Americans living in the US based on their linguistic proficiency (monolingual versus bilingual).

METHODS: Data from 558 Mexican Americans enrolled in the Health and Aging Brain among Latino Elders (HABLE) study were analyzed. Participants aged 50 years or older, who were interviewed in either English or Spanish based on language of preference, were grouped into "monolinguals" (Spanish-speaking only) and "bilinguals" (spoke both English and Spanish). Participants who only spoke English were excluded. T-tests and Chi-Square tests were used to compare differences between monolingual (n=255) and bilingual (n=303) participants.

RESULTS: Compared to bilinguals, monolinguals were older (62.1 (9.0) vs 60.6 (7.8) years old; t(556)=2.06; p=0.043), lived in the US for a shorter period (27.4 (16.8) vs 44.6 (17.8) years; t(546)=-11.54; p<0.001), had fewer years of education (5.7 (3.9) vs 9.5 (4.1) years; t(557)=-11.24; p<0.001), and had lower annual household income ($19,730 (18,223) vs $26,064 (20,984); t(505)=-3.78; p<0.001). Chi-Square tests indicated that more bilinguals owned their place of residence (χ^2_{2df} (N=559)=9.79; p=0.007), received a high school diploma (χ^2_{2df} (N=553)=70.03; p<0.001), and had health coverage (χ^2_{2df} (N=558)=15.12; p<0.001). Interestingly, despite a difference in health coverage, having a primary care physician and affording to go to a doctor were not statistically different between the two groups. In terms of health, monolinguals had higher Beck Anxiety Inventory Scores (6.7 (8.2) vs 5.2 (8.3); t(543)=2.11; p=0.035) and higher Geriatric Depression Scale scores (10.5 (6.9) vs 8.3 (7.2); t(551)=3.734; p<0.001) compared to bilinguals. There was also a statistical difference in self-reported health status among two groups with monolinguals reporting poorer health (χ^2_{2df} (N=558)=14.07; p=0.007) but there was no difference in personal medical history of diabetes, hypertension and high cholesterol.

CONCLUSIONS: The results of this study indicated that monolinguals were older, had fewer years of education, had fewer resources, and had higher anxiety and depression scores compared to bilinguals. Spanish-only speakers, whose language may represent inherent and potential social barriers, may experience more mental health issues than Latinos who speak both Spanish and English.

SOCIOECONOMIC DISPARITIES AFFECTING THE TRANSITION FROM HOSPITAL TO HOME: A MIXED METHODS ANALYSIS

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BACKGROUND: Socioeconomic differences due to low income has been found to disadvantage patients during care transitions in the United States but evidence remains limited among Canadian patients with publicly funded health-care coverage. The objectives of this study were to 1) measure the association between socioeconomic status (SES) and health outcomes following discharge from hospital and to 2) explore patient and caregiver perspectives on the role of income related disparities on care transitions.

METHODS: A mixed methods secondary analysis was conducted among individuals enrolled in a randomized control trial. Participants were discharged home from 5 hospitals in Ontario, Canada with congestive heart failure (CHF), chronic obstructive pulmonary disease, pneumonia, stroke, hip fracture, hip or knee replacement. Individuals were classified as low income if the annual salary was below $29,000 CND, or between $30,000 to $50,000 CND and supported three or more individuals. Data collected included demographics such as sex, age, diagnosis, disability or language barrier, role of family in caregiving and presence of home care. The association between SES and the following outcomes were evaluated using Chi- square and multivariable analyses: patient experience measures, self-reported patient understanding and adherence to discharge instructions, and unscheduled visits, readmission rates and death up to 3 months post- discharge. Lastly, the influence of income and income-related disparities was analyzed through a deductive direct content analysis of patient and caregiver experiences from post-discharge telephone interviews.

RESULTS: Our cohort of 443 participants included 111 (26%) low income, 120 (27%) who were not considered low income and 212 (48%) who did not want to respond. Most participants had an admission diagnosis of CHF (28%), pneumonia (22%), and hip replacement (21%). Compared to the higher income individuals, those in the low SES category were disproportionately non English or French speaking (28% vs. 6%, $p<0.0001$), prior immigrants (51% vs. 34%, $p<0.0116$), reported limited health literacy (58% vs. 23%, $p<0.0001$), and physical disability (62% vs. 38%, $p<0.0004$). Individuals with low SES were just as likely to report highly on patient experience measures and experience an unscheduled visit or death. However individuals with low SES were less likely to adhere to post-discharge follow-up appointments (39% vs. 52%, $p=0.0480$). Themes identified among the 44 participant interviews included personal finances taking priority over health, difficulties with scheduling and transportation to appointments, inability to afford medications, and the costs involved with family support.

CONCLUSIONS: SES plays an important role during the transition home from hospital, particularly in regards to post-discharge follow-up appointments. Further study is needed to better identify opportunities for supporting patients and their families with transportation, medications, and costs associated with caregiving.

SOMATIC, ANXIETY AND DEPRESSIVE (SAD) SYMPTOMS IN YOUNG ADULT LATINX IMMIGRANTS

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BACKGROUND: Several studies have examined mental health and somatization in Latinxs, but few have looked at symptoms specifically in those living undocumented in the United States. Discrimination and acculturation have previously been linked to worse mental health in immigrants, and somatization, anxiety, and depression are linked to poorer health-related quality of life. Young adult Latinx immigrants may be particularly prone to distress and greater understanding of this vulnerable patient population will guide physicians providing care in the outpatient setting.

METHODS: A self-administered questionnaire was completed by 107 persons from Mexico, Guatemala, El Salvador, and Honduras ages 18-29 in an outpatient primary care setting of a large safety-net healthcare system in the Midwest. Participation rates (> 90% of eligible patients) were high. Somatic, anxiety, and depressive symptoms were measured by the PHQ-14, GAD-7 and PHQ-8, respectively. A composite SAD score (sum score of the 3 scales; range, 0 to 69) was the primary outcome. Acculturation and immigration contextual factors including legal status were measured by additional questions including the Brief Acculturation Scale for Hispanics. Factors associated with SAD symptoms were examined using multivariable linear and logistic regression models.

RESULTS: Most participants had some degree of legal marginalization (83%). Threshold level scores for moderate somatization (37%), anxiety (20%), and depression (25%) were common. Multivariable analyses revealed that 5 factors related to the social context of immigration (worries about discrimination, health care access, employment, deportation of self, and deportation of family) predicted a higher composite "SAD score" (sum of the 3 scales, range 0 to 69). Each additional factor increased the SAD continuous score by 3 points (effect size of 0.21) and increased the likelihood of a high SAD score $\geq$ 20 (OR=1.7; 95% CI, 1.1 to 2.5). Participants who immigrated at a younger age also had higher SAD scores ($p=0.04$). An immigration distress index (IDI), which was a simple count of the 5 factors, predicted distress in a dose-response fashion, with SAD scores in patients with 0, 1, 2, 3, 4, and 5 IDI factors being 8.3, 10.5, 14.8, 17.1, 21.7, and 29.3, respectively. Elevated SAD scores were not associated with patient sex, marital status, education, income, country of origin, degree of acculturation, or DACA status.

CONCLUSIONS: Specific immigration contextual factors and earlier age upon arrival to the U.S. increase somatic, anxiety, and depressive (SAD) symptoms in Latinx young adult primary care patients. SAD and IDI measures are brief and can identify symptoms and concerns potentially amenable to treatment. These may include patient-centered culturally sensitive treatment strategies, symptom focused behavioral and medication therapies, and targeted referrals to community resources.

SPILLOVER EFFECTS OF HIP AND KNEE REPLACEMENT SURGERY BUNDLES IN MEDICARE

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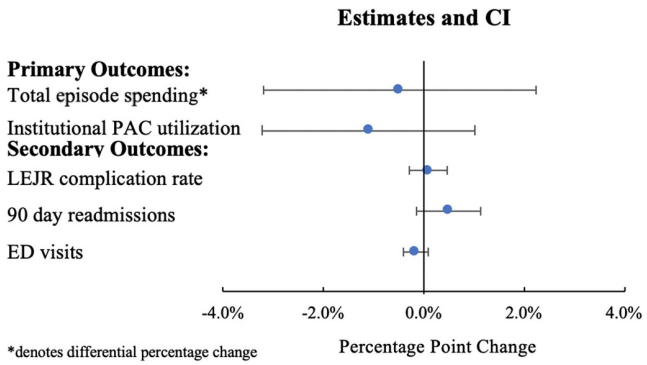
BACKGROUND: As a strategy to improve health care value for joint replacement surgery, mandatory bundled payments have produced 3-4% in episode cost savings with stable quality in the Comprehensive Care for Joint Replacement (CJR) Model. Though CJR targets Medicare fee-for-service patients, it may prompt broad organizational care delivery changes that "spill over" to other patients, such as those insured through private health plans. However, previous literature reporting evidence of spillovers has only used data on a subset of hospitals, thereby potentially compromising the randomized study design of CJR. We addressed these limitations in examining the impact of CJR participation on quality, utilization, and spending outcomes for commercially insured and Medicare Advantage (MA) patients.

METHODS: Our analysis used 2011-2016 Health Care Cost Institute claims encompassing 418,016 MA or commercially insured patients who underwent lower extremity joint replacement (LEJR) surgery at hospitals in 75 CJR markets and 121 non-CJR markets across the US. We leveraged the randomized design of CJR at the market-level to evaluate changes in

LEJR outcomes among CJR hospitals, compared to changes at non- CJR hospitals. Primary outcomes were changes in 90-day total LEJR episode spending and discharge to institutional post-acute care. Additional quality outcomes included the LEJR complication rate, 90-day readmissions rate, and emergency department visit rate. All models were adjusted for patient and market- level factors, and incorporated time fixed-effects and hospital and market random effects.

RESULTS: Patient characteristics, including prior health care utilization, varied between CJR and non-CJR markets, though they were not clinically meaningful. In adjusted analysis, patients who underwent LEJR surgery in CJR and non-CJR markets did not differ with respect to episode spending (difference of -$157, 95% CI -$1,043 to $728, p=0.73) or probability of discharge to institutional post-acute care (difference of -1.1%, 95% CI -3.2% to 1.0 %, p=0.31). Patients in CJR and non-CJR markets also did not differ with respect to changes in other quality outcomes. Stratified and sensitivity analyses yielded similar findings.

CONCLUSIONS: In contrast to findings from previous literature, there was a lack of evidence of program- wide CJR spillovers to patients insured through private health plans. Mandatory payment reforms may have limits in their effects.



STAKEHOLDER PERSPECTIVES ON INCREASING ACCEPTABILITY OF A WEB-BASED HEALTHY LIFESTYLE INTERVENTION FOR OLDER CANCER SURVIVORS

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BACKGROUND: To meet the health needs of the growing number of rural and older cancer survivors, we explored the views of multiple stakeholders regarding acceptability and potential benefits of a web-based healthy eating and exercise program among cancer survivors.

METHODS: Individual semi-structured interviews were conducted with representatives from stakeholder groups serving cancer survivors to inform the AiM, PLan, and act on LIFestYles (AMPLIFY) intervention: advocacy groups (n=8), organizations (e.g., industry, health system, etc.; n= 11) and supportive partners (n=8). Data were analyzed using inductive thematic analysis with NVivo 12 Pro.

RESULTS: Stakeholders (16 women, 11 men) identified factors that would enhance acceptability of AMPLIFY for cancer survivors and stakeholders. Themes common across stakeholder groups included increased accessibility for disadvantaged populations, data collection and data accessibility, program quality, and social support. Stakeholders believed rural cancer survivors would particularly benefit from increased program accessibility through web-based delivery, noting a need for program materials to match survivors' education level and be culturally diverse. At the same time, stakeholders expressed different views on the acceptability of web-based delivery for older cancer survivors, with the majority endorsing convenience as a factor promoting use among older survivors. All three groups stressed built-in program social support for survivors and accessibility of participant health or outcomes data by advocacy groups, organizations, or participants' physicians as factors increasing acceptability among survivors and stakeholders. Organizations noted the need for a program that was evidence-based and backed by trusted experts and user reviews. Advocacy groups viewed the "off the shelf" quality of the web-based program as an advantage. Both organization and advocacy groups suggested cancer survivor uptake would increase with a program implementation approach that included stakeholder-led physical and virtual resources complementary to the web-based program. Additionally, supportive partners highlighted information reliability, health benefits, goal setting, encouraging text messaging, and being able to exercise in private as factors that would increase AMPLIFY utilization.

CONCLUSIONS: Web-based delivery provides a venue to increase healthy lifestyle program reach for rural and older cancer survivors. Stakeholders serving cancer survivors identified factors that would promote program acceptability and uptake. Exploring the views of multiple stakeholders is useful to inform and enhance dissemination and implementation efforts of such programs among cancer survivors.

STANDARDIZING QUALITY OF VIRTUAL URGENT CARE: AN EXPERIENTIAL ONBOARDING APPROACH USING STANDARDIZED PATIENTS

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BACKGROUND: Virtual Urgent Care (VUC) is a now a common modality for providing real-time assessment and treatment of common medical problems. However, most providers have not had formal telemedicine training or clinical experience. Faculty have little experience with this new modality of healthcare delivery. We created an experiential onboarding program in which standardized patients (SPs) are deployed into a VUC platform to assess and deliver feedback to physicians in an effort to provide individual- level quality assurance and identify program-level areas for improvement.

METHODS: We simulated a synchronous urgent care evaluation of a 25-year-old man with lingering upper respiratory tract symptoms refractory to over-the-counter medications. The SP was trained to strongly request an antibiotic prescription. A mock entry in the electronic medical record, available to providers during the visit, provided demographic, prior medical, pharmacy and allergy information. The encounter was scheduled into a regular 30-minute appointment slot during a routine 8-hour shift. We developed a behaviorally- anchored assessment tool to evaluate core communication, case-specific, and telemedicine-specific skills. Response options comprised 'not done,' 'partly done,' and 'well done.' SPs provided post-encounter verbal feedback to urgent care providers (UCPs), who received a summary report and had an opportunity provide structured feedback regarding the case. A single SP performed 20 / 21 visits.

RESULTS: Twenty-one UCPs, with 2 to 23 years of clinical experience, participated in an announced scheduled visit. UCPs performed 'well done' in Information Gathering (93%) and Relationship Development (99%) domains. All UCPs provided appropriate management plans and did not give antibiotics. In contrast, Education and Counseling skills were less strong (32% 'well done'). Within this domain, few received 'well done' for checking understanding (14%); conveying small bits of information

and summarizing to ensure clarity (9%). Most (71% well done) collaborated with the SP in discussing next steps.

Specific telemedicine skills were infrequently used: only 19% performed a virtual physical exam, 24% utilized the audio/video interface to augment information gathering, 14% optimized technical aspects by assessing sound, video or ensuring a backup plan should video fail.

A subset of UCPs (n=9) provided structured feedback regarding the case. 100% 'somewhat or strongly agreed' that the encounter improved their confidence communicating via the video interface and helped improved telehealth skills.

CONCLUSIONS: This experiential virtual urgent care onboarding program utilizing standardized announced encounters uncovers several areas for improvement within telemedicine-specific and patient education domains. These findings form the basis for dedicated training for virtual urgent care providers to assure quality across the program.

STATE-TO-STATE VARIATION IN MEDICAID COVERAGE OF AND SPENDING ON DIRECT- ACTING ORAL ANTICOAGULANTS

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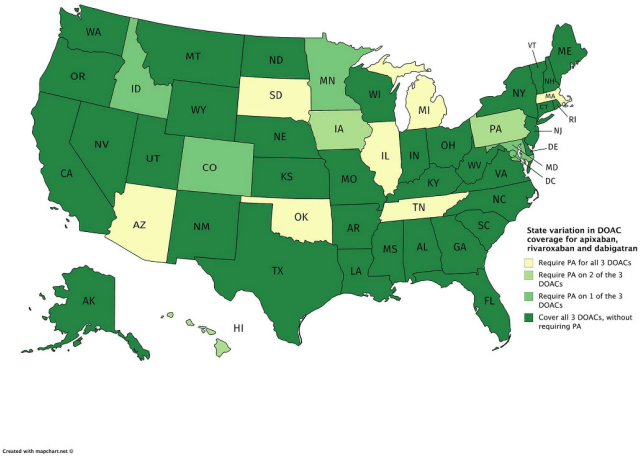
BACKGROUND: Direct-acting oral anticoagulants (DOACs) have demonstrated greater safety and effectiveness than traditional warfarin, particularly for stroke prevention in patients with atrial fibrillation the most common heart rhythm disorder in the U.S. Prior studies have reported underuse of DOACs in underserved populations (e.g., racial/ethnic minorities and Medicaid enrollees). Yet, little is known about state-to-state variation in Medicaid coverage of DOACs, and whether such variation influences anticoagulation disparities. Thus, we examined contemporary Medicaid coverage of and spending on DOACs.

METHODS: We extracted data from the Medicaid websites of all 50 states in June, 2019, collecting information on coverage of warfarin and DOACs (apixaban, dabigatran, edoxaban, and rivaroxaban). We also identified states that required prior authorization (PA) for DOACs. Additionally, we used Medicaid State Drug Utilization data from all 50 states to assess the total amount reimbursed for each oral anticoagulant from June 2018-June 2019.

RESULTS: As of June 2019, we observed restricted coverage of edoxaban, where 8 states did not cover edoxaban at all and of those that did, 33 required PA. When excluding edoxaban from our assessment, we found that 36 states (72%) did not require PA for any of the other three DOACs. We noted that 7 states required PA on all three DOACs, 3 states required PA on two DOACs, and 4 states required PA on at least one DOAC (Figure). Overall, spending on DOACs was significantly higher than spending on warfarin ($8,646,954), with the highest amount spent on rivaroxaban ($296,568,351), followed by apixaban ($284,049,978), and dabigatran ($20,913,698). States that required PAs did not appear to spend significantly less on DOACs than states without PA.

CONCLUSIONS: Upon review of Medicaid coverage of all 50 states in 2019, we found notable variation in DOAC coverage by state, particularly related to PA requirements. We also found broad variation in Medicaid spending on DOACs by state. Further research on the impact of Medicaid coverage variation on DOAC prescribing and atrial fibrillation-associated outcomes is needed to improve quality and equity of care in this increasingly common condition.



STATIN TREATMENT FOR PRIMARY PREVENTION OF MORTALITY IN PATIENTS AGED >75

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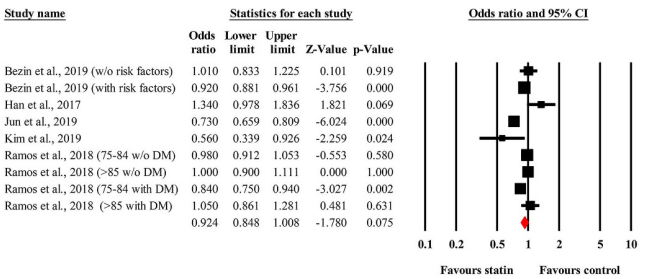
BACKGROUND: The use of statin therapy for secondary prevention has been established in all age groups. However, the role of statin therapy for primary prevention in the elderly remains controversial. The aim of this study is to investigate whether statin for primary prevention is associated with decreased all-cause death in individuals aged > 75 years.

METHODS: We performed a systematic search of PubMed, EMBASE, and the Cochrane Library from inception to December 2019 for studies that assessed the association between statin and mortality in patients aged 75 or older. The primary outcome was all-cause mortality. Odds ratios (ORs) with corresponding 95% confidence interval (CI) were synthesized.

RESULTS: Five studies met the inclusion criteria, for a total of 103,344 patients. During the follow-up period of 4.7-6.0 years, statin administration was not associated with decreased mortality (pooled OR = 0.92, 95% CI 0.85 to 1.01; I2= 79.7 %) (Figure). Egger's test did not show evidence of publication bias.

CONCLUSIONS: Statin treatment for primary prevention among patients aged 75 or older was not associated with decreased mortality. The heterogeneity was high; further studies with risk stratification are needed.



STICKING POINTS: ASSESSING PREVALENCE, PROVIDER AWARENESS AND NURSE PERCEPTIONS ABOUT FINGERSTICK BLOOD GLUCOSE TESTING IN HOSPITALIZED PATIENTS

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BACKGROUND: Fingerstick blood glucose (FSBG) testing in the hospital setting allows real-time insulin adjustment, protecting patients from significant hypo/hyperglycemia. Admitted diabetic patients are often placed on sliding scale insulin with four times per day FSBG testing, regardless of home insulin use.

FSBG test materials cost $9 per use (1), and we estimate that $500,000 is spent annually on FSBG supplies for our inpatient teaching service. In patients who are low risk for inadequate glycemic control, FSBG monitoring may add to nursing workload, cause patient discomfort, and waste resources without improving quality of care. We assessed the opportunity to reduce FSBG testing in low risk diabetic patients on the hospital medicine teaching service (HMTS).

METHODS: Our student-run team conducted a multi-faceted assessment of FSBG practices on the HMTS at an urban academic 1,100-bed tertiary care center. This included a point prevalence study (PPS), a provider awareness study (PAS), and a nurse perceptions survey (NPS). The PPS identified the number of patients receiving FSBG monitoring (per the EMR). The PAS tested provider awareness of FSBG orders. Each provider (intern/resident/attending) was given his/her patient list and was asked to identify (in real time) patients with FSBG orders in the last 24 hours, without looking at the EMR. The NPS was a five-question survey of practice patterns/perceived workload attributed to FSBG testing.

RESULTS: The PPS identified that 55 of 103 patients were receiving FSBG monitoring. 31 providers (100% completion) took the PAS. 3/31 correctly identified all patients with FSBG orders. 1/12 interns, 1/12 residents, and 1/7 attendings correctly identified patients with FSBG orders. 42% of interns overestimated and 42% underestimated the percentage of patients on FSBG. 33% of residents overestimated and 50% underestimated the percentage of patients on FSBG. 70% of attendings underestimated the percentage of patients on FSBG. The mean percentage of patients with FSBG testing correctly identified was 66%.

The NPS was administered to 28 nurses with 100% completion. 67.9% reported needing 4-6 minutes to administer a FSBG test, and 17.9% reported requiring 7-10 minutes. 60.7% estimated that fewer than 50% of patients undergoing FSBG testing are given insulin in response to test results.

CONCLUSIONS: Our student-run study demonstrates that FSBG testing is common, that provider awareness of FSBG monitoring is low, and that nurses require 4-10 minutes per fingerstick. In aggregate, FSBG is costly and little research has targeted it as a potential area for waste reduction. As such, FSBG testing represents a potential quality gap. Our work will inform quality improvement interventions to decrease fingersticks that are not changing care, maximize providers' time and hospital resources and improve patient experience.

References

(1) Healthcare Bluebook. https://healthcarebluebook.com. Accessed November 1, 2019.

STIGMA AND PRIMARY CARE ACCESS FOR PATIENTS ON LONG-TERM OPIOIDS

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BACKGROUND: Recent data suggest that many primary care physicians (PCPs) are unwilling to accept and care for a new patient who is on long-term opioid therapy. PCPs' reluctance to care for this group is commonly attributed to increased administrative burdens and fears of legal sanctions. Yet, no study has quantified how stigma may influence clinic decisions in caring for patients on a long-term opioid prescription.

METHODS: We used audit "secret shopper" methodology to call primary care clinics across nine different states with varying opioid overdose rates. Each clinic was called twice using two different scenarios. Both scenarios simulated a patient on long-term opioid therapy seeking to schedule a new patient appointment. They differed in the reason their prescription had been discontinued to examine stigma. Scenario A stated that the previous PCP retired while Scenario B indicated that the prior PCP stopped prescribing without providing a specific reason. We measured whetherhad a provider willing to see and potentially prescribe opioids to the patient. If a clinic was unwilling to see the patient for his/her opioid management, we also attempted to schedule an appointment for non-pain related care (e.g. diabetes management). McNemar's test was used to assess differences between scenarios in proportions of prescription and acceptance potential.

RESULTS: 452 clinics had calls completed for both scenarios. Of these, regarding clinic willingness to potentially prescribe opioids, 193 (43%) clinics indicated that their providers would not prescribe opioids in either scenario, 146 (32%) said their providers would be willing to see the patient and may prescribe in both scenarios, and 113 (25%) reported different responses to the two scenarios. In this latter group, clinics had 1.83 greater odds (OR=1.83 CI[1.23,2.76]) of indicating that someone would possibly prescribe if the caller's reason was that their doctor retired compared to if no reason was provided for the stopped prescription. 8.5% of the total paired calls (n=904) resulted in the representative saying they would not prescribe for the patient or even accept them for diabetes management after initially saying they were accepting new patients.

CONCLUSIONS: Among the same clinics, willingness to potentially prescribe opioids for a patient on opioids seeking a new primary care appointment varied significantly based on reason given for needing a new doctor. Additionally, a sizable contingent of the simulated patient calls resulted in denial of care for non-pain related reasons such as diabetes management for patients taking opioids. Our results indicate that beyond administrative requirements and office policies, stigma around opioids and pain management plays a significant role in clinic decision-making when deciding to provide care for patients on opioids for pain.

STRATEGIES FOR PATIENT, FAMILY, AND CAREGIVER ENGAGEMENT: A SCOPING REVIEW AND EVIDENCE MAP

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BACKGROUND: The widely applied Chronic Care Model emphasizes the need for an "informed, activated patient" and a "prepared, proactive team" to improve patient outcomes. We conducted a scoping review to construct a map of the available evidence on patient and family engagement strategies for people with chronic conditions.

METHODS: We adapted a framework for patient and family-caregiver engagement. Key Informants provided input on the framework for categorizing different types of engagement strategies. We searched PubMed and CINAHL from January 2015 to October 2019 to identify systematic reviews of randomized controlled trials and observational studies of strategies for engaging patients and their families or caregivers in active management of chronic conditions (involving more than just education). We also searched for original research on strategies not covered by reviews. Search will be updated February 2020.

RESULTS: We categorized patient and family engagement strategies into direct patient care, health system, and community/policy level strategies. The search yielded 134 systematic reviews. 126 reviews focused on

direct patient care, 5 on the health system level, and none on the community level. Reviews on direct patient care engagement most commonly focused on self-management support (88) and shared decision-making (34), and many used technology-based modalities including mobile health and electronic health record tools. Most included studies in adults (96), while 14 were in children. Self-management support strategies were most commonly tested as part of multi-component interventions. The most frequently reported clinical outcomes were adherence to medication/self-care plans, and chronic disease control (e.g., hemoglobin A1c and blood pressure). For self-management in adults, 26 reviews reported positive effects, 18 reported potential benefits, and 19 reported unclear benefits. None reported any harms. Most of the 34 shared decision-making reviews described multi-component interventions; seven reported positive effects, ten reported potential benefits, eight reported unclear benefits, and one reported no benefits. Health system-level strategies most commonly involved patients and family caregivers serving on patient and community advisory councils and participating in meetings or project teams. No rigorous evaluations were reported on these systems-level strategies. One original article was identified that described patient engagement at the community level and focused on a neighborhood-clinic partnership.

CONCLUSIONS: Patient and family engagement strategies with the most evidence pertained to self-management support. Use of technology to facilitate patient and family engagement is a promising approach. More research is needed to address a big gap in evidence on patient and family engagement at the health system and community/policy levels.

STREET-INVOLVED YOUTH AND YOUNG ADULT PERSPECTIVES ON HARM REDUCTION

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BACKGROUND: The overdose epidemic has not spared youth and young adults (YYA). Despite the presence of life-saving medications for the treatment of opioid use disorder (OUD), in a large cohort in Massachusetts, only 8% of adolescents who experienced a non-fatal opioid-related overdose (NFOD) received medication for OUD (MOUD) in the following year.

For YYA for whom traditional addiction services are not successful or not preferred, harm reduction approaches are promising. Yet, harm reduction strategies—"reduction of negative consequences related to substance use behaviors"—may need to be tailored to preferences of YYAs.

METHODS: In partnership with a Boston-based non-profit organization that provides outreach to YYA experiencing homelessness, we surveyed YYA ≥ 18 years. We asked about demographics, recent substance use and overdose, and knowledge of and access to health care, mental health, and harm reduction services. Surveys took 7-12 minutes to complete.

RESULTS: Fifty-two of 59 individuals (88%) approached by study staff completed the survey; thirty-three (63%) were aged 18-22 and 19 (37%) were ≥ 23. Thirty-four (65%) were male and 11 (21%) reported female gender; 41 (79%) identified as heterosexual. Twenty-three (44%) identified as Black, thirteen (25%) identified as White, fourteen (27%) identified as Latinx and 37 (71%) identified as homeless or unstably housed.

Marijuana (81%) and alcohol (52%) were the most frequently used substances in the last week. Eight (15%) participants reported opioid use in the past 6 months, of whom 3 (38%) reported a history of non-fatal overdose (NFOD)—additionally, 4 (9%) people who denied recent opioid use also reported a history of NFOD.

Fifteen (29%) reported having heard of harm reduction, but only 2 (4%) could define the term on an open- ended question; nine (17%) reported having accessed harm reduction services, and listed local community health centers, a local safety net hospital, a needle exchange program and youth-oriented programs as places where they accessed these services. Twenty-nine (56%) knew what naloxone was, 18 (35%) knew where to get naloxone, but only 4 (8%) usually carried it with them.

Only twenty-two (42%) reported having access to health care services, and 10 (19%) access to mental health services. Cost (33%), waitlists (25%), and unfriendliness to youth (10%) were the most frequent barriers noted to addiction services.

CONCLUSIONS: In this sample of street-involved YYA with high risk of overdose, participants reported familiarity with and interest in specific harm reduction services and substance use treatment, but also reported important barriers in accessing them. Creation of innovative, low-threshold, youth-tailored harm reduction services is warranted.

STRUCTURED INTER-HOSPITAL TRANSFER HANDOFFS TO PREDICT CARE ESCALATION AND MORTALITY - A PROSPECTIVE STUDY

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BACKGROUND: Approximately 1.6 million patients are transferred between hospitals yearly, with a disproportionately high mortality. Despite the risk associated with this transition of care, there is no established best practice in coordinating and triaging transfers from outside facilities. The transfer is a process across several hours to several days where physician communication is incongruent from the actual transition of responsibilities and often relies on incomplete documentation. While errors and miscommunication have been documented, the value of structured communication has not been established in prospective studies.

METHODS: We evaluated a convenience sample of 1000 consecutive prospectively collected inter-hospital transfers with a templated transfer note to a representative tertiary referral center. Each note contained structured elements which were extracted and merged to patient outcomes. The primary outcome was in- hospital mortality, with secondary measures including length of stay, and escalation of care within 24 hours. Finally we evaluated the rate of hand-off error: that patients were reported to be stable, but were transferred to the ICU within 6 hours of arrival. We performed multivariate logistic regression to evaluate individual elements prediction of outcome adjusting for age, race, payer, and comorbidities. C-statistic was used to determine how effective hand-off elements predicted inpatient mortality and early transfer to the ICU.

RESULTS: Information contained in the transfer note provided fair prediction of in-hospital mortality In fact relying on information in the dot phrase and age alone provided good prediction of in-hospital hospital

mortality (AUROC: 0.71) and fair prediction of transfer to the ICU within 24 hours (AUROC 0.66). When adjusting for age, demographics, and charleson comorbidity score, individual transfer elements predicted subsequent mortality including whether the patient would be stable throughout transfer (OR 0.34 p <0.001), whether recommendations were given (OR 0.47 p = 0.016), and whether the reason for transfer was to evaluate for transplant (OR 3.59 p = 0.018). Errors occurred in 6% of cases, where patients were documented to be stable, but required critical care within 6 hours of arrival. This was associated with higher rates of inpatient mortality (OR 2.99 p = 0.003)

CONCLUSIONS: In this prospective, observational study of interhospital transfers, we show that a structured hand-off supported by documentation provides valuable information. Both documentation of predicted stability and feedback for care where shown to be associated with lower risk of death. Additionally, in this context, error rates were rare (6%), but associated with higher adjusted mortality. This study supports a growing body of evidence that structured hand-offs and supporting documentation likely improves care and should be applied to high-risk transitions including interhospital transfers.

SUBCLAVIAN AND AXILLARY VEIN ACCESS VS CEPHALIC VEIN CUT DOWN FOR CARDIAC IMPLANTABLE ELECTRONIC DEVICE LEAD IMPLANTATION: A META- ANALYSIS

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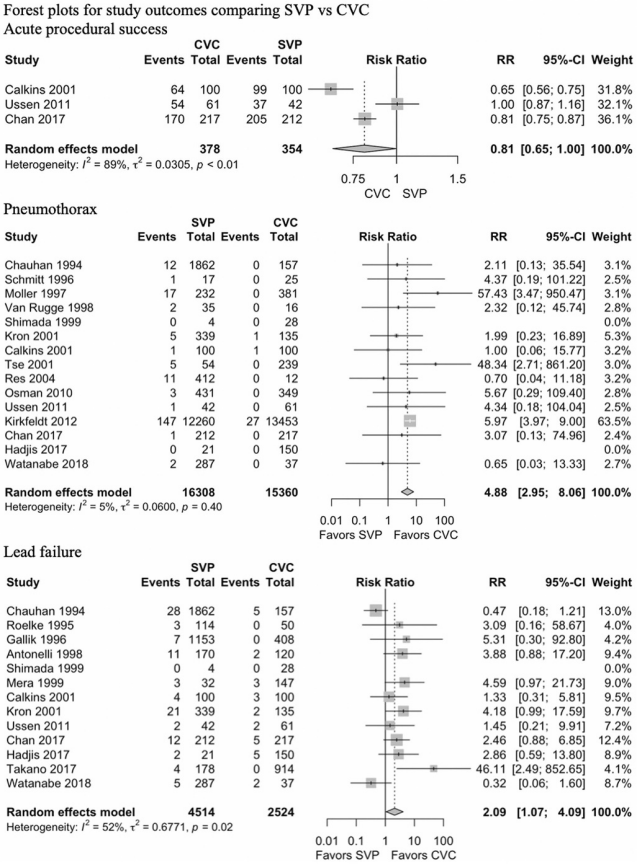
BACKGROUND: Background: Minimally invasive transvenous access is a fundamental step during implantation of cardiac implantable electronic devices (CIEDs). However, the preferred venous access is still subject to ongoing debate and the decision depends on operator experience.

METHODS: Methods: A comprehensive search for studies comparing subclavian vein puncture (SVP) and axillary vein puncture (AVP) vs cephalic vein cutdown (CVC) for CIED implantation was performed in clinicalTrials.gov, PubMed, Cochrane Central Register of Controlled Trials, Google Scholar, Web of Science, EBSCO Services and various scientific conference sessions from inception to July 1st2019. A meta-analysis was performed using random – effects model to calculate risk ratio (RR) and mean difference (MD) with 95% confidence interval (CI).

RESULTS: Results: Twenty-three studies were eligible which included 35,722 patients (SVP= 18,009, AVP= 409 and CVC= 17,304 patients). Compared with CVC, SVP was associated with higher risk of pneumothorax (RR: 4.88, 95%CI: 2.95 – 8.06) and lead failure (RR: 2.09, 95%CI: 1.07 – 4.09) while there was no significant difference in these outcomes when compared with AVP. When compared with AVP, acute procedural success was significantly lower with CVC (RR: 0.80, 95%CI: 0.76 – 0.85). There was no significant difference in other complications such as pocket hematoma/bleeding, device infection and pericardial effusionbetween SVP or AVP when compared with CVC.

CONCLUSIONS: Conclusion: CVC was associated with lower risk of pneumothorax and lead failure compared with SVP. AVP and CVC are both effective approaches for CIED lead implantation and offers the potential to avoid complications usually observed with traditional SVP.



SUBOPTIMAL UTILIZATION OF OSTEOPOROSIS-RELATED SERVICES FOLLOWING HIP FRACTURE IN OLDER ADULTS, 2007-2016

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BACKGROUND: Hip fractures are associated with mortality of 21%-30% in the year following fracture and a 2.5 fold increased risk for incurring a second fracture (3). Previous studies have shown that initiation of pharmacologic intervention following first hip fracture reduces risk of refracture. This retrospective cohort study investigates the treatment patterns following hip fracture and covariate patient characteristics in a nationwide insurance claims database.

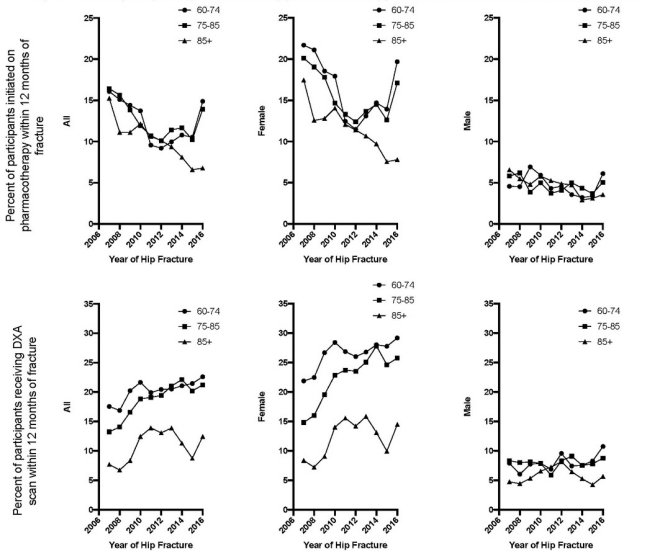
METHODS: PearlDiver is a commercially available database with over 4 billion HIPAA-compliant patient records from the United States. Using ICD-9 and ICD-10 diagnostic codes, we identified a cohort of adults aged 60+ who suffered a hip fracture between 2007 and 2016. We excluded individuals with claims for malignancy, bone pathologies, other fractures, and trauma <12 months before fracture. We identified participants who received a DXA scan or osteoporosis pharmacotherapy by CPT-code or NDC codes. We fitted a multivariate logistic regression to model relative risks of outcomes by sex, age group and year of fracture.

RESULTS: In total, 12,102 (21.5%) of 56,328 total participants utilized at least one osteoporosis-related service (DXA scan or medication) within 12 months following fracture. 3,533 (6.3%) of participants received both recommended services, while 44,226 (78.5%) of participants utilized neither service. Adjusted for sex and age, the chance of medication

initiation decreased 4.6% per year during the study period (RR, 0.954; 95%CI 0.946—0.961; p<0.001) and the chance of DXA scan increased 4.2% per year during in the study period (RR, 1.042; 95% CI, 1.035—1.050). Receipt of a DXA scan following hip fracture was significantly correlated with medication initiation (φ , 0.32; p<0.001).

CONCLUSIONS: We found the overall rate of utilization of any osteoporosis-related services in this cohort to be startlingly low, at 20.4%. Female sex, younger age, and white race predicted for use of osteoporosis medication. Our results emphasize the continued treatment gap for osteoporosis in older adults.

Fig 1. Percentage of participants receiving pharmacotherapy or DXA scan within 12 months of fracture



SUBSTANCE USE DISORDER-RELATED HOSPITALIZATIONS IN A SAFETY-NET HEALTH SYSTEM: TRENDS IN PREVALENCE AND READMISSION

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BACKGROUND: Opioid-related hospitalizations increased substantially over the past decade leading to growing efforts to provide services during hospitalization. Hospitalizations related to other substances have received less attention and lags in claims data means most trends do not incorporate data after 2017. Many patients with substance use disorder (SUD) receive care in safety-net health systems, yet the impact of SUD-related hospitalizations in these systems has not been well defined. This study characterizes trends in SUD- related hospitalizations and readmissions in a safety-net health system using standardized admission data over a 12-year period.

METHODS: We conducted a retrospective cohort study of all patients admitted to an urban safety-net hospital between 2008 and 2019. SUD diagnoses were identified based on ICD-9 and 10 codes associated with each admission. We described sociodemographic characteristics of hospitalizations related to SUD compared with those not related to SUD. We examined trends in admissions related to any SUD and stratified analyses by individual and combined SUDs. Finally, we assessed 30-day readmission rates stratified by SUD status. We used STATA MP 15.1 to perform the logistic regressions, controlling for race, age, gender, and year of admission.

RESULTS: Our sample consisted of 206,300 hospitalizations with 60,516 hospitalizations related to SUD. SUD-related hospitalizations were associated with younger age, male gender, and white race/ethnicity. The proportion of hospitalizations associated with any SUD diagnosis increased from 23.1% in 2008 to 34.2% in 2019. Alcohol-related hospitalizations were the most common SUD annually, representing 64.4% of all SUD- related hospitalizations. Among illicit substances, cocaine-related hospitalizations were the most common in 2008 (4.0% of total admissions) while psychostimulants (eg. methamphetamine) were the most common in 2019 (7.6% of total admissions). From 2008 to 2019, psychostimulant-related hospitalizations increased 22- fold (58 to 1,270). Among opioid-related hospitalizations, co-use with psychostimulants increased from 0.3% in 2008 to 35% in 2019. Readmissions were significantly more common among SUD-related hospitalizations (Adjusted odds ratio: 1.12 [95% CI, 1.1-1.2])

CONCLUSIONS: In an urban safety-net hospital, SUD-related admissions steadily increased since 2008 and accounted for one-third of total admissions by 2019. This trend is driven by rising rates of methamphetamine and opioid use combined with steadily high rates of alcohol use. The increasing prevalence of SUD-related admissions has important consequences for safety-net hospitals with regards to resource management and readmission penalties and and further research to expand harm reduction and treatments is needed. EHR data can help health systems adapt to changes in their patient populations as they continue to address the evolving substance crisis

SUBSTANCE USE PATTERNS AND HEALTH PROFILES AMONG US ADULTS WHO USE OPIOIDS, METHAMPHETAMINE OR BOTH, 2015-2018

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BACKGROUND: Methamphetamine use and co-use with opioids has increased substantially, but little is known about the sociodemographic characteristics, substance use patterns, or health profiles of individuals who use methamphetamine. To design effective public health interventions, health care professionals and policymakers need data describing individuals affected by the next wave of the opioid crisis.

METHODS: We used 2015-2018 data from the National Survey on Drug Use and Health and included non- elderly adults aged 18-64 years. We categorized respondents into three groups: opioid use only, methamphetamine use only, or methamphetamine/opioid co-use. Multiple logistic regression models, controlling for sociodemographic factors, were used to compare substance use characteristics and measures of individual health between the three groups.

RESULTS: Between 2015 and 2018 methamphetamine/opioid co-use rose 25% while opioid use alone decreased 23%. People who used methamphetamine were more likely to be unstably housed, low-income, and live in rural areas. Methamphetamine/opioid co-use was associated with an eightfold higher prevalence of injection needle use, a fourfold higher prevalence of HIV/AIDS, and threefold higher prevalence of viral hepatitis compared with opioid use alone. 30% of individuals reporting methamphetamine/opioid co-use had a severe mental illness, twice the prevalence of those using opioids alone.

CONCLUSIONS: Individuals who used methamphetamine (with or without opioids) had more complex substance use and health profiles than individuals who used opioids alone. These findings suggest public health and harm reduction approaches designed to address opioid use may have even greater importance in an era of rising methamphetamine use.

SUGAR ON MY TONGUE: A CASE SERIES OF DKA / HHS HOSPITAL ADMISSIONS AMONGST KNOWN DIABETICS AT A SAFETY-NET HOSPITAL

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BACKGROUND: Diabetic ketoacidosis (DKA) and hyperosmolar hyperglycemic state (HHS) are serious complications of diabetes mellitus (DM). DKA incidence is rising in the US with 90% of adult cases in known diabetics. This case series illuminate some characteristics of known diabetics admitted with DKA/HHS to inform prevention efforts.

METHODS: Records of all adults admitted in 2018 requiring an insulin drip were pulled from the EMR of our safety-net academic hospital. Four cases per month were selected randomly from this pool. These 48 cases were assessed per inclusion criteria, including laboratory-confirmed DKA or HHS on admission and a DM diagnosis prior to admission. Medical records were then reviewed.

RESULTS: Thirteen out of 48 cases met inclusion criteria. Nine patients were males. Six patients had DM1 and seven patients had DM2. Ages ranged from 24 – 71 with a mean of 46. Per EMR, six patients were non- Hispanic whites, five were Hispanic, and two were black.

Only one patient was uninsured and the remainder had either public or private insurance. Six of thirteen patients were unemployed. Four of 13 patients had unstable housing. Ten of 13 patients had a documented PCP and/or endocrinologist. Primary language was English for 11 patients and Spanish for two. HbA1c ranged from 7.8 – 14 with a mean of 11.2. Eight of the 13 patients had been previously hospitalized for DKA.

12 out of the 13 patients had documented medication nonadherence for a variety of reasons. Seven of 13 patients were seen by a DM educator during the admission. Seven of 13 patients had a documented appointment with PCP or endocrinology prior to discharge. LOS ranged from 1-11 days with a mean of 4.15 days.

CONCLUSIONS: Nearly half of DKA patients in this case series had DM1, which is consistent with the literature. In the US, only 5% of adult diabetics have DM1; DM1 patients represent ~ 59% of DKA cases.

Approximately 45% of US diabetics fail to achieve glycemic targets with high rates of nonadherence. Our data reflects this also, with 92% of cases with medication nonadherence.

Of our cases, ~½ were unemployed, ~ 1/3 had unstable housing, but 92% still had some type of health insurance. The literature suggests DKA patients have higher rates of unstable housing but also that the majority of DM patients with DKA are insured. This suggests that underinsurance may play a role in DKA amongst known diabetics.

Our cases had a male preponderance which is consistent with the literature on DKA admissions.

Our average LOS was 4.15 days, compared with a national average of 3.24 days. Only ~ ½ were seen by a diabetes educator and ~ ½ had follow up scheduled at discharge. These data suggest opportunities for local improvements.

Limitations include the small number of cases and reliance on medical record data. Selection bias was mitigated by a temporally distributed random sampling approach. Further research on DKA/HHS amongst known diabetics will be useful to highlight gaps in local chronic disease care systems.

TAILORED-TO-PLACE MESSAGING WITH THE STEP IT UP MOBILE HEALTH APPLICATION AS A TOOL TO INCREASE PHYSICAL ACTIVITY AND IMPROVE CARDIOVASCULAR HEALTH DISPARITIES AMONG AFRICAN AMERICAN WOMEN

Nithya P. Vijayakumar[1,4]; Sam J. Neally[1]; Kaveri Curlin[1]; Kosuke Tamura[1]; James F. Troendle[1]; Billy S. Collins[1]; Valerie M. Mitchell[1]; Sophie E. Claudel[1]; Joniqua N. Ceasar[1]; Marcus R. Andrews[1]; Yvonne Baumer[1]; Cristhian A. Gutierrez-Huerta[1]; Kathryn G. Tippey[2]; Shayne Giuliano[2]; Regina McCoy[2]; Jessica Zahurak[2]; Tonya Dodge[3]; Tiffany M. Powell-Wiley[1]. [1]National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, MD; [2]Connected Health Applications & Interventions (CHAI) Core, The University of North Carolina at Chapel Hill, Chapel Hill, NC; [3]Department of Psychological and Brain Sciences, The George Washington University, Washington, DC, DC; [4]University of Michigan Medical School, Ann Arbor, MI. (Control ID #3372465)

BACKGROUND: Cardiovascular disease (CVD) disparities are attributed in part to the built environment of resource-limited communities. African American (AA) women living in these communities have high CVD prevalence often accompanied by low physical activity (PA).

This study focused on at-risk AA women living in lower socioeconomic status (SES) Washington, DC neighborhoods. We created a mobile health application (app) called Step It Up to determine how app-based coaching tailored to available neighborhood resources (i.e. 'tailored-to-place') can increase PA.

METHODS: This pilot study enrolled a convenience sample of overweight/obese AA women residing in lower SES neighborhoods—DC Wards 5, 7, 8, and Prince George's County—with a goal of 24 participants. Before recruitment, we developed the Step It Up app with UNC CHAI Core using community-based participatory research principles. Participants received the Step It Up app and a Fitbit Charge 2 PA monitor for three weeks. After collecting baseline PA data in week 1, the Step It Up app provided PA self-monitoring tools and sent time- and location-based messages to encourage PA in weeks 2-3. Participants were randomized into one of 3 groups. All groups, including group 1 (control), received timed messages. Groups 2 and 3 (tailored-to-place) also received messages prompted by proximity to PA locations from a database (group 2) or provided by participants themselves (group 3).

Data for analysis excluded minutes with heart rate missing or ≤2SD below the mean, and defined a valid day as ≥10 hours of Fitbit wear. Mean steps/day/week was calculated for each participant and compared between message-type groups using linear mixed models adjusted for age and BMI.

RESULTS: The first 12 participants (n=36 person-weeks) had mean age=57±11 years and body mass index (BMI)=36±6 kg/m2. Groups 1, 2, and 3 (4 participants/group) had 20-21 average valid days of Fitbit wear. At baseline, participants took an average of 7098±2115 steps/day. In week 3 there was an increase of 1993 steps/day compared to week 1. The increase was no greater among tailored-to-place groups (groups 2 and 3) than the control group (Table 1).

CONCLUSIONS: Mobile health apps with remote coaching may contribute to greater PA for at-risk AA women. Preliminary analyses suggest that tailored-to-place messaging may not further enhance this effect. Additional data analysis from the final study sample, including qualitative and survey data, will clarify how tailored-to-place messaging can increase PA and reduce CVD disparities.

TARGETED FAMILY PLANNING SERVICE EXPANSION IN A HIGH RISK POPULATION: A QUALITY IMPROVEMENT INTERVENTION TO INCREASE ACCESS TO FAMILY PLANNING SERVICES FOR PEOPLE WITH SEVERE MENTAL ILLNESS IN AN OUTPATIENT PSYCHIATRIC CLINIC

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BACKGROUND: Patients with severe mental illness (SMI) have higher risks of unintended pregnancies and poor pregnancy outcomes compared to general population, yet are less likely to receive contraception.

Despite having frequent contact with psychiatric services, patients with SMI indicate that a separate family planning (FP) service at their mental health treatment facility would increase their engagement. Thus, our objective was to expand FP services to women and men of childbearing age, who receive out-patient psychiatric care at the Mental Health Center of Denver (MHCD).

METHODS: Denver Health (DH) and MHCD, both safety-net care settings, collaborate to provide a co- located primary care clinic (PCC) within MHCD's largest adult out-patient psychiatric clinic. We leveraged that close working relationship to integrate a monthly half-day FP clinic at the PCC at MHCD. Our services include options counseling and provision of all reversible contraceptive methods as well as referral to DH for permanent sterilization if desired. Expanding these services at a familiar location where clients already receive care reduces many barriers to access for the most vulnerable patients and provides an easy referral resource for psychiatrists, who are not able to address FP needs, yet care for and prescribe teratogenic medication to a high risk population. This service expansion was designed as a quality improvement (QI) project with interventions including collaborating with pharmacy and outreach to MHCD staff to generate patient interest in a walk-in clinic, offering services to MHCD employees to help improve understanding of the FP clinic, reviewing pharmacy work flow to identify patients in need, and expanding outreach to other MHCD service areas, especially their teen and young-adult outreach center.

RESULTS: Using Slicer Dicer Software, we determined that there are 138 women of childbearing age at the PCC at MHCD, only 25 of whom have documented FP usage. Though we cannot access MHCD's data on clients not enrolled at the PCC at MHCD, we can estimate similar, if not worse, uptake in FP services for those patients not engaged in primary care. To date, we have offered 5 half-day FP clinics and seen 9 patients, providing 3 LARCs, and initiating OCPs for 2 patients.

CONCLUSIONS: Reaching patients with SMI and providing preventive services is incredibly challenging, even between institutions with an already close working relationship. Yet, poor prevalence of FP use in patients with SMI highlights the importance of such work. Through rapid implementation of services followed by evaluation and adjustments to our strategy, QI work enables us to continually improve to ideally provide full FP services to as many patients as possible moving forward.

TEACHING HEALTHCARE POLICY TO INTERNAL MEDICINE RESIDENTS DURING MORNING CONFERENCE

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BACKGROUND: Physician advocacy and knowledge of healthcare policy are vital elements of medical education and included within the ACGME Core Competency of Systems-Based Practice. However, many GME programs do not incorporate these topics into their trainee education. To address this gap in our program, we introduced a resident curriculum on advocacy and healthcare policy. We administered surveys to determine knowledge and behaviors related to advocacy prior to the course, and to assess for changes following completion of the course.

METHODS: In September 2018, all 47 Internal Medicine residents at a single academic institution were invited to complete an anonymous online survey on belief in the importance of advocacy, knowledge of healthcare policy, and participation in advocacy activities. Response choices ranged from "Strongly disagree" to "Strongly agree" on a 1-to-5 point Likert scale. Residents then underwent a year-long curriculum of monthly lectures during morning conference on the US health insurance system, prescription drug pricing, social determinants of health, and legislative advocacy. After completion of the lectures, residents were re- administered the survey in June 2019.

RESULTS: The pre-survey had 21 respondents (44.7%): 12 PGY-1, 9 PGY-2/3; 12 male, 9 female. The post- survey had 27 respondents (57.4%): 15 PGY-1, 12 PGY-2/3; 9 male, 16 female. Before the course, PGY-2/3s were more likely to be familiar with current healthcare news than PGY-1s [Median±SD; 2.0±0.8 vs 1.0±0.9, p=0.041]. Post-survey results showed increases in describing policy-making [4.0±0.9; p<0.001], knowledge of policy [3.0±0.9; p=0.004], and familiarity with payer sources [4.0±0.9; p<0.001]. Residents continued to agree with the importance of advocacy [4.0±0.9; p=0.149] after the course. There was no change in contacting elected officials (22.2%; p=0.691), participating in advocacy (25.9%; p=0.834), or voting (92.6%; p=0.828). After the course, PGY-2/3s were more likely to report ability to describe policy-making compared to PGY-1s [4.0±0.4 vs 3.0±1.0, p=0.005]. There were no significant differences by gender.

CONCLUSIONS: This study demonstrated the feasibility of administering a healthcare policy curriculum for internal medicine residents during scheduled conferences. Before the course, residents had high levels of belief in the importance of physician advocacy, but low levels of knowledge of healthcare policy and participation in advocacy. After the course, residents showed increased policy knowledge, without increase in advocacy behavior. This suggests that further interventions may be needed to promote resident participation in advocacy. Knowledge improvements occurred across all PGY groups. Future directions for this program include: incorporating non-lecture formats such as flipped classroom and policy article review, increasing the pool of lecturers to improve program sustainability, incorporating resident feedback from the initial year, and implementing a state advocacy leadership day.

TELEMETRY ASSESSMENT OF IN-HOSPITAL ST-ELEVATION MYOCARDIAL INFARCTIONS

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BACKGROUND: It is estimated that about 10,000 in-hospital ST-segment elevation myocardial infarctions (STEMIs) occur in the United States every year. In most cases, patients are admitted for non-cardiac reasons and develop an acute coronary event during the course of their hospitalization. Due to their unique clinical manifestations, in-hospital STEMIs can often go unrecognized, leading to a delay in treatment and poor patient outcomes. It is imperative for healthcare institutions to implement evidence-based protocols that can improve the management of this clinical entity. The primary obective of this study is to assess the cardiac telemetry of patients diagnosed with in-hospital STEMI and identify any changes prior to the acquisition of the index electrocardiogram (ECG).

METHODS: This is a retrospective review of electronic medical records and telemetry data for adults, 18 years of age and older, who were diagnosed with in-hospital STEMI at UCLA Health hospitals from 2011 through 2012. Patients were identified using the In-hospital STEMI Quality Improvement Project (ISQIP) database by Shahandeh et al. Demographics and index ECG timing were recorded from the ISQIP database. Telemetry rhythm strips with time stamps were acquired through the data compiling tool set created by Do et al. Objective measures were identified by direct review, specifically noting baseline rhythms and electrocardiographic changes at time intervals prior to the index ECG.

RESULTS: A total of four patients were identified from the ISQIP database that had retrievable cardiac telemetry. Rhythm strips were downloaded for the 48-hour interval prior to the acquistion of the 12-lead ECG. After careful review of these strips, 2 of the 4 cases were noted to have telemetry changes well before the in-hospital STEMI was diagnosed. Patient 1 had new ST-segment elevations and depressions 4 hours prior to the index ECG. Patient 2 had new ST-segment elevations and depressions with QRS widening 2.5 hours prior to the index ECG.

CONCLUSIONS: Cardiac monitoring is a critical tool used in hospitals across the United States. In-hospital STEMI is an acute coronary event that is frequently overlooked due to its atypical manifestations. The purpose of this study was to assess whether telemetry could be utilized as an objective measure for this clinical entity. After careful review of the available data, ischemic changes were identified in two cases well before the diagnostic ECG was obtained. These findings indicate a missed opportunity to initiate intervention up to several hours earlier. Although the significance of these results is limited by the small sample size, it is clear that cardiac monitoring can be optimized to help expedite the diagnosis and treatment of in-hospital STEMIs. In addition, quality improvement projects focused on telemetry education for medical staff could also be beneficial.

TEMPERATURE IN UNINFECTED, INFECTED AND BACTEREMIC INPATIENTS

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BACKGROUND: Temperature in the hospital, and its correlation with infection, has not been studied on a large scale. Temperature is known to vary with multiple factors in healthy outpatients, and maximum temperature may provide a more consistent marker for infection than mean or sporadic temperature in inpatients. We used electronic health record (EHR) data to compare temperature distributions for uninfected and infected patients in the inpatient setting.

METHODS: We included EHR data from patients admitted to a Cleveland Clinic hospital in 2017-2018 without active malignancy or immunosuppression. We included one encounter per patient and excluded implausible temperatures. We classified patients as uninfected, infected (but not bacteremic), or bacteremic based on ICD-10 diagnoses. For infected and bacteremic patients, we included only temperatures within ±2 days of the diagnosis.

We used a linear regression to evaluate the association of demographics with maximum temperature in uninfected patients. A second linear regression on temperatures for all patients included infection status as well as demographics and time of day. We calculated maximum temperature interval odds-ratios for each degree rise or fall from the mean temperature.

RESULTS: Of 108,362 patients who met criteria, 698 were excluded due to missing data, leaving 1,698,781 temperatures from 107,673 patients. Overall, 6% were diagnosed with bacteremia and 25% were diagnosed with nonbacteremic infection. Group demographic characteristics were similar: mean age was 63 ± 2 years, 52% were female, 22% Black, and 7% other non-White. Among uninfected inpatients, mean ± SD temperature was 98.06 ± 0.74°F (99% were 97.05-99.07°F) and mean maximum temperature was 98.91 ± 0.71°F (99% were 97.08-100.74°F). Maximum temperature varied slightly by age, sex, race, weight and time of day. Infected and bacteremic patients demonstrated similar demographic and time-of-day effects, but had higher maximum temperatures (0.56°F for infected and 1.93°F for bacteremic patients). There were significant interactions between bacteremia and age and sex. Temperature increases with bacteremia were smaller for older patients (-0.13°F per decade) and women (-0.13°F). At a maximum temperature of 98.0-98.9°F, 2.9% of patients were bacteremic. Interval odds ratios for bacteremia increased at both higher [99-99.9°F (OR: 2.1), 100-100.9°F (OR: 6.5), 101-101.9°F (OR: 12.0), 102-102.9°F (OR: 17.1), ≥103°F (OR: 28.5)] and lower [97-97.9°F (OR: 1.3), 96-96.9°F (OR: 4.4), <96°F (OR: 13.9)] temperatures.

CONCLUSIONS: Mean uninfected inpatient temperature (98.1°F) was lower than generally believed.

Maximum temperatures below 97°F and above 100°F were associated with bacteremia, with more extreme temperatures being most predictive. Temperatures of older patients increased less in response to infection, suggesting that heightened clinical suspicion for bacteremia is appropriate in geriatric patients.

THE ASSOCIATION BETWEEN CARE COORDINATION AND HEALTH CARE UTILIZATION OF ADULT ALABAMA MEDICAID BENEFICIARIES WITH DIABETES

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BACKGROUND: Diabetes mellitus (DM) is a major cause of morbidity and mortality in the United States. With a prevalence of 9.4%, it is now the seventh-leading cause of death and accounts for greater than $240 billion in health costs annually. Diabetes disproportionately affects low-income populations in Southern states, including Alabama. Care coordination (CC) has been proposed as a way to improve health outcomes and reduce health care utilization (HCU). This study explores the relationship between CC efforts and HCU among adult Medicaid recipients living with DM in Alabama.

METHODS: This was a cohort analysis as part of a larger observational study of adults with diabetes covered by Alabama Medicaid, linking survey data to Medicaid claims data. Receipt of CC was assessed with the question "Has a care coordinator, healthcare outreach worker, or other health care professional from your health plan contacted you to talk about your health, diabetes care or other related issue?." Poisson regression was conducted to test the association of CC and HCU, defined by months with a utilization event (any hospitalization or ambulatory care-sensitive (ACS) hospitalization) in the 6 months after the survey date. Covariates included age, race, ethnicity, gender, education, marital status, rurality, comorbidities, diabetes duration, and insulin use.

RESULTS: A total of 499 participants had complete data with 6 months of continuous enrollment before and after the survey date. Mean age was 53.7 years (SD 9.3) with 19.6% reporting receipt of CC. The sample was mostly female (68.5%), Black (58.5%), with an income less than $10,000 (58.1%), and eligible for Medicaid via disability (91.4%). Compared to those who received CC, those without CC were more likely to be Black (62.1% vs.48.5%; $p<0.05$), rural (36% vs. 33.3%; $p<0.05$), report high levels of social support (63.8% vs. 27.3% High; $p<0.05$), less likely to use insulin (46.9% vs. 55.3%; $p<0.05$), and more likely to have received diabetes education (40.9% vs. 34.8%; $p<0.05$). In unadjusted models, not receiving CC was associated with higher rates of any hospitalization

(IRR 1.4, 95% CI 1.31-1.49) and of ACS hospitalization (IRR 1.51, 95% CI 1.23-1.79). In models adjusting for covariates, not receiving CC was associated with higher rates of any hospitalization (IRR 1.25, 95% CI 1.16-1.35) but not for ACS hospitalizations (IRR 1.1, 95% CI 0.8-1.39).

CONCLUSIONS: In our study of Alabama Medicaid beneficiaries with diabetes, CC was associated with a lower incidence of any hospitalizations over a 6-month period even after adjusting for demographic and clinical variables. Black participants and rural participants were significantly less likely to report CC services, while individuals on insulin and reporting low social support were more likely to receive CC. More studies are needed to examine the causal relationship between CC and HCU, the types of CC that are most effective in reducing hospitalizations, and the cost-effectiveness of these programs.

THE ASSOCIATION BETWEEN CLINICALLY ADMINISTERED OPIOIDS AND DISCHARGE OPIOID PRESCRIPTION WITHIN THE URGENT CARE SETTING: A RETROSPECTIVE COHORT STUDY IN ACADEMIC SAFETY-NET HEALTHCARE INSTITUTION

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BACKGROUND: Emergency departments increasingly utilize nonopioid analgesics to manage acute pain and minimize opioid-related harms. Urgent care centers, commonly staffed by internists and family medicine trained physicians, are rapidly expanding to lower costs, offload busy emergency departments, and provide efficient access to healthcare. Musculoskeletal pain, back pain, headache, and abdominal pain are frequent complaints reported by patients cared for in acute care settings and are commonly treated with oral or intravenous opioids for acute pain control. Little is known about opioid prescribing in urgent care settings. This study assessed the association between in-clinic opioid administration, opioid receipt at discharge, and progression to chronic opioid use among urgent care patients.

METHODS: This was a retrospective cohort study of patients 20 years or older, not on opioid medications, who presented for care to one of two urgent care clinics within a safety-net healthcare system from June 1, 2016 to April 30, 2019. We examined the association between receipt of a clinically administered opioid (CAM-opioid) and opioid receipt at discharge. We also examined the association between receipt of CAM-opioids and progression to chronic opioid use defined as a "90-day or greater supply of non-parenteral opioids with less than a 30-day gap in supply within a 180-day period."

RESULTS: The study sample included 34,978 patients, of which 13.8% (n = 4,842) received CAM-opioids and 86.2% (n = 30,136) did not receive CAM-opioids. After adjusting for age, gender, race/ethnicity, insurance, and pain diagnosis, patients with CAM-opioids were more likely to receive opioids at discharge compared to patients without CAM-opioids (aOR = 12.30, 95% CI 11.44-13.23). Patients with fractures or joint dislocations (aOR = 1.46, 95% CI 1.32 – 1.61) or renal colic (aOR = 8.60, 95% CI 6.89 – 1.74) were more likely to receive an opioid prescription at discharge compared to patients with acute or chronic radicular back pain (ref). Older patients were more likely to receive an opioid prescription at discharge (aOR = 1.01, 95% CI 1.01 – 1.01). Patients with gastroparesis (aOR = 0.62, 95% CI 0.54 – 0.71) or migraines (aOR 0.37, 95% CI 0.30 – 0.45) were less likely to receive an opioid prescription at discharge compared to patients with acute or chronic radicular back pain (ref). Among a selected cohort of patients, CAM-opioids were associated with progression to chronic opioid use (aOR = 2.12, 95% CI 1.66 – 2.71).

CONCLUSIONS: CAM-opioids were strongly associated with opioid receipt at discharge and with progression to chronic opioid use. CAM-opioid receipt during an urgent care encounter could drive availability of prescription opioids for diversion, overdose, physical dependence on opioids, and the development of opioid use disorder. Increased use of nonopioid analgesics in urgent care would likely reduce this association and associated public health harms.

THE ASSOCIATION BETWEEN HOSPITAL DISCHARGE AND OPIOID OVERDOSE IN PATIENTS PRESCRIBED CHRONIC OPIOID THERAPY: A SELF-CONTROLLED CASE SERIES

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BACKGROUND: Chronic opioid therapy (COT) is common among hospitalized patients. Research has shown an association between time after hospital discharge and overdose death among individuals with a substance use disorder. Little is known about this relationship in patients on COT. We sought to examine the temporal association between hospital discharge and opioid overdose among patients prescribed COT.

METHODS: We conducted a self-controlled case series (SCCS) using electronic health record data from an integrated health system in Colorado. We identified health plan members who were 18 years and older and prescribed COT between January 1, 2006 and April 30, 2019. COT was defined as three or more opioid prescriptions in a 90-day period. Among these patients, we identified all hospitalizations that occurred during the observation period. Patients discharged to a controlled setting (e.g. skilled nursing facility) were excluded. We defined the risk period as calendar days 0-29 after hospital discharge and the control period as days 30-89 after hospital discharge. Overdose events that occurred during the risk and control periods and came to medical attention were identified using ICD-9 and ICD-10 codes. Conditional Poisson regression was used to estimate the incident rate ratio (IRR) for opioid overdose comparing the risk period to the control period. Stratified analyses were also conducted to assess the IRRs by overdose related hospitalizations and hospitalizations due to all other reasons. Only the first hospital discharge for each individual during the study period was included in this analysis.

RESULTS: We identified 5990 unique patients during the study period who met our enrollment criteria with at least one hospitalization while receiving COT. Twenty overdose cases were identified after qualifying hospitalization and were included in the SCCS analysis. The majority of patients were male (55%), white (85%) and ensured by Medicare (65%). The mean age was 62 years (SD, 7.4) The IRR for opioid overdose was 0.25 (95% CI, 0.08 to 0.81) comparing the risk period to the control period. For individuals with an opioid related hospitalization (N=17), the IRR for overdose event was 0.23 (95% CI, 0.06 to 0.87).

CONCLUSIONS: Among individuals prescribed COT, opioid overdose was uncommon after initial hospital discharge. Among patients who experienced an overdose event, the risk of overdose was significantly lower in the 30-day period after hospital discharge than in the control interval regardless of reason for admission (overdose related hospitalization vs. other). However, our sample size was small and limited to one health system; a larger, multisite study is needed to further investigate this association. Additional research is also needed to identify potential clinical care characteristics that may be protective against opioid overdose among patients prescribed COT.

THE ASSOCIATION BETWEEN PROVIDER COMMUNICATION AND PATIENT OUTCOMES DURING INTER-HOSPITAL TRANSFER

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BACKGROUND: Inter-hospital transfer (IHT) exposes patients to risks of discontinuity of care, including errors in communication. To account for limitations of administrative data, we used medical record review to evaluate the association between provider communication during IHT and clinical outcomes.

METHODS: We performed a retrospective analysis of 347 randomly selected patients from a previously gathered cohort of patients ≥ age 18 transferred to the general medical service of a 793-bed tertiary care hospital from another acute care hospital between January, 2005 and September, 2013. Measures of communication during IHT were abstracted via targeted medical record review using a modified validated abstraction tool, and included: (1) Presence of a patient accept note, i.e., a summary of clinical information documented by the *accepting* clinician at time of patient acceptance for transfer; (2) Availability/quality of a transfer summary as documented by the *transferring* clinician at time of transfer, categorized into unavailable, low quality and high quality, based on inclusion of essential data elements; and (3) Documented reason for transfer, categorized into need for specialized care/procedure, second opinion, patient/family preference, or not documented. Data was abstracted by one of four trained clinicians. Outcome measures were collected administratively and included transfer to the ICU within 48-hours of patient arrival and in- hospital mortality. Covariates for adjustment included patient demographics, comorbidity, illness severity, admit year, and timing of arrival. We used descriptive statistics to determine baseline characteristics and performed multivariate logistic regression to obtain the adjusted effect of measures of communication on the composite clinical outcome of ICU transfer or in-hospital mortality. Secondary analyses evaluated each outcome independently.

RESULTS: We found that 208 (59.9%) of IHT patients had an available accept note prior to arrival and 262 (75.5%) had a high quality transfer summary available on arrival. Reasons for transfer were fairly equally distributed between the measured categories. In adjusted analyses, we found that presence of an accept note was associated with lower adjusted odds of ICU transfer/in-hospital mortality (aOR 0.21; 95% CI 0.07-0.61), largely driven by lower adjusted odds of ICU transfer. Availability/quality of a transfer summary and reason for transfer were not significantly associated with the composite outcome or either individually.

CONCLUSIONS: In this evaluation of IHT patients to general medical services, we found that the majority of IHT patients had a documented accept note, arrived with a high-quality transfer summary, and had documented varied reasons for transfer. We found that the presence of an accept note is associated with lower rates of ICU transfer after adjusting for other patient and transfer factors, suggesting that improved intra-hospital communication during IHT may impact patient outcomes.

THE ASSOCIATION BETWEEN SCHIZOPHRENIA AND ADHERENCE TO MEDICATIONS FOR SECONDARY STROKE PREVENTION

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BACKGROUND: Schizophrenia is associated with mortality after stroke, however the reasons for this are not well-understood. We aimed to determine whether there are differences in one-year adherence to secondary stroke prevention therapies among elderly ischemic stroke survivors with and without schizophrenia.

METHODS: Using the Canadian Institute for Health Information Discharge Abstract Database, we identified all patients aged 65 and over who were hospitalized with stroke between 2004 and 2018 in the province of Ontario, Canada. We then used validated algorithms to identify those with schizophrenia and linked to medication databases to identify prescriptions and to vital statistics to identify deaths. In those who filled a prescription for antihypertensive, lipid-lowering, or anticoagulant (for the sub-group with atrial fibrillation) therapy within 3 months of discharge and were alive at one year, we used Chi-square tests to compare the proportion of people with low adherence (defined as a proportion of days covered < 0.4) in those with and without schizophrenia. We used Cox proportional hazard models to estimate the association between schizophrenia and adherence, adjusting for age, sex, comorbid illness, area of residence, and income quintile.

RESULTS: The study sample consisted of 55842 patients, 574 (1.0%) of whom had schizophrenia. Compared to people without schizophrenia, those with schizophrenia were more likely to have poor adherence to antihypertensive (28.0% vs. 18.8%), lipid-lowering (38.6% vs. 29.8%) and anticoagulant therapy (41.1% vs. 32.0%). Schizophrenia remained a significant predictor of adherence even after adjustment for age, sex, comorbid illness, and area of residence.

CONCLUSIONS: Schizophrenia is associated with low adherence to medications for secondary stroke prevention. Future work should focus on interventions to optimize risk factor management in people with comorbid stroke and schizophrenia, with the goal of reducing post-stroke morbidity and mortality.

THE ASSOCIATION OF A NOVEL MEASURE OF PHARMACY ACCESS WITH INITIATION OF ORAL BREAST CANCER THERAPY

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BACKGROUND: Initiation of important chronic medications is lower than expected across a number of diseases. A few studies in single metropolitan areas suggest that pharmacy accessibility (or pharmacy "deserts") differs within those areas, but little is known about accessibility across larger regions, and even less is known about impacts of pharmacy access on medication use. Adjuvant oral endocrine therapy for 5-10 years with tamoxifen or aromatase inhibitors reduces all-cause mortality, and inexpensive generic formulations are available. We examined a novel national measure of pharmacy accessibility for its association with initiation of endocrine therapy.

METHODS: We conducted a retrospective cohort study of 30,771 postmenopausal breast cancer patients with newly diagnosed non-metastatic estrogen for estrogen receptor or progesterone receptor positive breast cancer from the 2008-2015 SEER-Medicare cancer registry. We identified and located all retail pharmacies in the US and created a measure of pharmacy access which adjusted for supply and demand using a 2-stage floating catchment area approach. We then classified individuals by residence in a census tract based on approximate quartiles of pharmacy access, and examined the association of commercial (ie nonspecialty) pharmacy access with aromatase inhibitor initiation within 3, 6 and 12 months after diagnosis. On initial analyses, the upper two quartiles appeared similar, so subsequent analyses compared the upper half vs lower pharmacy access groups. We used modified Poisson regression to estimate risk ratios and adjusted for demographics (age, race/ethnicity, census tract level

SES), low income insurance subsidy, clinical characteristics (comorbidities, stage, grade and tumor size) and primary cancer treatments (chemotherapy, radiation and surgery) using inverse probability treatment weights, and did sensitivity analysis using doubly robust models.

RESULTS: The cohort was 88.7% white, 59.9% had Stage 1 and 8.3% HER-2 positive cancer, and 23% received a low-income subsidy, Adjuvant endocrine medications were started in 29.9%, 36.4% and 81.7% of patients () within 3, 6 and 12 months, respectively. Within 3 months of diagnosis, compared with those with lower access, breast cancer patients who had high pharmacy access are more likely to initiate treatment (aRR 1.06; 95%CI 1.01-1.11). Results were consistent at 6 and 12 months, however, they declined over time (at 12 months, aRR=1.01; 95% CI 1.00-1.03). The doubly robust models had similar results.

CONCLUSIONS: In a population-based cohort with established access to medical care, timely initiation of an inexpensive oral anticancer agent was associated with a novel measure of pharmacy accessibility even with careful adjustment for clinical factors and socioeconomic status.

THE ASSOCIATION OF GEOGRAPHIC VERSUS PATIENT REPORTED SOCIAL DETERMINANTS OF HEALTH ON MORTALITY IN CARDIOVASCULAR PATIENTS

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BACKGROUND: Social determinants of health (SDH) predict patient outcomes and disproportionately impact the health of disadvantaged populations. SDH are often not considered in care due to the challenge of collecting patient-reported data. Community-level SDH, such as the Brokamp Area Deprivation Index (ADI), are more widely available; however, no research has evaluated the predictive validity of this ADI in adults or its association with patient-reported data. We compared patient-reported SDH to a new Area Deprivation Index (Brokamp ADI) to predict mortality in patients admitted for acute coronary syndrome (ACS) and/or acute exacerbation of heart failure (HF).

METHODS: The Vanderbilt Inpatient Cohort Study (VICS) was a 5-year prospective study that enrolled 3000 adult patients at one academic hospital treated for ACS and/or HF between October 2011 and December 2015. SDH patient-reported data were collected, including income range, education, health insurance, and household size. ADI was calculated using census tract level variables of poverty, median income, high school completion, lack of health insurance, assisted income, and vacant housing. The primary outcome was mortality with up to 5 years follow-up. Covariates included age, gender, race, and primary diagnosis (ACS, HF, or both).

RESULTS: The sample was 59% male, 84% Caucasian, and 93% insured; mean household income was $46,600 (SD $30,100). Census-tract (CT) derived Brokamp ADI components were significantly associated with their corresponding patient-reported (PR) variables, including: (1) CT assisted income and below the poverty limit vs PR below the poverty limit (OR 1.48, 95% CI 1.36, 1.61) and (OR 1.45, 95% CI 1.34, 1.58) respectively, (2) CT vs PR high school completion (OR 1.88, 95% CI 1.66, 2.14), (3) CT vs PR health insurance status (OR 1.51, 95% CI 1.24, 1.85), and (4) CT vs PR median income (OR 2.14, 95% CI 1.97, 2.33). During follow-up, mortality was 11% in the ACS group and 37% in the HF group. In the ACS sample, the composite ADI was associated with increased mortality (HR 1.20, 95% CI 1.06, 1.35); in the HF sample, composite ADI appeared to be associated with mortality, however confidence intervals were wide and overlapped 1 (HR 1.08, 95% CI 0.99, 1.18). When analyzing individual SDH components, individual patient reported variables of poverty (ACS and HF/both subgroups), education (ACS subgroup only), and income (ACS and HF/both subgroups) independently predicted mortality; ADI components of lack of health insurance (ACS subgroup only) and income (ACS subgroup only) were independently predictive of mortality.

CONCLUSIONS: Brokamp ADI variables and corresponding PR are significantly associated on all domains, and the composite Brokamp ADI predicts mortality in hospitalized patients with cardiovascular disease. In the absence of available patient-reported data, hospitals could use the composite Brokamp ADI as a surrogate for patient-reported data to enhance risk prediction models of mortality in cardiovascular disease.

THE CARE CONNECTIONS PROGRAM: A RANDOMIZED TRIAL OF COMMUNITY HEALTH WORKERS TO IMPROVE CARE FOR MEDICALLY AND SOCIALLY COMPLEX PATIENTS

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BACKGROUND: The Care Connections Program (CCP) embedded community health workers (CHWs) in 8 primary care clinics in the Los Angeles County Department of Health Services (LAC DHS). CHWs guided several patient interventions for clinically and socially complex patients, including medication review, health system navigation, home visits, health coaching, care transitions support, social support, and linkages to appropriate resources. We evaluated the effects of CCP on service use and clinical outcomes and solicited perspectives from patients and CHWs on the impact of program participation.

METHODS: Participant eligibility was based on frequent or avoidable acute care service us (emergency department [ED] visits and hospitalizations), the presence of uncontrolled chronic conditions, and provider referral. Eligible patients were randomized to Intervention (INT) versus Usual Care (UC). Information on patient demographic characteristics, service use 12-month pre- and post-enrollment and chronic condition control (for hypertension, diabetes and hyperlipidemia) were collected from administrative data. Service use (inpatient, emergency department, primary care, and specialty visits) and chronic condition control were analyzed using logistic regression models for any healthcare visits in the 12 months post-enrollment adjusting for service use pre-enrollment, patient demographic and clinical characteristics (age, gender, race/ethnicity, homeless status, comorbid conditions, and where appropriate, baseline chronic condition), and enrollment site. Adjusted percentages were calculated post-estimation.

RESULTS: Between April 2015 and October 2017, 1,291 patients were identified and randomized. Mean age was 59.6 years (SD=12.5), 56% were Latino/Hispanic and 29% African American. 6% were homeless, 76% had hypertension, 61% had diabetes, and 53% hyperlipidemia, with a mean Charlson comorbidity score of 2.23 (SD=2.25) before randomization. At baseline, there were no differences between INT and UC in patient characteristics, chronic conditions, or pre-enrollment utilization. At 12 months, there were no significant regression-adjusted differences between INT and UC in rates of hospital admission (I=27.3% vs UC=25.5%; p=0.64), emergency department visits (I=39.2% vs UC=41.4%; p=0.56), specialist visits (I=78.8% vs UC=76.7%; p=0.48), or chronic condition control. There was a significant increase in primary care visits (I=87.2% vs UC=77.4%; p=0.006).

CONCLUSIONS: In the first year after participation in CCP, CHWs assisted in linking high-utilizer patients to primary care, but the program did not influence acute care visits or specialty outpatient care. Additional research is needed to understand the longer-term impact of CHWs on patient service use and outcomes.

THE EFFECT OF CONTEXT ON MINDSET AND IMPRESSION MANAGEMENT IN RESIDENCY TRAINING AND THE IMPLICATIONS FOR ASSESSMENT AND FEEDBACK

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BACKGROUND: Feedback is valuable for physician growth; medical education conceptualizes feedback as a bidirectional learning conversation. Within this conceptualization, there is a tension between assessment *for* learning and assessment *of* learning. In this study, we explored residents' experiences with this tension and its perceived impact on the authenticity of their clinical performances.

METHODS: We used a constructivist grounded theory approach, informed by Goffman's theory of impression management and Dweck's theory of mindset. These theoretical lenses guided data collection and analysis. We conducted semi-structured interviews with 15 internal medicine residents (5 PGY-1s, 5 PGY-2s, and 5 PGY-3s). Data collection and analysis were conducted simultaneously and iteratively. We applied open and axial codes, wrote analytic memos, and discussed themes and relations between themes. Using constant comparison between our analysis, theory, and newly-gathered data, we refined our categorization of themes and developed a theoretical model to explain our findings. Theoretical saturation was determined by group consensus.

RESULTS: We identified three concepts regarding assessment and feedback. First, residents identified two mindsets when faced with assessment: 1) becoming better physicians, which we labeled a growth mindset, or 2) achieving a good evaluation from an assessor, which we labeled a fixed mindset. Residents described adopting both mindsets, depending on the context. Second, these mindsets influenced residents' impression management: residents with growth mindsets portrayed weaknesses as opportunities for growth and residents with fixed mindsets portrayed competence and hid weaknesses, not wanting to be judged poorly by their assessor. Third, social and structural context affected mindset and impression management. When residents built relationships with faculty through faculty involvement and investment in their growth, creating trust with that faculty, they adopted a growth mindset. When residents focused on formal assessments, with their perceived permanence and future consequences, they adopted a fixed mindset.

CONCLUSIONS: Context affects residents' mindset and impression management. The formal assessment process in medical education alters the context of feedback; this context may cause residents to adopt fixed mindsets and impede their ability to disclose weaknesses. This may decrease the quality of feedback and hinder resident professional identity formation. Relationship-building, through personal involvement (time) and investment (effort) in individual resident growth, may mitigate the effect of formal assessment and promote a growth mindset. Attention to residency structure around assessment, providing space for relationship-building and creating clarity of the purpose and structure of assessment, can help build formative relationships that support effective learning conversations in graduate medical education.

THE EFFECT OF GEOGRAPHIC COHORTING OF INPATIENT TEACHING TEAMS ON ALL- CAUSE MORTALITY

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BACKGROUND: Geographic cohorting is a way of structuring hospital admissions such that patients on a given physician team are admitted to a dedicated hospital unit and, through routine, aims to facilitate interprofessional collaboration, provider-patient communication and timely care. After many years of geographic cohorting at our primary academic site, the University of Pittsburgh Medical Center (UPMC) Internal Medicine Residency program transitioned to geographic cohorting at our academic community hospital. We aimed to evaluate the effect of transitioning to geographic cohorting of inpatient teaching teams on hospital readmissions and mortality at an academic community hospital.

METHODS: We conducted an interrupted time series analysis examining patient outcomes before and after the transition to geographic cohorting on inpatient teaching teams at UPMC Shadyside hospital which occurred in November 2017. The observation period spanned from January 2017 through October 2018, allowing for a two-month run-in period (November-December 2017) at the time of intervention. We included all patients discharged from the inpatient teaching teams during this time. We excluded patients admitted to the ICU and observation admissions. Logistic and linear mixed effects models were constructed to assess the impact of this intervention on patient outcomes and their rates of change. Our primary outcome was six month patient mortality adjusted for pertinent patient characteristics and time-varying covariates. Secondary outcomes included hospital length of stay (LOS) and all-cause 7-day and 30-day readmission rate to a UPMC facility.

RESULTS: During our observation period, the inpatient teaching teams at UPMC Shadyside discharged 1861 unique patients (57% white, 53% female, 62% Medicare-insured, mean age 64) with 1716 patients eligible for inclusion in the final adjusted model, including 888 prior to and 911 after our intervention. Overall, we did not see a significant change in slope for 6 month mortality, LOS, 7-day or 30-day readmission rates after adjusting for age, sex, race, insurance status, and Charlson Comorbidity Index (CCI). While the odds of dying within the next 6 months at the end of our observation period were significantly lower than at the start (OR 0.43, 95% CI 0.24-0.79; $p<0.01$), most of the improvement occurred prior to our intervention.

CONCLUSIONS: Geographic cohorting did not significantly improve or worsen patient 6 month mortality, LOS, 7-day and 30-day readmission of our inpatient teaching teams at UPMC Shadyside Hospital. Additional evaluation is needed to better understand the benefits and costs of geographic cohorting with careful consideration of local institutional factors and engagement of key stakeholders.

THE EFFECT OF OUTPATIENT NOTE TEMPLATES ON NOTE QUALITY: NOTE (NOTATION OPTIMIZATION THROUGH TEMPLATE ENGINEERING) RANDOMIZED CLINICAL TRIAL

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BACKGROUND: Physicians express concern with the current state of clinical documentation, deriding copy-forwarding and excess automatically-imported data. Existing literature on note reform is limited,

describing new note templates and/or note-writing education, with evaluation limited to pre-post analyses. The purpose of this study was to compare the quality of outpatient notes from two different templates using a rigorous methodology of a randomized controlled study design based on a standardized, simulated patient encounter.

METHODS: A new note template was designed that combined the APSO (Assessment, Plan, Subjective, Objective) format with strategies to reduce unnecessary data. This new note format was compared with a standard note template in a non-blinded randomized controlled experiment based on a video of a simulated clinical encounter. A corresponding complete health record was created in the training environment of the electronic medical record. Internal medicine residents were randomized to document the simulated encounter using the standard or new note template. Mimicking clinical conditions, residents completed this exercise in place of scheduled patients in the continuity clinic sessions. Residents evaluated their assigned note templates using a survey. The time to note completion and total note length were recorded. All notes produced were graded by three faculty reviewers using the PDQI-9 instrument, a validated rubric for assessing note quality.

RESULTS: 36 residents participated in the study. 19 were randomized to the standard note template, 17 to the new template. The new template generated notes that were shorter in length (103 vs 285 lines, p<0.001) but took the same amount of time to write (19.8 vs 21.6 min, p=0.654). As assessed by a five-point Likert scale, residents from the new template arm rated their notes as having increased visual appeal (4 vs 3, p=0.05) and less redundancy and clutter (4 vs 3, p=0.006). Overall note template satisfaction was not statistically different between templates.

Faculty reviewers, using a five-point Likert scale, rated the standard note as more up-to-date (4.3 vs 2.7, p=0.001), accurate (3.9 vs 2.6, p=0.003), and useful (4 vs 2.8, p=0.002). The new notes were rated as better organized (4.5 vs 3.3, p<0.001). There was no statistical difference in total quality between the two note templates.

CONCLUSIONS: This randomized controlled study examining the impact of note templates on note quality demonstrates the feasibility of using a simulated clinical encounter to test note templates before introduction into clinical practice. The new note template, in comparison to the standard template, generated shorter length notes that were felt to be more visually appealing and less cluttered by the residents who authored them. However, the faculty reviewers found the new notes to be inferior in several measured elements of quality. Total quality was not different between note templates.

THE EFFECTS OF CONTINUITY OF CARE ON HOSPITALIZATIONS AND EMERGENCY DEPARTMENT VISITS IN PATIENTS WITH OBESITY-ASSOCIATED CHRONIC CONDITION

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BACKGROUND: Obesity affects nearly half of U.S. adults and is contributing substantially to an epidemic of obesity-associated chronic conditions (OCC) such as diabetes and hypertension. The OCC epidemic is particularly severe in low-income, medically underserved, predominantly African American areas in the southern U.S. Access to a regular provider has shown to be associated with preventable healthcare utilization. However, little is known regarding the impact of continuity of care for patients with OCC, especially for those living in health professional shortage areas (HPSA) in the South. This study examines whether continuity of care protects patients living with OCC and in the subgroup with type 2 diabetes (OCC+T2D) from emergency department (ED) and hospital utilization. The study also evaluates whether continuity of care is associated with lower health care use for 1) African-Americans vs. Whites/Others and 2) patients residing in HPSA vs. non-HPSA.

METHODS: This study is a retrospective cohort analysis of 2015-2018 data from 5 adult hospitals and >50 outpatient clinics in the Mid-South participating in a regional Diabetes, Wellness, and Prevention, Coalition (DWPC) practice-based research network. Adult patients with obesity and ≥1 diagnosed OCC and the subgroup with diabetes (OCC+T2D) were included. Patients were identified during an index visit defined as the first visit from 1/1/2016-12/31/2017. Outcomes were overall and preventable hospitalizations and ED visits, measured in a 1-year follow-up period. Continuity of care was calculated for each patient at the clinic level. Multivariable negative binomial models were used to assess relationships between continuity of care and overall health care use.

RESULTS: A total of 27,265 patients had OCC and 9,135 had OCC+T2D. Patients in both groups were predominantly female and African-American with an average age of 60 years and mean BMI of 37 kg/m^2. Additionally, majority of the study population resided in HPSA or low-income areas. Multivariable analyses showed that among patients with OCC, higher continuity of care was significantly associated with lower incidence of overall and preventable ED visits (Overall: IRR=0.38[CI: 0.26-0.57]; preventable: IRR=0.52 [CI: 0.37-0.72]) and hospitalizations (Overall: IRR=0.48 [CI: 0.33-0.70]; preventable: IRR=0.80 [CI: 0.46-1.38]). Similar associations were found in the OCC+T2D group. In the unadjusted analysis, continuity of care was significantly associated with lower preventable ED use for patients residing in HPSA compared with those not in HPSA (IRR=0.63 [CI: 0.41-0.95]). However, the association was not significant in the adjusted model.

CONCLUSIONS: This study demonstrates that continuity of care may lower preventable and overall hospitalizations and ED visits particularly for patients residing in HPSA and low-income areas. The study findings highlight the importance of improving continuity of care among medically underserved patients with OCC.

THE EFFECTS OF ENROLLMENT IN MEDICARE ADVANTAGE SPECIAL NEEDS PLANS ON MORTALITY AND UTILIZATION FOR PATIENTS WITH END STAGE RENAL DISEASE

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BACKGROUND: Medicare Advantage (MA) Special Needs Plans (SNPs) were created as an alternative financing and delivery model to improve care and reduce costs for patients with ESRD, but little is known about their impact. This study examined the association between enrollment in ESRD SNPs and mortality and utilization.

METHODS: We combined data from the United States Renal Data System, a national data system on all individuals with ESRD, with paid claims from CareMore Health, an MA plan that offers ESRD SNPs, to create a linked data with detailed clinical and claims data for FFS and CareMore beneficiaries with ESRD from 2010 to 2017. Using this dataset, we identified beneficiaries who switched from FFS Medicare to ESRD SNPs offered by CareMore Health (SNP Enrollees). We then used coarsened exact matching (CEM) to identify a control group of beneficiaries who were clinically similar to the SNP Enrollees during a baseline period FFS enrollment, but who did not switch into an ESRD SNP (FFS

Controls). We matched patients on granular demographic and clinical variables known to impact mortality and utilization (*e.g.* ESRD duration, dialysis modality, and comorbidities) and utilized data from the USRDS to avoid potential bias from differential coding practices in MA. Our prespecified outcomes were mortality and acute care utilization, and we constructed two separate cohorts for these analyses. The mortality cohort included 441 SNP Enrollees matched to 8,519 FFS Controls and the utilization cohort included 370 SNP Enrollees matched to 6,096 FFS Controls. For the mortality cohort, we modeled mortality over three years of follow-up using weighted Cox regression models. For the utilization cohort, we modeled 12-month utilization rates using linear regression models.

RESULTS: The adjusted average hazard ratio (AHR) for mortality for SNP Enrollees was 0.51 (95% CI 0.40 to 0.66) compared to FFS Controls. SNP Enrollees had 7.88 fewer inpatient (IP) bed days (95% CI -9.42 to -6.34, p<0.001), 0.65 fewer IP admissions (95% CI -0.88 to -0.42, p<0.001), 5.51 fewer skilled nursing facility (SNF) days (95% CI -7.0 to -4.03, p<0.001), and 0.14 fewer SNF admissions (95% CI -0.25 to -0.03, p=0.016). There were no significant differences in dialysis days (p=0.131). These findings were robust to sensitivity analyses that included additional clinical variables (*e.g.* access type, laboratory values) and alternative matching approaches (*e.g.* propensity score matching).

CONCLUSIONS: Enrollment in ESRD SNPs was associated with reduced mortality and lower rates of IP and SNF utilization. To our knowledge, this is the first evaluation of ESRD SNPs since the plans were established in 2003. While this study examined SNPs offered by a single health plan, these findings suggest that SNPs may be an effective alternative financing and delivery model for patients with ESRD.

THE EXPERIENCE OF MALE PHYSICIANS WITH SEXUAL AND GENDER-BASED HARASSMENT: A QUALITATIVE STUDY

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BACKGROUND: Sexual and gender-based harassment are common in medicine. In literature suggest that men report lower rates of harassment compared to their female collogues with rates ranging from 4.2-65.15%. Additionally, there is data to suggest that the negative effects of harassment are consistent across genders, indicating that harassment is a significant problem for male physicians. These numbers suggest that gender-based and sexual harassment are not uncommon among men in medicine and the variability highlights the need for further investigation. The objective of this study was to better understand the experience men have with sexual and gender-based harassment in medicine.

METHODS: We conducted semi-structured interviews of male physicians, from trainees to attendings, at a tertiary care facility. The interview guide was developed after a review of the literature Participants were recruited via email between April and August of 2019. These interviews were transcribed verbatim and, using an iterative coding approach based in grounded theory, were coded and analyzed for themes.

RESULTS: We conducted a total of 16 interviews. Five major themes were identified: 1) Personal experiences of harassment: "massaging shoulders, putting heads on shoulders, talking about their sex lives, inviting me out to drinks," 2) Witnessed harassment: "talking about women's breasts when they're breastfeeding and how huge they are and wow" 3) Characterization of harassment: "I feel with harassment I would feel threatened," 4) Impact of harassment: "my professional license and career and reputation could potentially be on the line for this kind of interaction," and 5) Strategies for responding to harassment: "try to make it as professional as possible." The men reported experiences with sexual and gender-based harassment but were hesitant to define these encounters as such. They had minimal emotional distress from these encounters but worried about their professional reputation and lacked training for how to respond to these encounters. Many had also witnessed their female colleagues being harassed by both male patients and colleagues but did not respond to or stop the harassment when it originated from a colleague.

CONCLUSIONS: We found that men experience sexual harassment differently from women. Most notably, men report less emotional distress from these encounters and often do not define these events as harassment. However, similar to women, men feel unprepared to respond to episodes of harassment against themselves or others. Whether to deter sexual harassment against themselves, or, more commonly, against a female colleague, men can gain the tools to speak up and be part of the solution to sexual harassment in medicine.

THE HEALTH OF INFORMAL CAREGIVERS IN THE UNITED STATES: DOES BURDEN OF RESPONSIBILITY CORRELATE WITH HEALTH OUTCOMES?

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BACKGROUND: Over 43.5 million American adults identify as informal or unpaid caregivers, and represent an essential part of U.S. healthcare infrastructure for disabled or chronically ill persons. "Caregiver burden" is a well-understood phenomenon, with caregivers at increased risk of social isolation and subsequent mental and physical health consequences. Yet little is known about specific mediators of the burdens of caregiving. This study uses data from the 2018 Health Information National Trends Survey (HINTS) to examine health outcomes of informal caregivers in the US as mediated by intensity of caregiving experiences and level of available social support.

METHODS: This cross-sectional study examines the relationships between intensity of caregiving (low versus high) and health outcomes (diagnoses of anxiety, depression, diabetes or hypertension; measures of self-care, health) in a nationally representative sample. Chi square, t-test, linear and logistic regression analyses compared informal caregivers to the general population, and low versus high intensity caregivers. Multivariate modeling among informal caregivers explored effects of social support on these relationships. (SPSS v.25).

RESULTS: Of 3,504 respondents, 12.3% self-identified as unpaid caregivers. They were more likely to have anxiety/depression diagnoses and poor self-care/health ratings, versus the general population. Among the general population, factors significantly associated with poor self-health rating included being a high-intensity caregiver, low education level, and low income. Having emotional/structural support was associated with better self-rated health and self-care, and lower likelihood of an anxiety/depression diagnosis. Among informal caregivers, structural support was associated with better self-care scores and high-intensity caregiving was associated with poorer self-rated health status.

CONCLUSIONS: Our findings demonstrate an overall difference in health outcomes between informal caregivers and the general population, an effect that appears to be modified by intensity of caregiving and presence of social supports. Given our results, we hope physicians will

consider screening known caregivers for intensity of caregiving and existing social support systems.

THE IMPACT OF AN INTERVENTION TO INCREASE HIV PRE-EXPOSURE PROPHYLAXIS (PREP) UPTAKE AMONG PATIENTS WITH SYPHILIS IN A HOSPITAL-BASED GENERAL INTERNAL MEDICINE (GIM) PRIMARY CARE PRACTICE.

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BACKGROUND: HIV pre-exposure prophylaxis (PrEP) with daily tenofovir disoproxil fumarate/emtricitabine reduces HIV incidence in people with sexual and/or injection-related risk. PrEP is recommended by the Centers for Disease Control & Prevention (CDC) and the United States Preventive Services Task Force, but uptake by priority populations and in primary care settings has lagged. Systems interventions show promise in identifying PrEP candidates. Syphilis infection is one objective, potent risk for incident HIV infection; notifying primary care providers (PCPs) that their patient(s) with syphilis may be eligible for PrEP could improve PrEP uptake in this high-risk population. The goal of this study is to evaluate the impact of PCP outreach on PrEP uptake among patients with syphilis in an urban, hospital-based primary care practice.

METHODS: The study took place within the GIM primary care practice at Boston Medical Center (BMC) in Boston, MA. The interdisciplinary Massachusetts Department of Public Health-funded BMC PrEP team developed a hospital-wide registry of patients with positive syphilis tests. A PrEP program manager reviews the registry daily to identify PrEP candidates. On 1/1/2019, a new outreach protocol was implemented. GIM PCPs whose patient(s) appear on the registry receive a form message in the electronic medical record alerting them to potential PrEP eligibility and offering institutional PrEP resources.

We performed a retrospective chart review of all HIV-negative GIM patients with a positive syphilis test in a three-month period before and after the start of the intervention in order to compare the proportion of patients who were 1) offered and 2) prescribed PrEP within one and six months of positive syphilis testing. Duration of time from diagnosis to PrEP prescription, appropriateness of syphilis treatment, and adherence to other STI screening guidelines were also assessed.

RESULTS: Positive syphilis serologies were seen in 43 patients in the pre period and 56 in the post period. The population was 41% female, 67% Black and 3% white; 23% identified as Hispanic. The majority of syphilis results were consistent with untreated late latent disease (48%) or prior treated syphilis (39%). Untreated, infectious syphilis (i.e. primary, secondary, or early latent) represented 5% of positive screens. Patients diagnosed with syphilis in the post-intervention period were more likely to have their syphilis treated correctly (81% vs. 68%). Small increases in PrEP offers (7 vs. 6) and prescriptions (5 vs. 3) within 6 months of positive syphilis testing were also observed. Four of five patients starting PrEP in the post period were Black or Hispanic.

CONCLUSIONS: Overall, a multidisciplinary approach to improve access to PrEP among GIM patients with syphilis was associated with more accurate syphilis treatment. Although the increases in PrEP offers and prescriptions seen were small, this protocol shows promise for reaching populations that have historically been excluded from PrEP care.

THE IMPACT OF ELECTRONIC COMMUNICATION OF MEDICATION DISCONTINUATION TO PHARMACIES (CANCELRX) ON MEDICATION ERRORS: A PILOT STUDY

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BACKGROUND: Adverse Drug Events (ADE) are frequent in ambulatory care, leading to an estimated 4.5 million patient visits each year. Failure to communicate with pharmacies when medications are discontinued leads to unintended dispensing of medications and ADE. A new functionality in electronic health records (EHRs), CancelRx, allows prescribers to send electronic messages to notify pharmacies when medications are discontinued. The primary objective of this study was to evaluate the impact of CancelRx implementation on medication errors, specifically on prescriptions filled or sold after intended discontinuation.

METHODS: We conducted a pilot pre-post evaluation of CancelRx implementation with 14 prescribers in a single practice at an academic medical center during 3 months prior to and following implementation (January 16, 2018 – April 15, 2018 and January 16, 2019 – April 15, 2019, respectively). We used an EHR database report to identify medications e-prescribed in ambulatory care by pilot prescribers to a health system pharmacy and subsequently discontinued in the EHR. These data were matched to fill and sales data from pharmacy management software to determine if the last filled or sold date followed prescription discontinuation in the EHR. A physician and a pharmacist conducted EHR record review for all prescriptions that appeared to have been dispensed following discontinuation in the EHR to determine if the prescriber intended to discontinue the medication. In addition, in the post-implementation period, we reviewed the EHR of a 40% sample of prescriptions reordered within 120 days to determine if any reorders were the result of unintended medication discontinuation at the pharmacy.

RESULTS: Following CancelRx implementation, fewer medications were filled or sold following intended discontinuation [0.4% (2/474) vs 6.6% (13/197), $p < 0.001$] or sold only [0.0% (0/474) vs 3.0% (6/197), $p = 0.001$], but more medications were reordered in the following 120 days [17.5% (83/474) vs 10.2% (20/197), $p = 0.016$]. Within the sample of records reviewed for medications reordered after CancelRx implementation (n=34), 20.6% (7) may have resulted from unintended discontinuation of the prescription at the pharmacy, when a cancellation message was unintended or was sent following erroneous discontinuation of a prescription in the EHR.

CONCLUSIONS: Implementation of CancelRx reduced the number of medications sold to patients following intended discontinuation but may result in medication errors when medications are discontinued in error in the EHR or when unintentional cancellation messages are sent to pharmacies. Larger studies of CancelRx implementation are needed to confirm these findings and identify best practices for implementation.

THE IMPACT OF FAMILIAL SOCIAL NETWORKS ON BODY MASS INDEX IN ADULTS WITH DIABETES

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BACKGROUND: Diabetes mellitus affects approximately 30.3 million individuals in the U.S., where obesity is a leading risk factor for the development of type 2 diabetes. Evidence suggests social support

improves diabetes outcomes as it promotes disease acceptance and enhances self-management and coping, resulting in less stress, better quality of life, and improved clinical endpoints. When perceived as positive, support from social networks has been instrumental in knowledge sharing and informed decision-making among adults with diabetes, leading to improved glycemic control and self-management and reduced complication rates. However, little is known about the impact of familial social networks on Body Mass Index (BMI) among adults with diabetes. Therefore, the aim of this study was to assess the influence of familial social networks on BMI among a nationally representative sample of adults with diabetes.

METHODS: Data from 385 adults from the Midlife Development in the United States (MIDUS) Survey was analyzed. The outcome was BMI analyzed as a continuous and dichotomized variable (≥30 vs. 30), and the predictor was social network activation, which included family support, family strain, and family affectual solidarity as linear and dichotomized variables. Linear and logistic regression models tested the relationship between familial social network and BMI, controlling for age, education, race, education, marital status, income, insurance, and current employment status.

RESULTS: The mean BMI for the sample was 34.0 ± 8.3. Compared to those with no family support or family affectual solidarity, adults with family support (β=-2.62; 95% CI -4.34, -0.91) and family affectual solidary (β=-2.19; 95% CI -3.82, -0.56) had lower BMI in the linear regression models after adjusting for covariates. There were no significant associations between family strain and BMI in the unadjusted (p=0.284) or fully adjusted models (p=0.546). In obese vs. non-obese adults, those with family support had a 39% lower BMI in the unadjusted model (OR=0.61; 95% CI 0.39, 0.96) compared to those reporting no family support. These significant relationships remained in the fully adjusted model, where those with family support had a 54% lower BMI compared to those with no family support (p=0.002). There were no significant associations between family strain and BMI in obese vs. non-obese adults.

CONCLUSIONS: In this nationally representative sample of adults with diabetes, family support was associated with lower odds of obesity. These findings suggest the need for incorporating familial network members in clinical diabetes management to provide support and facilitate improved weight management and also suggest family support as a target for research interventions focused on understanding the role of social networks in self-management among adults with diabetes.

THE IMPACT OF HOSPITALIST EXPERIENCE ON PATIENT LENGTH OF STAY AND COSTS OF CARE

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BACKGROUND: The hospitalist model of care is associated with decreased length of hospital stay and lower expenditures compared with inpatient care provided by general internists. Whether hospitalist experience is associated with length of stay or costs is important for the field of Hospital Medicine and the health system more broadly. We set out to investigate whether hospitalists improve at reducing costs or length-of-stay as they gain experience.

METHODS: We created a retrospective cohort consisting of inpatient stays under the care of hospitalists in our health system between 1/1/2008 and 6/30/2016 among patients 18 years of age or greater.

We analyzed these data in multiple ways. First, we limited the dataset to hospitalizations during which the patient was cared for by only one physician and used multilevel negative binomial regression, with hospitalizations clustered by physician and with physician experience, physician age, Medicare Severity- Diagnosis Related Group (MS-DRG), and hospital as hospitalization-level covariates. This analysis included 16,398 hospitalizations and 114 physicians. Second, we included patients cared for by multiple hospitalists and calculated a weighted average experience of the physicians over the hospitalization. We tested whether the weighted experience of the physicians involved in each hospitalization predicted length of stay using a multilevel negative binomial regression. This analysis included 27,711 hospitalizations and 115 physicians. Third, we calculated a rolling average length of stay for each provider, with length of stay attributed to the discharging physician. If hospitalists improve at reducing length of stay as they gain experience, rolling average length of stay should decline as physicians gain experience. We tested that hypothesis using fixed- and random-effects models. This analysis included 16,535 observations among 114 physicians.

We repeated these approaches with endpoints of total costs and direct costs of the hospitalization.

RESULTS: Physician experience was associated with higher patient length of stay or no difference, depending on analytic technique. In our first analysis, each additional year of physician experience was associated with a 0.007 day increase in length of stay (p=0.012). When using the weighted experience of all hospitalists involved during the hospitalization, there was no detectable relationship between experience and length of stay (p>0.2). In our within-hospitalist analyses, each year of experience was associated with a 0.020 day increase in length of stay (p<0.001). No analytic method suggested decreasing length of stay with experience. Results were similar for costs: either no detectable change or increased costs, depending on analytic technique.

CONCLUSIONS: Patient length of stay is unlikely to decrease with hospitalist experience, and may increase. For hospital medicine to remain sustainable as a profession, hospitalists may need to contribute in ways other than reducing patient length of stay.

THE IMPACT OF INTERNET SEARCH ON PATIENT SELF-DIAGNOSIS AND TRIAGE

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BACKGROUND: Many Americans use the Internet to search for health information including why they are ill and where they should get care. The value of using search engines is controversial. Search may direct users to inaccurate information and/or increase anxiety (cyberchondria). We assessed the impact of Internet search on a lay person's ability to triage and self-diagnose.

METHODS: Building on prior work, we created 48 case vignettes (<60 words; <6th grade reading level) that included a chief complaint and additional details. The vignettes were in 4 triage categories (emergent, within 1-day, within 1-week, self-care) and included both common (e.g., viral illness) and severe (e.g., heart attack) conditions. Participants were a national sample of lay people who use the Internet. For each vignette, they reported three outcomes: self-triage (emergent, 1-day, 1-week, self-care), top 3 diagnoses, and nervousness/anxiety regarding the case. Participants were then asked to use the Internet in any way they felt useful to research the vignette. After search, they again reported these outcomes and perceived difficulty in finding useful information. Diagnoses were manually reviewed and considered correct if any of the 3 listed diagnoses was correct. To validate the diagnosis and triage assigned, the vignettes were shown to 18 PCPs. We performed multivariable modeling to identify patient factors associated with correct triage and diagnosis.

RESULTS: The PCPs reported the correct triage and diagnosis in 91.2% (95% CI, 89.2-93.2) and 95.7% (95% CI, 94.3-97.0) of vignettes, respectively. 5000 internet searchers (51% female, 76% white, 23% without

college, 52% zero chronic diseases, 72% good/very good health, mean of 2 physician visits in last 6 months) completed a vignette. Mean search time was 12.1 minutes (95% CI, 10.7-13.5). There was no difference in triage accuracy before and after search (74.5% vs 74.1%; difference, -0.4 [95% CI, -1.4-0.6]). Highest rates of correct triage were for emergent (87.0%) and same-day cases (81.3%). There was an increase in diagnostic accuracy before and after search: 49.8% vs 54.0%, difference, 4.2 [95% CI, 3.1-5.3]), with the greatest increase in lower acuity vignettes. Nervousness/anxiety did not change after search but did increase as the case's triage became more emergent (2.6/5, self-care; 3.9/5, emergent). Only 15% of participants changed their diagnosis after search: 10% from incorrect to correct, 5% from correct to incorrect. Factors associated with an increased likelihood of correct diagnosis included female gender (aOR, 1.52 [95% CI, 1.35-1.69]), non-White race/ethnicities (for example Black aOR, 1.74 [95% CI, 1.24-2.44]), and any lower health status (for example poor aOR, 1.94 [95% CI, 1.26-2.98]).

CONCLUSIONS: Among a nationally-representative sample of online Americans, Internet search had no impact on triage or anxiety but improved diagnosis modestly, with large differences among demographic groups.

THE IMPACT OF PATIENT CONTEXTUAL DATA ON PATIENT-PHYSICIAN COMMUNICATION AND PATIENT ACTIVATION: RESULTS FROM A RANDOMIZED CONTROL TRIAL

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BACKGROUND: Patient's life circumstances, goals, and preferences for strongly influence their engagement in health and healthcare. Within confines of the primary care visit, clinicians often have difficulty addressing these factors. Digital health tools may be one way to assist patients in identifying and reporting goals, supports, risks, and care preferences for point-of-care (POC) discussions. However, research is limited regarding whether patient contextual data (PCD) gathered using a digital health tool for POC use affects patient-physician communication or patient activation.

METHODS: A two-arm (EHR-integrated PCD Tool and Usual Care), non-blinded, randomized control trial was conducted from May to October 2019 at two urban, academically affiliated primary care clinics. The PCD Tool, integrated into the EHR, collects, summarizes, and presents information about patients' identified health values, needs, goals, supports, risks, and preferences with their health care team. The outcomes were the post-visit Communication Assessment Tool (CAT) score and the Patient Activation Measure (PAM) score. Outcomes were analyzed using intention-to-treat and an instrumental variable approach to estimate the treatment-on-the-treated.

RESULTS: 301 patients were enrolled, randomized with stratification by race to study arms. Most participants were female, > 65, retired, with at least a college degree, and a household income ≥$50,000. There were no significant differences in pre-/post-visit change in PAM scores by arm (p=.079). Some aspects of communication were different between arms, specifically "being treated with respect" (13.76; 95%CI=2.27, 25.25; p=0.02) and that the "provider showed care and concern" (16.39; 95%CI=4.27, 28.52; p<0.01). However, the overall change in the CAT score was not significant (9.32; 95%CI=-1.05, 19.69; p=0.08). The treatment-on-the-treated results demonstrate no change in overall CAT score, but show large effects of specific items: "being treated with respect" (49.80; 95%CI=0.80, 98.79; p=0.05), "showed interest in my ideas" (55.73; 95%CI=4.83, 106.62; p=0.03), "showed care and concern" (59.65; 95%CI=9.69, 109.61; p=0.02) and "spent about the right amount of time with me" (49.82; 95%CI=0.77, 98.86; p=0.05) for participants in the PCD Tool arm.

CONCLUSIONS: The goal of this trial was to understand if the use of a PCD tool designed to enhance the capture and sharing of PCD influenced patient-provider communication and patient activation for primary care patients. We found that the inclusion of PCD improved some aspects of patient-provider communication, but had little effect on patient activation.

THE IMPACT OF THE EHR AND CLERICAL WORK ON BURNOUT IN A LARGE ACADEMIC HOSPITAL SYSTEM

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BACKGROUND: The advent of the Electronic Health Record (EHR) has transformed the physician workday and disrupted work-life balance through the addition of significant clerical burden related to increased documentation time, order entry, billing, and inbox management, much of which has been associated with burnout. To understand the relationship between burnout, EHR time outside the workday, and clerical task time, we conducted a faculty survey across all departments within the Mount Sinai Health System (MSHS). We hypothesized that time spent on the EHR or clerical work would be associated with greater burnout.

METHODS: We administered a web-based anonymous cross-sectional survey to all faculty at MSHS from 11/2018 through 2/2019. The survey was comprised of validated instruments, including the Mayo Well-Being Index (WBI), Maslach Burnout Inventory (MBI) 2 item scale, and PHQ-2 depression screen, as well as demographics, professional characteristics, and measures of clerical and EHR burden. Data analysis involved dichotomization of Likert scale variables, t-test and chi-square bivariate analyses, and multivariate logistic regressions.

RESULTS: Of 4156 faculty members in the MSHS, 1781 (43%) participated in the survey and we analyzed a subgroup of faculty with clinical responsibilities: 1346 (76% of sample). 35% of clinical faculty were burned out on the WBI, and 30% on the MBI-2. Demographic and professional factors significantly associated with burnout on both scales included being female, lower faculty level, younger age, longer work hours, screening positive for depression, and feeling work does not leave enough time for personal life. Feeling that the practice unloads clerical burden, and that work is meaningful is associated with significantly lower burnout risk. Burnout was also associated with agreement that EHR adds to frustration (37.7% vs. 22.0% burned out on MBI), spending >1 hour on EHR outside the workday (38.3% vs. 28.4%) and >1 hour of clerical work per day (42.5% vs. 26.0%). Results were similar with WBI. In multivariate analysis with the following variables: gender, level, full time employment status, age, work hours per week, clinical time, depression and practice unloading of clerical work, we found that spending >1 hour per day on EHR outside the workday (MBI OR=1.71, p=0.001; WBI OR=1.53, p=0.01) and spending >1 hour on clerical work per day (MBI OR=1.65, p=0.003; WBI OR=1.60, p=0.01) were each significantly and independently associated with burnout on each scale.

CONCLUSIONS: Our findings suggest that spending time on the EHR after work hours and excessive time on clerical tasks may put clinical faculty at greater burnout risk independent of clinical hours worked. The study was limited by its cross-sectional nature and single healthcare system. These results suggest the need for interventions targeting both

drivers within the workplace and the electronic and clerical work that follows physicians home to build a healthier and more clinically effective provider population.

THE INFLUENCE OF NEOLIBERALISM AND THE CONSUMERIZATION OF MEDICINE ON POTENTIALLY INAPPROPRIATE HIGH-INTENSITY LIFE SUSTAINING TREATMENTS NEAR THE END OF LIFE

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BACKGROUND: Potentially inappropriate high-intensity life-sustaining treatments (LST) near the end of life such as mechanical ventilation and resuscitation have the potential to create ethical challenges where treatments can cause harm and suffering with little chance of benefit. Interventions to reduce inappropriate high-intensity LST have met with limited success, raising the possibility that the social context within which clinical decisions are made may play a role in the persistence of potentially inappropriate high-intensity care. One such contextual factor is neoliberalism, characterized by free-market capitalism, which encourages a culture of consumerization and unlimited choice. The objective of this study is to understand the broader macro-sociological factors that influence institutional culture and individual behavior that impact potentially inappropriate high-intensity care.

METHODS: We conducted 55 semi-structured in-depth interviews with clinicians and administrators at two hospitals in California rated by the Dartmouth Atlas rated as high-intensity and low-intensity for intensity of end-of-life care, as well as eight interviews with clinicians and administrators at a low-intensity public hospital in Washington. Transcripts were analyzed using thematic analysis.

RESULTS: Interviews reveal different practice patterns and behaviors in response to ethical challenges around potentially inappropriate high-intensity LST, which reflect different support structures that mitigate the influences of neoliberalism at an institutional level. Stronger systems-level support structures at the low- intensity hospitals appear to support clinicians in making decisions in a patient's best interest that modulate the intensity of end-of-life care. In contrast, the high-intensity hospital reflects a culture of consumerism, which encourages clinical momentum towards high-intensity LST. This is characterized by a prioritization of an unreflective reverence to patient autonomy; extreme deference towards consumerization; clinician powerlessness to act ethically; a focus on metrics and in particular, patient satisfaction; and the coopting of ethics committees into a regulatory body.

CONCLUSIONS: These results suggest that neoliberal ideologies and the consumerization of medicine shape organizational culture and clinical practice in ways that might modulate the intensity of end-of-life care. Understanding how macro-sociological phenomena influence clinical practices and behaviors have the potential to inform the development of systems-level interventions to mitigate potentially inappropriate high-intensity end-of-life care.

THE MAJORITY OF PATIENTS WITHOUT AN ADVANCE DIRECTIVE AT A SAFETY-NET HOSPITAL PREFER A DIFFERENT SURROGATE DECISION MAKER THAN THE DEFAULT UNDER STATE LAW

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BACKGROUND: Previous studies show that only one third of Americans have filled out an advance directive. Advance care planning is associated with higher quality of end-of-life care, including more in-hospital death and less hospice utilization. Despite these advantages, gaps in end-of-life care planning persist, particularly in underserved patient populations. We designed a study to assess advance care planning at a large county safety-net hospital.

METHODS: We surveyed 100 patients in primary care clinics at Grady Memorial Hospital, a large county hospital in Atlanta, Georgia. We asked patients if they had filled out an advance directive, then asked them whom they would want to make medical decisions if they were unable to speak for themselves. We also assessed rates of advance care planning completion in the Grady medical intensive care unit by reviewing 69 charts.

RESULTS: 7% (7/100) of primary care clinic patients had filled out an advance directive, and 1.4% (1/69) of intensive care unit patients had an advance directive on file. Of the primary care patients without an advance directive, 58% (54/93) would choose a different surrogate decision maker than their legal next of kin under Georgia law.

CONCLUSIONS: In our safety-net hospital, patients are unlikely to have an advance directive, both in primary care clinics and in the intensive care unit. Rates of advance care completion at our institution are significantly lower than published rates for similar populations. Unexpectedly, the majority of those without an advance directive would choose a different surrogate decision maker than the default under Georgia law. Very few patients had heard of an advance directive, which suggests that they had not been offered to fill one out previously. Several clinic patients expressed interest in filling out an advance directive after completing the survey. Though this study did not have the resources to assist patients completing advance directives during the survey, interested patients were referred to the Grady advance care planning clinic. This study shows that there is a significant unmet need in advance care planning in our underserved patient population.

THE NEED FOR BREVITY DURING SHARED DECISION MAKING FOR CANCER SCREENING: CAN WE COMPROMISE?

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BACKGROUND: Detailed shared decision making (SDM) about cancer screening is difficult. Patients need to be better informed but have limited facetime with PCPs. Every minute spent discussing cancer screening is a minute *not* spent on other important issues. Decision-making outside of routine visits isn't always feasible.

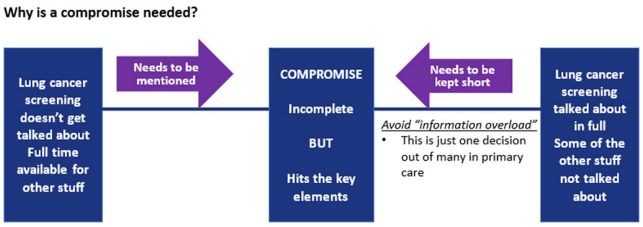
A more feasible approach to SDM may thus require a compromise: SDM that is incomplete but hits key elements (Figure 1). However, little is known about how patients feel about a compromise. Using deliberative focus groups, this study assessed patient perspectives on a compromise solution (brief, targeted SDM) where the PCP focuses on 3 key elements: 1) make a highly personalized recommendation; 2) briefly present qualitative information on the key tradeoffs for an individual; and 3) convey full support for decisional autonomy and desires for more information.

METHODS: We recruited a stratified random sample of Veterans from one academic-affiliated VA health system who were eligible for lung cancer screening, oversampling women and minority patients, to a 6-hour deliberative forum. First, experts informed participants about cancer screening basics and factors that influence heterogeneity in an individual's

net benefit, including their preferences. Then, facilitator-led small groups elicited patient feedback and questions on the Brief SDM compromise proposal.

RESULTS: 36 Veteran heavy smokers participated (50% male, 83% white, 47-79 years old). At final debriefing, all 5 small groups reached consensus that the brief SDM approach was acceptable. There was strong consensus on the importance of patients being final deciders and providing them with more information on request. There was disagreement about the exact language clinicians should use during brief SDM. Surprisingly, despite pushback from expert presenters, patients broadly agreed that clinicians should *not* mention the potential of false positive results leading to downstream invasive procedures, because this information was felt to be 1) inappropriately "scary" and 2) patients could refuse biopsy at a later date.

CONCLUSIONS: Patients recognized the need for brevity during patient-clinician cancer screening discussions and gave a rich rationale for why a brief, targeted SDM approach is acceptable. Obtaining the input of more nationally representative samples of patients is needed. Still, these findings suggest that feasible alternatives to detailed SDM may be useful and acceptable for routine cancer screening discussions. Tools that help clinicians quickly personalize a screening recommendation during a clinic visit are urgently needed.



THE PATIENT, PROVIDER, AND SYSTEM-LEVEL FACTORS THAT CONTRIBUTE TO THE QUALITY OF PATIENT EDUCATION PRIOR TO DISCHARGE: A DIRECT OBSERVATION STUDY

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BACKGROUND: The transition of care from hospital to home is a vulnerable time. Prior studies indicate that the amount of discharge education and anticipatory guidance that patients may receive vary widely. Suboptimal understanding of the care plan can lead to post-hospitalization morbidity and readmissions. Our aim was to identify the multiple patient-, provider-, and hospital system-level factors that contribute to the quality of discharge education a patient receives prior to discharge. Direct observation on the day of discharge can help inform contributors to inequities in the patient's discharge education experience.

METHODS: Purposeful sampling was used to select patients designated for discharge by noon. On the day of discharge, a trained medical student sat at the bedside of a single patient from 6am until time of discharge, and documented all communication between the patient and the healthcare team. Field notes were analyzed by three independent reviewers using a constant comparison method to identify the patient-, provider- and system-level themes that played a factor into the quality of patient education received in the discharge observations.

RESULTS: We conducted over 150 hours of observation of 30 patients' discharge days across two academic hospitals. On the patient level, we found that patients with previous hospitalizations and thus, familiarity with the hospital discharge process engaged in more question-asking and in turn, received more in-depth education to prepare them for the next care setting. This "hospital literacy" was even more paramount when patients had a previous suboptimal care transition experience, and emerged as a consistent theme of self-advocacy, more so than one's race, perceived health literacy, or the presence of a caregiver. At the provider level, healthcare teams that were focused on pending tests or outstanding consult recommendations provided less comprehensive discharge education since conversations centered on the logistics of that pending factor. The system level factors contributing to less discharge education included patient discharge to a subacute rehabilitation center or discharge over a weekend.

CONCLUSIONS: Understanding the multi-level factors that contribute to the quality of patient discharge education can alert the healthcare team to patients at risk of suboptimal care transitions. Ensuring that our patients exit the hospital with an equitable quality of information, ready to manage their health in the next care setting, will require interventions at every level.

THE PREVALENCE, COSTS, AND HARMS OF LOW-VALUE CANCER SCREENING AMONG OLDER AMERICANS WITH DEMENTIA

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BACKGROUND: Preventive cancer screening offers limited benefit to older adults with dementia and can cause harm. Prior work has established the frequency of cancer screening in dementia patients as recent as 2008. We sought to determine recent U.S. prevalence, costs, and harms of cancer screening delivered to older Americans with dementia.

METHODS: We used data from the Health and Retirement Study (HRS), a nationally representative longitudinal study of the health and economic changes of aging in community-dwelling and institutionalized older Americans. The HRS uses validated cognitive tests to identify patients with cognitive impairment consistent with dementia. We used validated HRS questionnaires that ask participants and/or their proxies whether they underwent colon cancer screening in the past 4 years, and breast, cervical, or prostate cancer screening in the past 2 years. To ensure the test occurred while the patient had dementia, we accounted for the 2- or 4-year lag in the survey questions by including patients aged ≥65 who had dementia for at least 4 years and received colon cancer screening and those who had dementia for at least 2 years and received breast, cervical, or prostate cancer screening in 2016. We used Medicare fee rates to estimate the average amount spent on testing. We used U.S. Preventive Services Taskforce systematic estimates to quantify harms: each year, approximately 0.12% of patients undergoing screening colonoscopies experience major intestinal bleeding/colonic perforation, 0.64% of women undergoing breast cancer screening experience unnecessary breast biopsies, 0.38% of women undergoing cervical cancer screening experience moderate-severe bleeding/pain/discharge from biopsies, and 0.65% of men undergoing prostate cancer screening experience incontinence/impotence from prostate surgeries.

RESULTS: We identified 501 patients in 2016 who had dementia for at least 4 years, representing approximately 1.9 million older Americans; mean age 82.7 years, 69.6% female, 56.4% white, 22.9% black, 18.3% Hispanic, and 2.4% other race/ethnicity. We estimated 520,139 patients (27.5%) who underwent colon cancer

screening, 523,280 women (31.9% of women) who underwent breast cancer screening, 317,521 women (19.5% of women) who underwent cervical cancer screening, and 442,907 men (49.9% of men) who underwent prostate cancer screening—totaling $357 million in spending. These tests led to an estimated 624 patients with major intestinal bleeding/colonic perforations, 3,348 women with unnecessary breast biopsies, 1,206 women with moderate-severe complications from cervical cancer screening, and 2,878 men with urinary incontinence/impotence from prostate cancer screening.

CONCLUSIONS: Older Americans with dementia frequently undergo cancer screening tests with questionable benefit, leading to high costs and substantial harm. Reducing low-value cancer screening has the potential to lower U.S. health care spending and improve patient-oriented outcomes in this vulnerable population.

THE RELATIONSHIP BETWEEN FRAILTY AND PERFORMANCE STATUS IN PATIENTS WITH CIRRHOSIS AWAITING LIVER TRANSPLANTATION

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BACKGROUND: Frailty—a multi-dimensional construct that encapsulates physical function, performance status, and nutritional status—has emerged as a critical determinant of mortality in patients with cirrhosis. Currently, the UNOS registry only includes the Karnofsky Performance Status (KPS) scale, which captures only one single component of frailty. We aimed to evaluate the relationship between frailty and KPS.

METHODS: We analyzed data from adults with cirrhosis listed for liver transplantation (LT) without hepatocellular carcinoma at a single center from 2/2014-6/2019 with outpatient assessments of frailty [using the Liver Frailty Index (LFI)] and performance status (using KPS) within 30 days of listing. "Frail" was defined using the previously established LFI cutoff of ≥4.5. Correlation between LFI and KPS was evaluated using Spearman's correlation test. Uni- and sequential multivariable analyses assessed associations between LFI and KPS with waitlist mortality (= death/delisting for sickness) using competing risk models (with LT as the competing risk).

RESULTS: Included were 247 patients with cirrhosis: median MELDNa was 17. Median (IQR) LFI was 3.9 (3.4-4.5); median KPS was 80 (70-90). The correlation between LFI and KPS was -0.32 (p<0.001). Among 61 (25%) patients who were categorized as frail, median (IQR) KPS was 80 (60-90); 45% were modestly impaired (KPS 50-70) and 3% were severely impaired (KPS 10-40). At a median of 8 months follow-up, 25 (10%) patients died/were delisted. In univariable analysis, LFI (sHR 1.09, per 0.1 unit, 95% CI 1.03-1.14) was associated with waitlist mortality while KPS was not (sHR 0.92, per 10 units, 95% CI 0.70-1.22), which remained true in multivariable analysis (Table).

CONCLUSIONS: Among patients with cirrhosis, there was only modest correlation between frailty and performance status. While frailty was predictive of waitlist mortality in our outpatient cohort of LT candidates with a median MELDNa of 17, KPS was not. Our data provide evidence that KPS does not fully capture "frailty" in outpatients with cirrhosis and suggest that frailty, as measured by the Liver Frailty Index, may be more appropriate to capture mortality risk than performance status alone and advocate for its incorporation into the UNOS registry.

Table. Univariable and sequential multivariable competing risk models evaluating the association between LFI and KPS on waitlist mortality.

	Sub-hazard ratio (95% CI) p-value					
Factor	**Univariable**	**Sequential multivariable regression**				
LFI, per 0.1 unit	1.09 (1.03-1.14) p=0.001	1.09 (1.04-1.14) p=0.001	1.08 (1.03-1.13) p=0.001	1.07 (1.02-1.12) p=0.003	1.07 (1.02-1.11) p=0.01	1.07 (1.01-1.11) p=0.01
KPS, per 10 units	0.92 (0.70-1.22) p=0.57	1.02 (0.79-1.31) p=0.90	1.02 (0.79-1.31) p=0.90	1.00 (0.78-1.27) p=0.98	1.00 (0.78-1.29) p=0.99	1.00 (0.78-1.29) p=0.99
MELDNa, per 1 unit	1.04 (0.98-1.10)		1.03 (0.97-1.09)	1.04 (0.97-1.10)	1.03 (0.97-1.10)	1.03 (0.96-1.10)
Age, per year	1.07 (0.99-1.15)			1.06 (0.98-1.14)	1.06 (0.98-1.14)	1.06 (0.98-1.14)
Ascites	2.21 (1.02-4.80)				1.75 (0.81-3.79)	1.73 (0.79-3.79)
Albumin, per g/dL	0.60 (0.30-1.20)					0.68 (0.35-1.33)

THE RELATIONSHIP BETWEEN INDUSTRY PAYMENTS AND ADOPTION OF NEW BREAST CANCER SCREENING TECHNOLOGY

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BACKGROUND: Citing insufficient evidence, the U.S. Preventive Services Task Force has not recommended for or against the use of digital breast tomosynthesis (DBT) for breast cancer screening. Nevertheless, DBT use has increased substantially in recent years. During this time, DBT manufacturers made significant marketing investments to promote DBT. We evaluated the relationship between radiologists' receipt of industry payments and adoption of DBT.

METHODS: We used Open Payments data from the Centers for Medicare and Medicaid Services (CMS) to identify DBT product-specific general industry payments from 2014-2016. We then linked Open Payments data to radiologists' claims for mammography services in the subsequent year using the Medicare Provider Utilization and Payment file, which includes claims from providers who have rendered services to at least 10 Medicare beneficiaries. We also identified groups of radiologists based on shared practice address. We used logistic regression to measure the association at the provider level between receipt of an industry payment and DBT adoption, defined as any use of screening DBT during a calendar year. We also evaluated whether radiologists who did not personally receive a payment but practiced in a group with someone who did receive a payment were more likely to adopt DBT. Multivariable models were adjusted for providers' sex, state, 2D mammogram volume, and group practice size, with standard errors clustered by group. We expressed results as percentages using marginal effects.

RESULTS: Our sample included 13,083 radiologists who billed for screening mammograms in 2015, 12,837 in 2016, and 12,683 in 2017. From 2015 to 2017, the percent of individual radiologists who received payment in the previous year ranged from 1.0% to 1.6%. During this time, 9.3% to 10.3% of radiologist groups included a radiologist who received payment in the previous year. In 2015, 63% of radiologists who received payment in the previous year used DBT compared to 36% of those who did not receive payment (P < .001). In 2016, DBT use was 75% vs. 52% (P < .001) and, in 2017, 83% vs. 66% (P < .001). In 2015, among radiologists who did not personally receive payment in the previous year but were in a group with someone who did, 47% used DBT at least once compared to 37% of radiologists in a group where no one received payment (P < .005). These figures were 59% vs. 54% (P = 0.13) in 2016 and 77% vs. 68% (P < .002) in 2017.

CONCLUSIONS: We observed a consistent association between receipt of industry payment in the previous year and DBT adoption among radiologists. Although the number of radiologists who personally received payment was small, our results suggest that industry payments may have a

ripple effect within group practices, thus touching a substantially larger number of physicians. As group practice arrangements become more common and complex, considering the role of conflict of interest in groups may deserve greater attention.

THE RELATIONSHIP BETWEEN PATIENT HETEROGENEITY, ANTIBIOTIC TIMING, AND THE OUTCOMES OF PATIENTS WITH SEVERE BACTERIAL INFECTION

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BACKGROUND: Sepsis, severe sepsis, and septic shock remain important contributors to hospital utilization, morbidity and mortality in the United States. Timely interventions including blood cultures, intravenous crystalloid infusions, and antibiotics make up the 3-hour sepsis bundle which represents current standard of practice, and the target of hospital quality reporting. Many aspects of sepsis care are still under discussion including best diagnostic criteria, optimal timing of treatment, and management of heterogeneity.

METHODS: We performed a retrospective observational analysis of patients with severe bacterial illness admitted to a 6 hospital network from 2011 to 2017. The primary outcome in this study was a composite of inpatient mortality or length of stay more than 10 days, stratifying by different definitions of sepsis: 2+ SIRS criteria, 2+ SOFA score, both, or neither. We then investigated the ability to predict antibiotic latency, defined as the time from presentation to administration using patient factors prior to treatment including demographics, vitals, labs, and orders collected prior to 1, 3, and 6 hours of presentation. Finally to disentangle the impact of treatment timing from patient factors we compared a cohort that received antibiotics before time "t" against a propensity score matched control that did not across all time points between 15 minutes and 24 hours.

RESULTS: We identified 21,425 patients admitted with severe bacterial infection, of which 29.4% had no sign of sepsis, 35% were SIRS positive, 8% were SOFA positive, and 27.3% were both SIRS and SOFA positive. In all groups antibiotic latency followed a J curve relationship with higher mortality and length of stay within the first hour and after the fourth hour. Patients were observed to have higher acuity when receiving antibiotics within the first hour, and greater complexity when receiving antibiotics late. Patient factors were able to predict with good accuracy whether antibiotics were administered within 1 hour (AUC 0.72), within 3 hours (AUC 0.74), and within 6 hours (AUC 0.76). Earlier antibiotics administration was associated with improved outcomes against matched controls for all time points later than 2.5 hours for all groups including patients who lacked any diagnostic criteria of sepsis.

CONCLUSIONS: Timing of antibiotics for patients admitted with infection is a predictable function of severity of illness and complexity. Earlier antibiotic timing was associated with improved outcomes independent of risk or diagnosis of sepsis, and easier to observe in lower risk patients. Based on these data, future efforts to improve outcomes include education of at-risk individuals to present earlier to the hospital. Additionally, decision support tools should focus on patients who benefit specifically from timely treatment and not merely identifying sepsis or absolute risk. Finally, risk adjusted latency of care is likely a better measure of quality than a 1 hour or 3 hour sepsis bundle adherence.

THE RISING COST OF HEALTHCARE AMONG INDIVIDUALS WITH INTELLECTUAL DISABILITY

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BACKGROUND: It is estimated that there are 7 to 8 million individuals in the US with intellectual disability (IDD). As those with IDD age they are more likely to experience chronic health conditions requiring care that would lead to increasing health care services such as durable medical equipment, adult day care, and residential care. However analyzing these costs over time can at times be difficult with varying regulations in coding between states.

METHODS: The goal of the study was to evaluate methodology used to analyze Medicaid claims data and review the cost per capita of services for individuals with IDD for 5 states (New York, Ohio, Pennsylvania, California, and Florida) between 2009 and 2012. We conducted a retrospective cohort study on Medicaid Analytic eXtract (MAX) data requested from the Centers for Medicare and Medicaid Services (CMS) for CA, FL, NY, OH, and PA for the years 2009 to 2012. Eligible individuals were 18-64 years old, dually eligible for Medicare and Medicaid benefits, were continuously enrolled in Medicaid (defined as 10 of 12 months) in each year of enrollment, and have an ICD-9 diagnostic code for intellectual disability. Analysis was focused on the total cost per capita for durable medical equipment (DME), residential care, and adult day care.

RESULTS: Over the 4 year study period, DME cost steadily decreased for all states except Ohio, where it saw an increase of over 200% from 2009 to 2012. While New York outspends the other states by over 100 million dollars per capita on residential care, all 5 states' cost have been steady over the 4 years. Similarly, New York greatly outspends the other 4 states in total adult day care cost. Total cost over the 4 years have held with the exception of Ohio, whose total expenditures on adult day care has risen close to 40% from 2009 to 2012. The top 5 drivers of DME expenditures for those individuals with IDD for all 5 states were the following: 1) personal care items; 2) formula; 3) home modifications; 4) environment modification; and 5) wheelchair component-accessory. Drivers of residential care and adult day care costs were harder to ascertain due to variance in billing codes across states.

CONCLUSIONS: Results of our analysis show the rising costs of healthcare and how it can vary between states. However, even with the limited scope of this study it was still difficult identifying these expenditures. Future studies should evaluate the methodology as this information can be useful in informing future spending policies.

THE ROLE OF CLINICAL DECISION SUPPORT ALERTS ON CLOSTRIDIOIDES DIFFICILE TESTING AND INFECTION RATES: A SYSTEMATIC REVIEW

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BACKGROUND: *Clostridioides difficile* infections (CDI) affect over 450,000 people each year in the United States. The optimal strategy for diagnosis, however, remains unclear and inappropriate CDI testing accounts for approximately 15% of all CDI testing leading to overdiagnosis and unnecessary treatments and costs. Several studies have investigated

the utility of electronic decision support alerts in diagnostic stewardship for CDI. Nonetheless, it is unclear if alerts are effective in positively impacting process metrics (e.g., inappropriate CDI testing) or patient-centered outcomes (e.g., CDI rates). The aim of this systematic review was to determine the effect of alerts related to CDI diagnostic stewardship on CDI testing volume and CDI rates among hospitalized adult patients and to determine whether or not there are any adverse effects of these interventions.

METHODS: We queried Ovid MEDLINE and 5 other databases for original studies evaluating the association between clinical decision support alerts for CDI diagnosis and CDI testing volume and/or CDI rate. Two investigators independently extracted the relevant data. Primary outcomes included the total number of *C. difficile* diagnostic tests ordered, the number of clinically indicated tests ordered, and CDI rate before and after the intervention. Secondary outcomes were potential adverse consequences of alert interventions (e.g., rate of CDI-related complications) and alert override rates.

RESULTS: Of 2047 studies identified in the search, 11 observational studies met inclusion criteria. Studies varied significantly in alert triggers and in outcomes of interest. Six of the 11 included studies reported a significant decrease in CDI testing volume, 6 of 6 studies evaluating appropriateness of CDI testing found a significant reduction in the proportion of inappropriate testing, and 4 of 7 studies measuring CDI rate demonstrated a significant decrease in the CDI rate in the post- vs pre-intervention periods. There were limited data reporting adverse outcomes. One study found an increase in CDI testing after implementation of a clinical support tool. Of the included studies, only one reported on adverse clinical outcomes, finding a non-significant increase in CDI-related complications post-intervention. Furthermore, only one study reported alert override rate, identifying that physicians generally ignored approximately one-fourth of electronic alerts, with higher rates among physicians receiving multiple alerts in a single episode and among interns and residents.

CONCLUSIONS: The use of electronic alerts for diagnostic stewardship for *C. difficile* was associated with reductions in CDI testing, the proportion of inappropriate CDI testing, and rates of CDI in most studies.

However, broader concerns related to alerts remain understudied including unintended adverse consequences and alert fatigue. Despite the advantageous effects of electronic alerts described in these studies, there is limited reporting on unintended adverse consequences.

THE ROLE OF CONFIDENCE IN HOME CARE WORKERS' CONTRIBUTION TO HEART FAILURE PATIENTS' SELF-CARE: TESTING A STRUCTURAL EQUATION MODEL

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BACKGROUND: Home healthcare workers (HCWs) frequently care for adults with heart failure (HF). Prior qualitative studies have found that HCWs promote HF patients' self-care, but are poorly prepared to do so and lack confidence. Also, the manner in which mutuality (i.e., the positive quality of the relationship) between HCWs and HF patients contributes to HCWs' care is unknown. Here we investigated these issues quantitatively. Guided by the Situation-specific Theory of Caregiver Contribution to HF self-care, we hypothesized that HCW preparedness and mutuality influenced HCW contribution to patients' self-care maintenance (i.e., behaviors to maintain HF stability) and management (i.e., response to HF symptoms), with HCWs' confidence mediating the relationship.

METHODS: We conducted a cross-sectional survey of English-speaking HCWs employed by 23 home care agencies who cared for a HF patient in the last year in New York, NY. HCWs completed a sociodemographic questionnaire, the Caregiver Preparedness Scale (CPS), the Mutuality Scale (MS), and the Caregiver Contribution to Self-Care of HF Index (CC-SCHFI), which assesses caregiver contribution to self-care maintenance, management, and caregiver confidence. We tested our hypotheses with structural equation modeling (SEM). Mediation analysis was done to test indirect effects.

RESULTS: The 317 HCWs had a median age of 50, 94% were women, 44% were Non-Hispanic Black, 79% had ≥ high school education, 71% were foreign-born, and all spoke English. The HCW had a median of 8.5 years of caregiving experience. Overall, HCWs felt prepared for HF caregiving (CPS mean 3.86 [SD: 0.93])) and had moderately positive relationships with patients (MS mean 3.87 [SD: 0.76]). 63% contributed adequately to self-care maintenance, 22% to self-care management, and 44% felt confident with HF caregiving. The tested model fit the data well (CFI=.98; RMSEA=.04) and showed the following significant relationships: mutuality and preparedness covaried (r=.47); preparedness influenced HCW confidence (b=.79); mutuality influenced HCW contribution to self-care maintenance (b=.25); HCWs confidence influenced their contributions to self-care maintenance (b=.22) and management (b=.52). HCWs' contribution to self-care maintenance influenced their contribution to self-care management (b=.47). Analysis of the indirect effects showed that HCW confidence fully mediated the relationship between preparedness and contributions to self-care maintenance (effect=.17) and management (effect=.41).

CONCLUSIONS: While HCWs' preparedness heavily influenced their contribution to HF self-care, HCWs' confidence, mediated this relationship. Thus, confidence, a modifiable factor, plays a key role in HCWs' contribution to HF self-care. As this workforce increasingly cares for HF patients, the mechanisms underpinning the relationships among HCWs' preparedness, mutuality, confidence, and self-care warrant further study.

THE ROLE OF EHEALTH LITERACY IN THE DIGITAL DIVIDE AMONG HOSPITALIZED PATIENTS

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BACKGROUND: Hospitalized patients may benefit from technological interventions to assist with chronic disease care and self-management during transitions of care, a time of heightened vulnerability. However, although technology access is common, an increasing concern is a "digital capability" divide that could interfere with the benefits of these technology-based transition of care interventions. Prior studies have not specifically evaluated the digital capability divide among hospitalized patients. Therefore, we evaluated associations between digital capability, technology access/use, and health literacy among adult inpatients.

METHODS: Hospitalized adult patients on the general medicine service were enrolled in a sub-study of an ongoing quality-of-care study. eHealth literacy, a measure of digital capability that encompasses patient's ability to access and use technology specifically for health-related reasons, was assessed using the validated eHEALS tool. Enrolled participants also completed a technology survey that asked about technology access and use, with questions primarily drawn from benchmarked Pew Research Center survey items. Health literacy was assessed using the three-item Brief Health Literacy Screen. Descriptive statistics, bivariate Chi- squared analyses and multivariate logistic regression analyses (adjusted for age, gender, race, HL) were performed.

RESULTS: Among 105 participants, the mean age was 52.6 (SD: 17.4), the majority were African American (79%), half were female (49%) and

half had at-most a high school education (45%). One-third had low HL (30%) and one-third (31%) had low eHL (mean eHEALS score: 27.8 [SD:7.6]). The Spearman correlation coefficient between HL and eHL assessments was -0.056 (p=0.6). In bivariate analyses with respect to specific technology access and use, low eHL scores were associated with less desktop computer (p<0.01), laptop computer (p<0.01), tablet computer (p<0.01), and smartphone (p<0.01) ownership, but not cellphone ownership (p=0.4). Low eHL scores were also associated with less use of the internet generally (p<0.01), for looking up health information (p<0.01), and for posting health information online (p<0.01), but not with respect to downloading an app for health-related reasons (p=0.9). Results remained unchanged with multivariate analyses except that laptop ownership was not associated with low eHealth.

CONCLUSIONS: Lower eHL was associated with less ownership and use of technology. Interestingly, there were similar levels of cellphone ownership across eHL levels, suggesting this may be the best device to utilize when implementing technology interventions. A traditional HL assessment tool did not correlate with eHL indicating that different capability domains may be assessed by these tools. With the explosion of technology-based interventions, eHL may need to be assessed and addressed to realize their full potential and obtain optimal outcomes.

THE ROLE OF RESIDENTIAL SEGREGATION IN CARDIOVASCULAR DISPARITIES AMONG VETERAN HEALTH ADMINISTRATION USERS

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BACKGROUND: Research on residential segregation has focused on its influence on the health of racial/ethnic concordant individuals. For example, studies suggest that non-Hispanic (nH-)Black residential segregation is related to worse cardiovascular health for nH-Black residents.

We know less about how residential segregation relates to cardiovascular disease (CVD) risk among other racial/ethnic minority groups. Within a national sample of Veteran Health Administration (VHA) users, we characterized racial/ethnic disparities in CVD risk and examined whether residential segregation modified these disparities.

METHODS: We linked electronic health record data from a 2017 national cohort of VHA-users (n=5,985,046) to 2013-2017 U.S. Census data to compare CVD risk between nH-Blacks, nH-American Indian/Alaskan Natives (AI/AN), nH-Asians, and nH-Native Hawaiian/Other Pacific Islanders (NH/OPI) vs. nH-Whites. We measured CVD risk with a 5-item index (count) of diagnosed overweight/obesity, diabetes, hyperlipidemia, hypertension, and tobacco use; and residential segregation with nH-Black and Hispanic isolation indices. We used Poisson regression to model CVD risk scores, and post-estimation to express disparities as differences in mean CVD risk scores between each racial/ethnic minority group and nH-Whites. To examine effect modification, we included race/ethnicity-residential segregation product terms. Models also included age, sex, socioeconomic status, rurality and geographic region.

RESULTS: Mean nH-Black isolation index varied across racial/ethnic groups, ranging from 0.15 (AI/ANs) to 0.41 (nH-Blacks); mean Hispanic isolation index ranged from 0.19 (nH-Whites) to 0.52 (Hispanics). Relative to nH-Whites, covariate-adjusted CVD risk scores were greater for AI/ANs (difference=0.07, 95% confidence interval [CI]:0.01-0.14), nH-Blacks (difference=0.22, 95%CI:0.20-0.23), Hispanics (difference=0.06, 95%CI:0.02-0.10), and NH/OPIs (difference=0.16, 95%CI:0.14-0.18); and were lower for Asians (difference=-0.06, 95%CI:-0.11- -0.002).

Living in neighborhoods with greater nH-Black residential segregation increased the magnitude of advantages among Asians (p=0.005), and attenuated Hispanic disparities (p=0.014). In neighborhoods with greater Hispanic residential segregation, the magnitude of Hispanic (p<0.001) and NH/OPI (p=0.011) CVD risk disparities increased and Asian CVD risk advantages decreased (p<0.001).

CONCLUSIONS: Black and Hispanic residential segregation was associated with CVD risk in other racial/ethnic groups. NH-Black residential segregation was not related to CVD risk factors in nH-Black VHA-users but was related to advantages for Asians and Hispanics. Hispanic segregation was related to greater CVD risk in both Hispanics and NH/OPIs. Efforts to reduce cardiovascular health disparities should be tailored to different racial/ethnic groups and may include focusing on those living in segregated communities.

THE ROLE OF SMART PHONES IN HEALTH CARE DECISIONS AND DISCUSSIONS; DOES PATIENT PERCEPTION OF HEALTHCARE QUALITY MATTER?

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BACKGROUND: With the rapid growth of the internet, patients are able to access a wealth of healthcare information outside of the traditional doctor patient relationship that may be unreliable. Understanding the role of the patient-physician relationship on how this information is used in the clinical encounter is essential to provide effective care to patients in the smartphone era.

METHODS: Data from the 2018 Health Information National Trends Survey (HINTS 5, cycle 2) were analyzed (N=3504). The primary analysis examined the effect of the patient perceived quality of the patient-physician relationship on the use of smartphones/internet data in medical discussions and decisions. A secondary analysis looked at further variables including where respondents initially sought health information and their trust of sources on cancer related health information on the same outcomes (the use of smartphones in medical decisions and discussions). Descriptive statistics and multivariable logistic regression were conducted. Patient demographics including age and SES status were controlled for in the predictive model.

RESULTS: A minority of survey respondents use smartphones for healthcare decisions (31.1%) and discussions with their healthcare provider (28.4%). Most respondents use the internet as a first source of health information (55.1%); only 9.6% went to their healthcare provider first. Generally, there was no association between respondents' perception of how their healthcare provider communicated with them and their use of smartphones to help make healthcare decisions. Perceived quality of communication with their healthcare provider was significantly associated with how respondents first access health information in most categories assessed. Within these categories, those who went to their provider first had a higher perceived quality of healthcare provider interaction.

With regard to where people first go for information, those who went to the internet first were the most likely to use their smartphones for healthcare decisions (48% for internet vs 24.5% for doctor vs 31.4% for other, p<0.000) and in discussions with their healthcare provider (41.8% for internet first vs 33.8% for doctor first vs 28.9% for other, p<0.000).

In the final logistic model, respondents who felt that their healthcare provider always spent enough time had decreased odds of using a smartphone for healthcare decisions or in discussion with their health care provider even when accounting for all other demographic variables in the model.

CONCLUSIONS: This study found that most survey respondents in a nationally representative sample are not using smartphones in medical

decisions or discussions. In addition, the perceived quality of a healthcare provider largely does not influence smartphone use in medical decisions and discussions. However, the use of the internet for health information may influence these patterns of behavior.

THE SECRET INGREDIENT: HOW DO OSCE CASES ACTIVATE LEARNERS AROUND TRANSGENDER HEALTH?

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BACKGROUND: Transgender and gender non-conforming (TGNB) patients face great challenges when seeking care. Providing gender affirming care requires biomedical knowledge and cultural humility that may be unfamiliar to health care providers. This can create uncertainty, stigma and bias from healthcare providers that can lead to significant health inequities. Little is known about the best way to activate health professional learners to overcome this discomfort and become activated to care for transgender patients. We sought to examine the characteristics of OSCE cases with transgender-identified standardized patients (SP) that activate learners to provide intentional gender-affirming care.

METHODS: A qualitative approach using modified grounded theory was used to elucidate the activating aspects of OSCE cases featuring TGNB standardized patients. TGNB specific OSCE cases ran over 3 years. A purposive sample of current and former Primary Care residents (N=18) at an academic residency in a major urban center participated in focus groups to identify the benefits and challenges of OSCE cases with TGNB patients.

RESULTS: 18 total residents participated in the focus groups. Transcription generated130 pages. During coding, 22 individual codes were developed and grouped by similar themes into 15 "supercodes". Supercodes were sorted by theme into 4 groups: (1) Overall experience with OSCEs as an educational tool, (2) prior experience with TGNB people, (3) Experience specific to the trans-OSCE case, and (4) Power dynamics, learner discomfort, motivation, and metacognition.

CONCLUSIONS: Residents believe their role is important. They differentiate the need to know psychosocial skills (using pronouns and preferred names) from biomedical knowledge (hormone therapy, etc.). Practical application of skills occurs mainly in the context of applying appropriate psychosocial skills to their experience on inpatient services. Residents described rarely seeing TGNB patients in the outpatient setting, and therefore having less experience with biomedical aspects of TGNB care.

Learners reported discomfort with participating in OSCEs but felt they were a valuable learning tool in general. Regarding the specific TGNB cases, residents reported additional discomfort and fear of being perceived as culturally inappropriate by the SP or faculty member. This fear may lead to learner fragility, which may have the effect of driving the resident to learn more or to shut down the learner and reject the material's importance to their practice.

Residents reported a range of believing that gender-affirming care is not something they consider part of their standard practice to aspiring to actively pursue gender-affirming care as a career. The activation outcomes as a result of the OSCE case increased with exposure to multiple cases. More research is needed to identify long-term educational strategies to activate learners.

THE UTILIZATION AND COSTS OF USPSTF GRADE D SERVICES IN MEDICARE, 2007-2016

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BACKGROUND: Low-value care (LVC), or patient care that offers no net benefit in specific clinical scenarios, leads to unnecessary spending and patient harm in certain circumstances. The U.S. Preventive Services Task Force (USPSTF) Grade D Recommendations exemplify LVC, given the high certainty that the expected clinical benefits of these services do not exceed the expected harms. We estimate the utilization and costs of ten USPSTF Grade D Services among U.S. Medicare beneficiaries.

METHODS: We conducted a repeated cross-sectional analysis of 2007 to 2016 data from the National Ambulatory Medical Care Survey (NAMCS), a nationally representative survey of U.S. ambulatory visits. NAMCS uses a multistage probability sampling design and data are abstracted directly from medical records. Eligible visits included beneficiaries aged >18 years who listed Medicare as their primary payer. We selected ten USPSTF grade D services based on feasibility of case identification using diagnosis codes and recorded symptoms. These included: (1) cervical cancer screening in women >65 years old, (2) prostate cancer screening in men >75 years old, (3) colonoscopy screening in adults >85 years old, (4) vitamin D screening, (5) cardiovascular disease screening in low risk adults, (6) COPD screening in asymptomatic adults, (7) screening for asymptomatic bacteriuria, (8) vitamin D supplementation for primary prevention of fractures in postmenopausal women, (9) hormone therapy for primary prevention of chronic conditions in postmenopausal women, (10) vitamin E or beta-carotene supplements for primary prevention of cardiovascular disease/cancer. We determined the annual volume of these services based on years available for each measure and then multiplied by per unit costs using Medicare payment rates.

RESULTS: We identified 95,578 unweighted visits, representing approximately 2.4 billion U.S. Medicare visits during the study period. Over 30 million low-value services were provided to Medicare beneficiaries each year, and direct costs ranged from $649,604,514 to $862,159,707 annually. The three most frequently used services were (1) screening for asymptomatic bacteriuria, (2) vitamin D supplementation, and (3) vitamin D deficiency screening, comprising 83% of the measured services and 46% of LVC spending. Three services (1) screening for asymptomatic bacteriuria, (2) cervical cancer screening in women >65 years old, and (3) colonoscopies in adults >85 years old comprised 53% of LVC spending.

CONCLUSIONS: Medicare beneficiaries frequently received Grade D services, costing nearly $1 billion in U.S. health care spending each year. The negative clinical impact and total costs of these low-value services are likely larger as these findings do not capture all D-rated services, as well as the cascade of downstream health care utilization after their use. Reducing Grade D services could offer an opportunity to improve patient-centered outcomes while safely reducing U.S. health care spending.

THIS IS HARD WORK; USING A TEMPLATE FOR GOALS OF CARE CONVERSATIONS AT COMMUNITY HEALTH CENTERS

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BACKGROUND: Patients with late stage chronic illness and their care teams can benefit from goals-of-care conversations. However, primary care teams often miss the opportunity for conversations, delay them until the very end of life, and/or limit them in scope. Researchers at Ariadne Labs developed a best-practice approach to these conversations, The Serious Illness Conversation Guide (SICG). Several trials demonstrated its effectiveness in well-resourced settings. We sought to determine if training for and use of the SICG would be acceptable and feasible in the low-resourced, high demand primary care environment of community health centers (CHCs) serving a diverse, low income population.

METHODS: 15 Family Medicine physicians at 2 academic CHCs in the Bronx were trained in the use of the SICG. Training took place in the fall of 2018 and consisted of 2 one-hour sessions with didactic and role play components. Eleven physicians completed conversations with 39 unique patients over a 5 month period following training. Each physician was interviewed about their experience using the SICG using a semi- structured interview guide. Interviews were audiotaped and transcribed. Using grounded theory, a coding structure was developed and applied to all transcripts by two investigators (AG, DS). An inductive thematic analysis strategy was used by three investigators to examine the coded data (AG, DS, EC).

RESULTS: Two major themes and several sub-themes emerged from the review of our transcripts: 1) "This is hard work." Subthemes included the juxtaposition of the benefit of a deepened bond with patients from enhanced clinically and socially relevant information, with concerns regarding time constraints and emotional drain on the physician, erosion of patient trust especially when discussing prognosis with patients from diverse backgrounds, management of often complex family dynamics, and patient characteristics that impeded completion of the SIC (e.g. untreated mental illness, cognitive decline, and pressing acute concerns in the context of time-limited visits in oversubscribed clinics). 2) "Adaptation." Participants felt that the SICG tool, while helpful, often needed to be modified during actual use. Many felt that sustaining this process would require adaptation by the system to overcome the barriers of time and emotional drain on the physician.

CONCLUSIONS: These findings shed light on the acceptability and feasibility of the SICG in the CHC setting. While participants enthusiastically embraced the use of the SICG and felt it had a beneficial impact on patient care, there remain barriers to its sustained use. Further work should examine what adaptations are needed to overcome these barriers so that this important intervention can become part of routine practice for the patients served by CHCs.

TIME FOR CLINIC: A MULTI-CENTER ASSESSMENT OF FOURTH YEAR PRIMARY CARE EXPOSURE AND AMBULATORY PREPAREDNESS AMONG INTERNAL MEDICINE INTERNS

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BACKGROUND: Fourth year medical school training for students applying to internal medicine (IM) residency programs traditionally emphasize inpatient experiences. Only 13% of U.S. medical schools require dedicated IM ambulatory training.[1] Interns arriving for IM residency consistently report low levels of preparedness for ambulatory experiences.[2] We therefore sought to assess fourth year primary care exposure among IM interns and its relationship to self-assessed preparedness for their primary care clinic.

METHODS: The authors created an anonymous sixteen item survey that queried intern demographics, medical school primary care exposure (both IM and multi-specialty), and self-assessed preparedness for ambulatory medicine during residency. In June - August 2019 four geographically diverse IM residency programs (University of Chicago, University of North Carolina, University of Pennsylvania and University of Washington) administered the survey to 161 interns.

RESULTS: A total of 138 interns (86%) responded to the survey. The median last exposure to clinical primary care training was 13 months prior to the start of residency (interquartile range [IQR] 7-18 months). During the fourth year of medical school, the median amount of ambulatory IM experience was zero days (IQR: 0 – 20 days) and 2.5 days for any primary care (IQR: 0 – 26.5 days). Interns who rated themselves as prepared ($\geq$ 3 on 5-point Likert scale) for primary care clinic responsibilities had an average of 4.6 fewer months between their last primary care exposure and the start of internship than those who rated themselves as unprepared (10.7 vs. 15.3 months; 95% CI: 2 – 7 fewer months; $p<0.01$). "Prepared" interns also reported an average of 14.6 more total primary care days (22.3 vs. 7.7 days; 95% CI 8 – 21; $p<0.01$) and 6.5 more IM clinic days (13.7 vs 7.2 days; 95% CI 1.7 – 11; $p<0.01$) during fourth year compared to their "unprepared" counterparts.

CONCLUSIONS: The majority of incoming IM interns had little exposure to primary care during the fourth year of medical school. At the start of residency, IM interns who felt more prepared for their primary care clinic reported more recent and more numerous primary care experiences. Including more primary care experiences as part of fourth-year training could improve preparedness of medical students who are applying to internal medicine residency. Additionally, enhancing initial levels of intern ambulatory supervision or increasing intern ambulatory training experiences may be helpful.

TIME TO ANTIBIOTICS IN SEPSIS: DEFINING TIME-ZERO AMONG PATIENTS WITH MAJOR ORGAN DYSFUNCTION

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BACKGROUND: The 2016 Surviving Sepsis Campaign guidelines recommending antibiotic administration within 1-hour of emergency department (ED) presentation have been criticized for their role in overdiagnosis and treatment. More recently clinician experts have called for antibiotic timeliness guidelines that reflect risk of death from acute physiologic derangements, based on the principle that risk of death in sepsis increases after development of major organ dysfunction (MOD). However, the association between time to antibiotics (TTA) from onset of MOD and mortality has not been tested. We evaluated the association between TTA from development of first MOD on mortality in sepsis.

METHODS: We performed a retrospective cohort study at an academic medical center extracting data from the electronic health record (EHR) on adults presenting to the ED between 6/2012 and 12/2018 who met validated Sepsis-III EHR criteria. Time-stamped measurement of MOD within the first 48 hours [defined as 1) lactate $\geq$4, 2) GCS $\leq$12, 3) shock requiring vasopressor or 4) O_2saturation/$FiO_2\leq$300], antibiotic administration and inpatient mortality were collected.

Multivariable logistic regression was used to evaluate the association between time from MOD to antibiotics (before MOD [<0hrs], 0-1hr after MOD, 1-3hrs after MOD and >3hrs after MOD) and in-hospital mortality, adjusting for demographics, comorbidities, severity of illness, and time to MOD (Table).

RESULTS: There were 7,122 patients presenting to the ED with confirmed sepsis and MOD. Median time from ED presentation to MOD identification was 1.5hrs (IQR 0.3 – 6.31), and from ED presentation to antibiotics administration was 2.5hrs. Overall mortality was 17.1% (1221/7122).

In multivariable analysis, when compared with patients receiving antibiotics preceding MOD (<0 hour), patients receiving antibiotics 0-1hr (OR 1.36, 1.08-1.72, p=0.009), 1-3hr (OR 1.53, 1.21-1.92, p<0.001) and >3hr (OR 1.54, 1.22-1.96, p<0.001) after MOD had a stepwise increase in odds of death (Table).

CONCLUSIONS: These results confirm a known mortality benefit to early antibiotics among patients presenting with major organ dysfunction. However, this study newly demonstrates a more pronounced mortality benefit from antibiotics preceding MOD. This benefit compels health systems to maintain current 1-hour TTA target for all patients presenting with sepsis until we are better able to predict development of MOD. Stratifying TTA targets by severity of illness, as defined by acute MOD, could unintentionally increase the mortality of patients with delayed major organ dysfunction.

Table 1: Multivariable* analysis of the association between time to antibiotics from major organ dysfunction on mortality in sepsis

Time from MOD to Antibiotic Categories	Sepsis with MOD Percentage (N= 7,122)	Mortality Odds Ratio (CI)	P-value
<0 hours	39.6 (2,819)	1.0 (ref)	--
0-1 hours	20.3 (1,445)	1.36 (1.08-1.72)	0.009
1-3 hours	21.4 (1,526)	1.53 (1.21-1.92)	<0.001
>3 hours	18.7 (1,332)	1.54 (1.22-1.96)	<0.001

*Multivariable logistic regression adjusted for the following variables: Antibiotic opportunity time (time from ED presentation until development of Major Organ Dysfunction), Illness severity (Sequential Organ Failure Assessment score at the time of sepsis diagnosis, Triage Systemic inflammatory Response Criteria), Demographic characteristics (age, gender, race/ethnicity, limited English proficiency), Elixhauser comorbidity score, admission year, pre-admission location (home, SNF, etc.)

TIME TO BRING IT HOME? ASSESSING POTENTIAL MEDICARE COST SAVINGS ASSOCIATED WITH GREATER HOME DIALYSIS USAGE

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BACKGROUND: Nearly 37 million Americans have kidney disease, the ninth-leading cause of death in the United States. Less than 1% of Medicare beneficiaries have ESRD, but this condition accounts for 7% of Medicare's annual budget. ESRD patients are generally treated by dialysis, which is both costly and burdensome for patients. Evidence indicates that home dialysis may be cheaper to provide and better suited to the lifestyles of certain patients. Prior studies comparing home and facility dialysis generally had relatively small sample sizes derived from single healthcare settings. We address this important gap in the literature and produce evidence that can be generalized at the national level

Our objective was to compare spending on Medicare beneficiaries with end stage renal disease (ESRD) that use home dialysis to spending on beneficiaries that use facility dialysis in a comprehensive, nationally-representative administrative claims data set.

METHODS: We used data from Medicare Enrollment Database (EDB) and Master Beneficiary Summary File (MBSF). Using multivariate Generalized Linear Models (GLM) and controlling for demographic characteristics along with comorbidities, we evaluated total per beneficiary per month (PBPM) spending on beneficiaries receiving home and facility dialysis. Since ESRD is a qualifying condition for Medicare coverage for those younger than 65 years, we performed the analysis separately within two sub-groups of Medicare beneficiaries – those who were 66 years or older and those who were 65 years and younger. We used propensity score matching (PSM) methods for our multivariate analysis.

Starting with all Medicare beneficiaries with ESRD enrolled in Parts A and B in the year 2016 (N=314,704), we excluded beneficiaries that commenced dialysis for the first time in 2016, had high number of comorbidities and/or had outlier average costs (more than 5 times the mean PBPM). After applying these exclusions, the total sample size was 247,422. The sample size for our PSM analysis was 74,089.

RESULTS: Overall, 11% of beneficiaries with ESRD were home dialysis users. In both age subgroups, higher proportion facility dialysis users were female, non-Hispanic Black, Hispanic and eligible for Medicaid. In multivariate analysis, we found that the use of home dialysis was associated with significantly lower cost among Medicare ESRD beneficiaries that are 66 years or older (approximately $162 PBPM, or $1,945 per beneficiary annually). However, we did not find statistically significant difference in PBPM costs among Medicare beneficiaries that are 65 years or younger.

CONCLUSIONS: One of the goals under the Advancing American Kidney Health initiative is to have 80 percent of new ESRD patients in 2025 receive dialysis in the home or receive a kidney transplant. We find evidence of lower total Medicare spending on beneficiaries, age 66 years or older, who chose to use home dialysis versus those that use facility dialysis.

TIME TO REIMBURSEMENT FOR HEALTH CARE FACILITIES UNDER THE GHANA NATIONAL HEALTH INSURANCE SCHEME, 2016-2017

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BACKGROUND: Longer reimbursement times of health insurance claims from payers to providers may adversely affect primary health care service delivery readiness and quality, such as provider retention and facility investment in infrastructure and supplies. In Ghana, the 2003 National Health Insurance Scheme (NHIS) was a major step towards universal health coverage. The national standard is ninety days for reimbursement, however, there are few current reports of reimbursement times and factors associated with delays. We describe national times to reimbursement for health care facilities in Ghana and facility-level factors associated with longer reimbursement times.

METHODS: We analyzed a health care facility and household survey conducted in Ghana from 2016-2017 by the Performance Monitoring and Accountability 2020 (PMA2020) program. Data collectors surveyed a nationally representative sample of health facilities on care delivery and facility management, including financing and typical times to reimbursement for claims submitted to the NHIS. We described the range of time to reimbursement and facility-level predictors. In a secondary analysis, we also explored association of time to reimbursement with frequency of late staff payment and retention (number of staff who left the facility in the past 6 months) and patient-reported experiential quality assessed through the linked household survey.

RESULTS: We surveyed 131 health care facilities in 2016 and 135 facilities in 2017 reported claims reimbursement times. The median time

to reimbursement for all facilities in both years was 8 months. Nine facilities (6.87%) reported reimbursement times 1 month or less in 2016 while only two facilities (1.48%) reported 1 month or less in 2017. Factors associated with more rapid reimbursement included greater numbers of beds, having an electronic medical record and using DHIMS2 to track their data. Facilities with annual budgets and those that had been externally audited in the past year also had lower median times to reimbursement. Other facility-level characteristics were not associated with differences in time to reimbursement. There was no relationship for time to reimbursement with frequency of late staff payment and staff retention rates or patient-reported experience measures.

CONCLUSIONS: The median time of eight months from claims submission to reimbursement, is longer than the NHIS goal of a 90-day turnaround. There were various facility-level infrastructure and management factors associated with lower times to reimbursement, but, in our sample, longer reimbursement times were not associated with differences in staff retention or patient experience. Improvements in infrastructure and aspects of facility management at Ghanaian health care facilities may improve claims processing and times to reimbursement. Further research is needed to study the downstream effects on providers and service delivery, which could enhance the country's goal of high-quality health care and universal health coverage.

TITLE COST-CONSCIOUS PRESCRIBING IN DIABETES CARE: AN NHANES ANALYSIS

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BACKGROUND: The price of analog insulin has increased dramatically, making it unaffordable for many patients with diabetes. By contrast, human synthetic insulins are available at a fraction of the cost. The National Academy of Medicine has recommend that providers incorporate financial factors into care management strategies, a strategy referred to as *social risk-informed care*. Although qualitative studies have demonstrated that some clinicians consider the cost of insulin among their patients with financial risk factors, this has not been examined on a national scale.

METHODS: Retrospective cross-sectional analysis of 4 cycles of the National Health and Nutrition Examination Survey (NHANES) to examine use of human versus analog insulin based on self- reported financial constraints, defined as the presence of one or more of the following patient characteristics: food insecurity, poverty, lack of access to prescription drug coverage, low educational attainment, and history of being uninsured in the prior 12 months. Secondary outcomes included the association between use of human versus analog insulin on diabetic complications (uncontrolled Hemoglobin A1c (HbA1c), proteinuria, diabetic retinopathy and overnight hospitalization) stratified by the presence or absence of financial constraints.

RESULTS: Of 22,263 eligible respondents, 698 (3.1%) reported use of insulin and the type of insulin used, representing 485,228 patients nationally. Nearly ¼ respondents, 23.2% (n=195), reported use of human insulin and 72.5% (n=503) of respondents reported at least 1 financial risk factor. Overall, we found that patients with financial risk factors were significantly more likely to use human insulin compared to patients without any financial risk factors (88.5% vs 76.7% p=0.014). Although financial risk was independently associated with an increased odds of adverse diabetes outcomes (AOR 2.37 95% CI 1.16-4.84), the use of human synthetic insulin did not appear to contribute to this risk on multivariate analysis (AOR 0.91 95%CI 0.47-1.75).

CONCLUSIONS: Our study provides evidence that patients with financial risk factors may be more likely to use human synthetic insulins compared to insulin analogs which suggests that providers may be engaging in in social risk-informed care for patients. Although financial risk factors appear to be associated with worse diabetes outcomes, use of human synthetic insulin does not and should be considered as a low-cost alternative to analog insulin among patients with financial risk factors.

TOBACCO SMOKING-INDUCED LEUKOCYTOSIS

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BACKGROUND: Tobacco smoking is a recognized cause of leukocytosis but little is known about the degree of leukocytosis nor the impact of smoking cessation. We aimed to characterize tobacco smoking- induced leukocytosis and describe the longitudinal impact of smoking cessation on white blood cell (WBC) count.

METHODS: Medical records of patients undergoing evaluation by hematologists for persistent leukocytosis which included BCR-ABL testing (polymerase chain reaction and fluorescent *in situ* hybridization) between January 1st, 2014 and December 31st, 2018 were studied. Patients in whom leukocytosis was determined to be secondary to tobacco use after exclusion of other causes were identified. Age, sex, body mass index (BMI), carboxyhemoglobin level, and complete blood cell count (CBC) were collected. Tobacco use was characterized as packs per day (PPD) and pack-years.

RESULTS: Forty patients with a median age of 49.5 years (range: 28-75) were determined to have smoking- induced leukocytosis. 24 patients were female and the mean BMI was 31.5kg/m^2. On average patients smoked 0.9 PPD for a median of 34 pack-years (range: 3-59). Mean CBC values included: WBC count 13.3x10^9/L (range: 9.8 to 20.9x10^9/L), hemoglobin 15.0g/dL, platelet count 298x10^9/L, neutrophil count 8.8 x10^9/L, lymphocyte count 3.2x10^9/L, monocyte count 0.87x10^9/L, eosinophil count 0.34x10^9/L, basophil count 0.09x10^9/L. 39 patients had absolute neutrophilia (98%), 21 lymphocytosis (53%), 20 monocytosis (50%), 19 basophilia (48%), 12 erythrocytosis (30%), 9 eosinophilia (23%), and 8 thrombocytosis (20%). Carboxyhemoglobin was elevated in all patients who were tested (n=6). Eleven patients either quit (n=9) or reduced (n=2) tobacco use. When compared to initial WBC count, reduction in tobacco smoking led to a significant decrease in WBC count (12.8x 10^9/L vs 10.8x10^9/L, p<0.01). On average, leukocytosis improved five months following reduction in tobacco use (range: 1-11 months). None of the patients who continued to smoke had resolution of their leukocytosis.

CONCLUSIONS: Tobacco-induced leukocytosis was characterized by a mild elevation in WBC and was most commonly associated with neutrophilia, lymphocytosis, and/or monocytosis. Cessation of smoking led to improvement in leukocytosis. Tobacco history should be elicited from all patients presenting with leukocytosis to limit unnecessary diagnostic testing, and counselling regarding smoking cessation should be offered.

TRACKING ABNORMAL MAMMOGRAM RESULTS AND BARRIERS TO FOLLOW-UP: PRIMARY CARE PHYSICIANS' PERSPECTIVES

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BACKGROUND: Lack of timely follow-up of abnormal mammogram results can lead to delays in breast cancer diagnoses. Ensuring follow-up is usually a task for ordering providers - largely primary care physicians (PCPs). Tracking systems are important aids in assuring timely follow-up. We investigated the variability in tracking systems for abnormal mammogram results among PCP practices and examined how this variability related to perceived barriers to achieving follow-up.

METHODS: We surveyed General Internal Medicine and Family Medicine PCPs practicing in San Francisco. Practice models included academic, public safety net, staff model HMO, and private. Survey questions investigated formal tracking system utilization (none, outside of electronic medical record [EMR], EMR with registry, EMR with registry and alerts) and perceived barriers to follow-up. We combined and averaged barrier scores to create a measure of follow-up barrier burden based on score distribution (range 0-3): low (0-0.9), moderate (1-1.6), high (1.7-3). We investigated associations between tracking system type, practice model, and follow-up barrier burden.

RESULTS: Of 588 eligible respondents, 300 (51%) completed the survey. Almost half (47%) reported having no formal tracking system. Type of tracking system varied across practice models ($p<0.001$): academic PCPs were least likely to report having a formal tracking system (15/79; 19% with any tracking system) and staff model HMO PCPs were most likely to report tracking in the EMR with a registry and alerts (38/45; 84%). Follow-up barrier burden also varied across practice models ($p<0.001$): 82% of academic and 80% of public safety net PCPs experienced moderate or high burden compared to 36% of staff model HMO and 60% of private practice PCPs. Tracking system type was associated with follow-up barrier burden ($p=0.004$). Of 86 PCPs experiencing high follow-up barrier burden, most either had no formal tracking system (52%) or tracked outside the EMR (19%). Of 93 PCPs experiencing low follow-up barrier burden, 52% tracked within the EMR with a registry. Follow-up barrier burden was not associated with the proportion of patients served by the practices from race-ethnic minorities ($p=0.85$), with limited English proficiency ($p=0.44$), or with Medicaid insurance ($p=0.92$).

CONCLUSIONS: Utilization of tracking systems for abnormal mammogram results varied across practice models. Higher follow-up barrier burden was associated with inadequate tracking systems. This was most prevalent in academic and public safety net settings. Follow-up barrier burden was not associated with patient characteristics, but rather with system issues related to tracking. To reduce burden that may lead to delayed follow-up and poor quality of care, primary care practices should address systems-level factors by maximizing EMR capabilities to track abnormal mammogram results.

TRACKING CHRONIC OPIOID PRESCRIBING METRICS FOR QUALITY IMPROVEMENT – WHAT HAPPENS TO PATIENTS WHO FALL OFF THE LIST?

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BACKGROUND: In the past fifteen years, there has been a reported 370% increase in opioid overdose deaths in the United States. In light of this epidemic, there has been movement to address the safe prescribing of long term opioid therapy (LTOT) as issues of "doctor-shopping" and limited evidence of impact on pain/function have been revealed. While this movement has contributed to a decrease in the number of new opioid prescriptions, providers are faced with the question of how to treat patients who have been on LTOT for years. In evaluating the outcomes of this population, recent studies have noted that patients on LTOT demonstrate a higher mortality rate, as well as a higher rate of overdose-related deaths when the opioid prescription had been discontinued.

In line with national and state guidelines, UConn Health recently implemented a policy for patients receiving LTOT as defined as 3 months or longer. The data regarding this patient population was evaluated to assess UConn providers' compliance to this policy. Over time, the number of patients identified as receiving LTOT from UConn prescribers has decreased. The goal of this study is to evaluate the reason why patients discontinued their prescription at UConn since the policy was introduced, as these patients may represent a group at high risk of opioid misuse or overdose.

METHODS: As part of an ongoing quality improvement project, data on patients receiving chronic opioids (at least 3 prescriptions during a 12-week period) from UConn Health prescribers have been reviewed on a quarterly basis. We compared data sets from one data pull to the next to determine which patients had "fallen off" the list, with a total of 322 patients. Patients on suboxone or methadone for opioid use disorder were excluded from the study. For each patient, pain type, active opioid prescriptions, date of prescription discontinuation or last fill date, date of last appointment with the responsible prescriber, and reason for discontinuation were documented based on information from the patient chart and the Connecticut prescription monitoring database program.

RESULTS: Data is still in review. Initial analysis reveals very few patients have discontinued their opioid prescriptions. The most common reasons for no longer being on the list fall into the following categories: "patient seeing pain management," "receiving prescription from outside provider," "opioids restarted," "lost to follow-up," or "left practice". Patients who left the practice often did so due to provider-initiated discontinuation of their prescription. The least frequent reason for discontinuation has been "resolution of pain".

CONCLUSIONS: As providers have become more aware of the harm of initiating opioid prescriptions, there remains a question of how to manage patients already on LTOT. Our study demonstrates that most of these patients have not transitioned to being opioid free, indicating a need for further research on the outcomes of chronic pain patients.

TRACKING PATIENT PERCEPTIONS OF INTERPROFESSIONAL TEAMWORK IN TWO RESIDENT TRAINING PRACTICES

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BACKGROUND: Internal medicine residency programs are incorporating interprofessional (IP) training experiences into ambulatory curricula, but the IP competencies most appreciated by patients served by training practices have yet to be fully elucidated. The objective of this report was to compare patient satisfaction and perception of teamwork in patients seen by an innovative IP team with patients seen in a general resident continuity practice. We also sought to assess changes in patient satisfaction in these two practices over two time periods.

METHODS: Participants were patients in a hospital-affiliated ambulatory clinic that houses both a traditional Internal Medicine (IM) resident practice and a novel IP training program for residents, medical students, and trainees in physician assistant, pharmacy, and psychology programs. Patients are randomly assigned to one of the two practices. A convenience sample was asked to complete a questionnaire comprised of the PIVOT (Patients' Insight and Views of Teamwork), 14 additional items assessing perceptions of quality and access to care, and open-ended iquestions to obtain impressions of the clinic and teamwork. Surveys were offered in English and Spanish. Data was collected during two 8-week periods in summer 2017 and summer 2019. A two-by-two factorial design analyzed group differences at the two time points. We also conducted content analysis of open-ended items.

RESULTS: We obtained surveys from 131 patients treated by the IP practice and 114 patients in the traditional resident practice (38% male, 62% female, mean age = 54.44(15.32)). Satisfaction was high overall, with a small but nonsignificant increase in mean PIVOT scores from 2017 (M=4.23(0.6)) to 2019 (M=4.32(0.53), F(1,241)=1.67, p=0.2). Mean scores in the IP clinic (M=4.3(0.59)) and the traditional clinic (M=4.25(0.55)) were comparable (F(1,241)=0.54, p=0.46). Item analysis suggested that patients in the IP clinic felt better informed about delays (F(1,185)=5.81, p=.02). Patients seen by the IP team more frequently included specific names of team members in their comments. Patients in both clinics highlighted improved communication as one of the main advantages of teamwork within the patient care team.

CONCLUSIONS: Patient satisfaction was generally high in the IP and traditional resident clinics at both time points, with some indications that interprofessional care may lend itself to better coordination of care and attentiveness to patients' needs. Moreover, responses to open ended items suggest that patients recognize the importance of teamwork in enhancing communication. Mentioning specific names of team members may also be an indication that patients in the IP practice felt more connected to their providers. Additional data collection is required over time to further assess the effectiveness of interprofessional care and patients' perceptions of teamwork.

TRACKS IN INTERNAL MEDICINE RESIDENCY TRAINING PROGRAMS: CUSTOMIZING RESIDENCY EDUCATION

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BACKGROUND: Opportunities for specialized training in Internal Medicine Residency Programs (IMRPs) first emerged in the 1970s in the form of Primary Care Tracks (PCTs). With increasing health system complexity, further specialized tracks within IMRPs, such as hospitalist tracks and clinician-educator tracks, have also been developed. Despite the expansion of these opportunities, there is a paucity of data on their prevalence. We explored the prevalence and track types currently offered in IMRPs to better define the current state of residency training.

METHODS: To identify the prevalence and types of tracks within ACGME-accredited IMRPs, we reviewed program-reported data from program websites and the AMA's Fellowship and Residency Electronic Interactive Database Access System (FREIDA™). We utilized each program's ACGME code to access their website and FREIDA report. We developed a review tool to classify the tracks reported on both resources. Frequencies of track types were then tabulated.

RESULTS: To date, 298 of 539 IMRPs have been reviewed. Results reveal a great variety of track offerings with the most prevalent tracks being PCTs, research, global health, and hospitalist tracks. All tracks are listed in Table 1. With the exception of research tracks, tracks were more frequently reported on FREIDA than on program websites. Additional analyses are underway.

CONCLUSIONS: At least one track was present in 37% of IMRPs. Early data suggests that programs with only one track are most likely to feature PCTs. The discrepancies between FREIDA and program websites may pose challenges for residency applicants. Our results are limited by the information presented in these resources, which may be outdated or inaccurate. However, medical educators and students have few other resources with which to review currently available residency tracks. Our data confirms that IMRPs continue to customize residency training by offering a variety of specialized training tracks.

TRAINING RESIDENT-PHYSICIANS TO IDENTIFY AND ADDRESS HEALTH AND HEALTHCARE DISPARITIES: A MEGA THINKING AND PLANNING STRATEGY

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BACKGROUND: The Accreditation Council for Graduate Medical Education (ACGME) expects physicians trained to identify and address disparities in health and healthcare. The Florida State University (FSU) Internal Medicine Residency Program at Sarasota Memorial Health Care System (SMHCS) used Kaufman's Mega Thinking and Planning (MTP) principles in its design to improve health and health care outcomes for the community of Sarasota.

METHODS: Mega planning posits that all organizations add value to society. Macro planning identifies intra- and extra-mural stakeholders to provide inputs with measurable objectives. Micro planning operationalizes staff inputs congruent with organizational performance metrics. MTP requires alignment of vision at the mega, macro and micro levels. This ideal, but measurable vision, guides planning elements including societal impact, processes, inputs, integration and performance-based outcomes.

ACGME, FSU, and SMH visions anchored MTP resulting in a collaboration between FSU, SMHCS and community partners (Macro) to build an internal medicine resident-based primary care clinic (Micro) using patient-centered medical home (PCMH) model. The Clinic serves an impoverished adult population with complex healthcare needs contributing to high rates of hospitalizations and utilization of emergency services. On- site services include pharmacists, dietitians, financial benefits coordinator, medical-legal aid.

RESULTS: Clinic services commenced July 2017 with inaugural PGY1 residents. Results are presented through June 2019: 3,754 established patients with 8,258 patient encounters; 2,518 uninsured patients screened and 57% qualified for assistance; 3,245 laboratory medicine assays. PCMH metrics: influenza immunization 48%; pneumococcal vaccination 13%; colorectal cancer screening 60%; breast cancer screening 83%; HbA1c poor control (>9%) 60%; and medical attention for diabetic nephropathy 93%. Macro performance included SMHCS inpatient and Emergency Department services referred over 300 patients; SMHCS Community Specialty Center provided free specialty care for 938 patients; and Good Samaritan Pharmacy funded over $1M for prescriptions. Improved health is evidenced by established clinic patients (pre-post through June 2019) increased hospitalization (access), but reduced readmission patterns (improved follow-up). Generalizable resident-driven scholarship involving QI initiative themes include congestive heart failure; pre-DM2 intensive primary care; primary care prevention and advanced directive planning.

CONCLUSIONS: Critical to MTP success is consensus building framework with avenue to ideal vison through performance criteria at Micro and Macro levels. This process drives an ethical and practical strategy to ensure added value to society. Practice patterns learned during residency training are predictive of future practice. Our clinic provides residents a longitudinal 39-weeks experience immersed in this abstract's story.

TRANSFORMATIVE LEARNING IN GRADUATE MEDICAL EDUCATION – A SCOPING REVIEW

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BACKGROUND: Transformative learning (TL) is an educational theory centered on perspective transformation, and has recently emerged as a promising technique in health professions education (HPE).[1-4] TL may be particularly salient for addressing social determinants of health (SDH). While direct patient experiences with the medically underserved may benefit learners, a change in worldview – as espoused by TL – may be necessary to produce optimal practice behaviors. Unfortunately, ways to employ TL in graduate medical education (GME) may not be obvious, and its penetration in this realm is currently unclear. We undertook this study to better understand the literature on TL within GME, with particular attention to learning SDH.

METHODS: Systematic comprehensive searches were executed in the MEDLINE database for articles that met predefined inclusion and exclusion criteria. Articles were included if they discussed TL in the post-graduate training setting (defined as post-receipt of the terminal degree but before unsupervised practice). Search criteria used Boolean operators to include various synonyms for TL and GME. References to other manuscripts on TL cited by included papers were evaluated for inclusion. A qualitative thematic analysis was performed with an initial focus on TL venues, outcomes, educational intent, learner perspective, and motivation. Through inductive coding, additional emerging themes and subcategories relevant to TL within GME were included, revealing SDH as a key theme.

RESULTS: We initially identified 69 citations. Through title, abstract, and full manuscript review, we narrowed our final set of citations to 12 manuscripts (figure 2).[5-16] The GME populations included a wide range of medical and surgical specialties,[5-7,10-16] psychology fellowship trainees[8] and Mexican social servants.[9] Four overarching themes were identified: 1) "Care of the medically underserved," 2) "Mentorship, role-modeling, and coaching," 3) "Inspiration from the larger organizational level," and 4) "Improvement in patient care." Seven manuscripts (58%) referenced TL in relation to the medically underserved.[6,7,9,10,13,15,16] Specific venues included international health electives (IHEs),[6] incarcerated patients or returning citizens,[7] community-based social service organizations,[15] and rural clinical training experiences.[9,10] The patient-doctor relationship,[6] resource limitations,[6,15] and team dynamics[9,10] were all integral to transformation. These transformations often drove commitment to future action.[6]

CONCLUSIONS: Transformative learning is a relatively new educational theory whose value is increasingly recognized in the HPE literature. The majority of currently published literature on TL within GME relates to care of the underserved, highlighting its connection to learning SDH. TL has potential to inspire future action among trainees. TL is an important tool for medical educators to create experiences that will have a lasting impact on their trainees and the patients and populations they serve.

TRANSGENDER CARE: RETENTION RATE OF TRANSGENDER PATIENTS AT AN LGBTQ CENTER OF EXCELLENCE

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BACKGROUND: Transgender patients have low rates of access to health services due a wide range of issues including violence, legal barriers, stigma and discrimination (3). Estimating the prevalence of transgenderism has proven to be difficult with various studies coming up with a rate of approximately 0.6% (1, 2). For reference, the worldwide prevalence of HIV is 0.6-0.9% (9). By limiting access to care, transgender patients often lack basic preventative care, mental health support, as well as hormonal management leading some to self-medicate with unregulated and unlicensed hormonal preparations frequently bought over the internet (6).

Transgender patients are often living in the margins of society and face many restrictions even when attempting to access medical care. By creating an LGBTQ Center of Excellence, which is committed to providing excellent and affirming care for LFBTQ communities, we strive to remove some of these barriers for our most vulnerable patients. So how are we doing?

METHODS: EMR Epic application, Slicer Dicer, was used to identify all transgender patients (as identified in patient demographics) who were seen at Denver Health Medical Center by a primary care provider (defined as internal medicine or family medicine) in the last year (10/23/2018-12/20/2019). This data was then extracted to Microsoft Excel and manipulated using pivot tables to determine the number of times each patient returned for a follow up visit. This process was then repeated looking at all patients seen at Denver Health Medical Center during the same time frame and by the same group of providers, for comparison purposes.

RESULTS: A total of 947 patients were found to identify as transgender and sought care in the office setting from a primary care provider at Denver Health Medical Center between 10/23/2018 and 12/20/2019. Of these patients, 639 (67.5%) returned for one or more follow up visits. For comparison, 125 435 total patients presented for an office visit to a primary care provider at Denver Health Medical Center during the same time frame. Of these patients, 89 069 (71%) returned for one or more follow up visits.

CONCLUSIONS: Studies have already showed that a delay in accessing care leads to poorer outcomes amongst transgender patients (8). Therefore reducing barriers to care is paramount when treating this vulnerable population. Primary care physicians, in particular, play a key role in the care of transgender patients. This study shows that creating a center of excellence whose mission is to reduce barriers improves access to care for this population and brings their rate follow up to near equal to overall follow up rates.

TREATMENT OUTCOMES AND MORTALITY AMONG HOMELESS ADULTS IN AN OUTPATIENT-BASED ADDICTION TREATMENT PROGRAM, 2008-2018

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BACKGROUND: People experiencing homelessness have been disproportionately impacted by the opioid crisis, with drug overdose death rates 20 times higher than the general population. There is very limited evidence examining the outcomes of Outpatient-Based Addiction Treatment (OBAT) programs designed specifically for homeless people. The objective of this study is to evaluate addiction treatment outcomes and risk factors for mortality in homeless-experienced patients with opioid use disorder (OUD).

METHODS: We conducted a retrospective cohort study of all adults (≥ 18 years) who had at least one OBAT encounter at Boston Health Care for the Homeless Program (BHCHP) between January 1, 2008 and December 31, 2017. The primary outcome was all-cause mortality, defined as any death that occurred by December 31, 2018 and identified by linking participants to the Massachusetts Registry of Vital Records and Statistics. Secondary treatment-related outcomes were retention in addiction care (defined by the presence of a urinary toxicology screen), buprenorphine adherence (defined by a positive buprenorphine toxicology result), and opioid abstinence (defined by a negative opioid toxicology result), all abstracted from the BHCHP medical record and measured on a monthly basis. We used descriptive statistics to assess these treatment-related outcomes at 1, 3, 6, and 12 months, and we used multivariable cox regression to identify baseline and time-varying characteristics associated with all-cause mortality.

RESULTS: We identified 1,238 patients with at least one OBAT encounter during the study period. The majority were male (74.0%) and nearly half were white (48.6%) with a mean age of 42.5 years. A total of 738 (59.6%) patients were retained in continuous addiction care at 1 month, 358 (28.9%) at 3 months, 219 (17.7%) at 6 months, and 135 (10.9%) at 12 months. The median number of months of buprenorphine adherence was 3 (IQR 1, 16) and the median number of months of opioid abstinence was 0 (IQR 0, 6). Overall, 157 (12.7%) patients died, yielding an all-cause mortality rate of 30.3 deaths per 1,000 person-years. Among those with cause of death information available (n=63), 50.8% died from a drug overdose. Older age predicted a higher mortality risk (aHR=1.43 per 10-year increment, 95% CI=1.23, 1.67; p<0.0001), while retention in addiction care conferred a lower mortality risk (aHR=0.46, 95% CI=0.29, 0.73; p=0.0008).

CONCLUSIONS: This cohort of homeless-experienced adults seeking OUD care had a high mortality rate, with over half of all deaths being attributable to drug overdose. There were significant drop-offs in retention in addiction care, particularly within the first 3 months of OBAT engagement. Although complete opioid abstinence was uncommon, retention in care was associated with decreased risk of mortality. Interventions to improve retention in addiction care within the homeless community will be important to mitigate mortality risk in this vulnerable population.

TRENDS IN NONCARDIOVASCULAR COMORBIDITIES AMONG PATIENTS WITH ACUTE MYOCARDIAL INFARCTION

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BACKGROUND: Updated knowledge of the full spectrum of comorbidities among patients with myocardial infarction(MI) in the United States remains limited. Specifically, there is limited data regarding noncardiovascular comorbidities in myocardial infarction, and if any, their prevalence varies tremendously between studies (Table 1). It was also suggested that some of those noncardiovascular comorbidities, like renal dysfunction and anemia, are associated with poor prognosis.

METHODS: Using the latest National Inpatient Sample database (NIS), we identified 127,730 patients admitted to hospital in 2016 with a principle diagnosis of MI. Comorbidities were identified by using ICD-10 in all the secondary diagnoses. We compared the cardiovascular comorbidities from NIS with the comorbidities revealed from previously published literature.

RESULTS: Among 127,730 of 129,305 patients carry a diagnosis of MI. The most common comorbidities remain conventional cardiovascular disease, including known coronary artery disease (61.61%), hyperlipidemia (58.62%), hypertension (53.97%), smoking (46.9%), type 2 diabetes mellitus (27.45%) and atrial fibrillation (19.7%).

The proportion of noncardiovascular comorbidities are significantly higher than previously supposed. As a matter of fact, little data was found discussing the non-cardiovascular comorbidities among patients with MI (Table 1). The common noncardiovascular comorbidities are the following: chronic renal disease (39.68%), anemia(24.53%), acute renal injury(19.12%), chronic obstructive pulmonary disease(13.2%), anxiety(9.94%) and depression(8.59%).

CONCLUSIONS: We conclude that in current era, myocardial infarction is a condition that is associated with an increasing burden of noncardiovascular comorbidities, which has not been systematically studied before. There is a need for future research on those noncardiovascular comorbidities in an effort to optimize the outcome of acute myocardial infarction.

TABLE 1. MYOCARDIAL INFARCTION AND THE PREVALENCE OF COMORBIDITIES (%)

	Source	Our Data	Dragana, et al.	Nguyen, et al.	Canto, et al.
	N	129,305	29,620	302	542,008
	Time Frame	'15-'19	'02-'12	'10	'94-'06
Cardiovascular Comorbidity	Coronary Art. Disease	61.61	36.80	5.60	--
	Hyperlipidemia	58.62	50.52	4.60	28.00
	Hypertension	53.97	58.59	59.30	52.30
	Smoking	46.90	34.40	--	31.30
	T2 Diabetes Mellitus	27.45	14.70	16.90	22.40
	Atrial Fibrillation	19.70	--	1.30	--
Noncardiovascular Comorbidity	Chronic Renal Disease	39.68	7.10	1.00	--
	Anemia	24.53	--	0.30	--
	Acute Renal Injury	19.12	--	--	--
	COPD	13.20	--	0.70	--
	Anxiety	9.94	--	--	--
	Depression	8.59	--	--	--

References
1. Canto, et al. Number of Coronary Heart Disease Risk Factors and Mortality in Patients With First Myocardial Infarction. JAMA. 2011;306(19):2120-2127
2. Dragana, *et al.* Validity of Charlson Comorbidity Index in patients hospitalised with acute coronary syndrome. Insights from the nationwide AMIS Plus registry 2002–2012. *Heart* 2014
3. Nguyen, et al. Prevalence of Comorbidities and Their Impact on Hospital Management and Short-Term Outcomes in Vietnamese Patients Hospitalized with a First Acute Myocardial Infarction. PLoS ONE 2015; 9(10): e108998

TRUSTING COMMUNITY PARTNERSHIPS: A DESCRIPTIVE ANALYSIS OF PRE-CLERKSHIP CLINICAL EXPERIENCES

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BACKGROUND: Pre-clerkship clinical experiences are a vital component of undergraduate medical education. Engagement in an authentic clinical setting promotes students' deeper learning and professional identity formation. The University of Central Florida College of Medicine (UCF COM) offers a longitudinal clinical experience, Community of Practice (COP), along the first two years, partnering with volunteer community physicians. The objective of this study was to perform a descriptive analysis of COP to better understand the pre-clerkship clinical environment, patient population, and level of student involvement.

METHODS: During COP sessions, M1 and M2 students complete a Patient Encounter Log (PEL) capturing information regarding session location (inpatient vs outpatient), number of patients seen, patient demographics and chief complaint, level of student involvement and activities performed (i.e. history, exam, oral presentation, etc.). Through a retrospective, descriptive study, data from PELs from the academic years 2015-2016 through 2018-2019, were abstracted and deidentified prior to analyses. Descriptive statistical analyses of the responses recorded in the PELs were performed using SPSS software.

RESULTS: There were a total of 15,952 patients logged. COP-1 sessions took place most often in an Outpatient Setting (77.2%) and in an Acute Care Setting (56.2%) across COP-2. The patient population had a 50/50 distribution of female and male patients. About half of the patients seen in COP-1 were adults (ages of 18-64 years), with 19% being pediatric and 30.5% geriatric populations. Patients seen by COP-2 students were more evenly distributed (35.9% adult, 30% pediatric and 33.9% geriatric). For

both COP programs, cardiovascular, abdominal and musculoskeletal chief complaints were most prevalent, whereas Genitourinary and Gynecological complaints were seen least often. Student Involvement is outlined in Table 1.

CONCLUSIONS: UCFCOM COP program engages students with a diverse patient population in a variety of clinical settings. Student participation and clinical skills performed increased from COP-1 to COP-2 suggesting a rise in student involvement and clinical competence over time. There was a notable increase in the performance of clinical skills independently from COP-1 to COP-2. This study provides insight into community partnership models of pre-clerkship clinical education.

U.S. NONPROFIT HOSPITALS' COMMUNITY HEALTH NEEDS ASSESSMENTS AND IMPLEMENTATION STRATEGIES IN THE ERA OF THE AFFORDABLE CARE ACT

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BACKGROUND: The Affordable Care Act codified new requirements as a condition for nonprofit hospitals maintaining their tax-exemption, including the conduct and internet-based dissemination of a triennial community health needs assessment (CHNA), and the adoption of a related implementation strategy (IS). Prior work suggests that only 11% of hospitals had conducted a CHNA before the rules went into effect. We determined hospitals' compliance with conducting a CHNA, adopting an IS, and making the documents publicly available. We then assessed the quality of publicly available CHNAs and ISs using explicit criteria based on IRS reporting guidelines.

METHODS: We performed a observational study of U.S. nonprofit hospitals. Using specific search terms on the Propublica Nonprofit Project Database, we identified a stratified random sample of 500 general and specialty nonprofit hospitals. We obtained the IRS form 990 Schedule H for each hospital to assess self- reported adherence to the CHNA and IS requirements. We then accessed hospital websites to obtain CHNAs and ISs using an explicit, standardized search of hospital websites. We then evaluated the quality of the available CHNAs and ISs by generating a score using the CDC State Plan Index (SPI) likert scale. This scale codifies the level of detail provided in these reports across multiple domains, ranging from 0 (not addressed) to 5=high quality/highly detailed. Quality was evaluated by trained abstractors, with random sample of reports undergoing dual review to ensure reliability.

RESULTS: Of the 500 U.S. hospitals in our sample, 99% (n=495) reported on their IRS 990 form that they had conducted a CHNA, and 98.4% (n=492) reported that they had made it available online. We were able to locate 87% (n=430) of these CHNAs online. Similarly, 98% (n=490) reported that they adopted an IS, and 80% (n=353) could be located online. The preliminary quality of both the CHNAs and ISs was variable. The average score was 3.26/5 for CHNAs (n=349). The proportion of CHNAs with a rating of solid or high quality varied: description of the community served (82% of CHNAs), description of methods (78%) to the process for obtaining input from the community (40%) or prioritizing health needs (33%) or evaluating impact (46%). Finally, 41.3% of IS strategies were evaluated as solid or high quality.

CONCLUSIONS: Although nearly all nonprofit hospitals were reportedly in compliance with the CHNA and IS requirements under the ACA, a minority of hospitals did not make these documents publicly available. Our preliminary assessment of CHNA quality found that many hospitals are neglecting crucial evaluation components in their effort to assess community health. Federal policy-makers have an opportunity to increase transparency and accountability amongst nonprofit hospitals by enforcing current IRS code.

UNANNOUNCED STANDARDIZED PATIENTS AS A MEASURE OF LONGITUDINAL CLINICAL SKILL DEVELOPMENT

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BACKGROUND: Unannounced Standardized Patients (USPs) provide opportunity to measure residents' clinical skills in actual practice. USPs, or secret shoppers, are trained to ensure accurate case portrayal across encounters, making them optimal for tracking changes in skills longitudinally. At present, little is known about how residents handle USP visits with repeat cases. This study examines variation in resident communication and global domain scores when visited by the same USP case at two separate time points during residency training.

METHODS: Primary care residents (n=46) were assessed twice by one of six standardized cases (asthma, fatigue, Hepatitis B concern, back pain, shoulder pain, or well visit) during the course of their residency, typically during their first and third training year. Upon visit completion, residents were rated using a behaviorally-anchored checklist. Communication domains assessed included info gathering (4 items), relationship development (5 items), and patient education (4 items). Other domains included patient activation (4 items) and satisfaction (4 items). Responses were scored as not done, partly done, or well done. Summary scores (mean % well done) were calculated by domain. All cases were combined to create composite scores, due to small sample sizes per case. First and second visit domain scores were compared using a t-test. Finally, we grouped high performers (80% or higher on communication scores during their first visit) because this measure demonstrated competency.

RESULTS: With cases combined, there were no significant differences based on time of assessment and changes in score between first and second visit were small. 14/46 (30%) learners who performed well on composite overall communication scores (80% or higher) during their first visit outperformed poorer communicators in patient satisfaction (93% vs 61%, P<.001) and activation (48% vs 18%, P<.001). In subsequent visits, these high performers performed at a similar level to their fellow residents, with no significant differences noted. Further, when looking at individual trajectories, individual learner scores in the communication domain increased between visits for 21 learners (46%), decreased for 19 (41%), and stayed same for 7 (15%).

CONCLUSIONS: Results suggest that a learning curve occurs between assessments during the first year in residency and subsequent assessments. This could be due to an increased capacity to engage with a patient occurring training progression, or due to a better understanding of addressing common chief complaints presented with our USP cases. Understanding causes of individual-level score decreases will enable tailoring of educational interventions suitable for specific learner trajectories, as will a deeper dive into the impact of the clinical microsystem on performance. We predict a more nuanced understanding of these mediating factors through our plan of increasing our repeat visit sample size.

UNCONTROLLED BLOOD PRESSURE AND RESISTANT HYPERTENSION IN ELDERLY CHRONIC KIDNEY DISEASE PATIENTS

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BACKGROUND: A subgroup analysis from the SPRINT trial limited to patients ≥80 years old showed improved cardiovascular outcomes and no difference in injurious falls for patients in the intensive treatment arm (who achieved a mean systolic blood pressure of 123.9 mmHg). Management of hypertension in elderly CKD patients is complex. JNC8 recommends a target of 150/90 mmHg for adults aged ≥60, but also recommends a target of 140/90 mmHg for CKD patients, irrespective of age. We examined primary care data on systolic blood pressure (SBP) and number of anti-hypertensive (anti-HTN) medications in CKD patients ≥80 years old, as compared to younger CKD patients.

METHODS: Patients who had a primary care visit at one of our 15 primary care clinics between 4/1/2018-4/1/2019 were eligible. We included adults with stage 3-4 CKD in the preceding two years, defined as two estimated glomerular filtration rates (eGFR) between 15–59 mL/min/1.73 m^2 separated by at least 90 days. We divided CKD patients into three age groups 40-64, 65-79, and ≥80 years old, in order to compare mean SBP and mean number of anti-HTN medications across these groups. We also determined how many patients had resistant hypertension in each age group (SBP ≥140 mmHg despite being on ≥3 anti-HTN medications).

RESULTS: Of 105,849 primary care patients, 8,013 had stage 3-4 CKD. The CKD patients were 59% female, 12% African American, and 6% Hispanic or Latino. The mean SBP was higher for CKD patients ≥80 years old compared to patients aged 65-79 (132.1 mmHg vs. 129.9 mmHg, p <0.0001) and compared to patients aged 40-64 (132.1 mmHg vs. 128.1 mmHg; p < 0.0001). The mean number of anti-HTN medications was higher for CKD patients ≥80 years old compared to patients aged 40-64 (2.16 vs. 1.90, p <0.0001), but not compared to patients aged 65-79 (2.16 vs. 2.12). Uncontrolled SBP (≥140 mmHg) and resistant hypertension increased across stage of CKD and age group (Table 1).

CONCLUSIONS: In this cohort of patients with stage 3-4 CKD, mean SBP is highest for patients ≥80 years old, despite similarly aggressive management as that of patients 65-79 years old. Further research is needed to determine how increasing the number of anti-HTN medications in CKD patients ≥80 years old would affect cardiovascular outcomes, acute kidney injury, renal failure, and falls.

	Age 40-65			Age 65-80			Age >= 80		
	Systolic BP >= 140								
	Numerator	Denominator	%	Numerator	Denominator	%	Numerator	Denominator	%
CKD Stage 3a	185	947	19.5	584	2617	22.3	471	1577	29.9
CKD Stage 3b	73	304	24.0	235	901	26.1	290	918	31.6
CKD Stage 4	41	131	31.3	87	290	30.0	119	328	36.3
	Anti-HTN Medications >=3								
	Numerator	Denominator	%	Numerator	Denominator	%	Numerator	Denominator	%
CKD Stage 3a	256	947	27.0	854	2617	32.6	522	1577	33.1
CKD Stage 3b	118	304	38.8	422	901	46.8	389	918	42.4
CKD Stage 4	61	131	46.6	159	290	54.8	167	328	50.9
	Systolic BP >= 140 AND Anti-HTN Medications >= 3								
	Numerator	Denominator	%	Numerator	Denominator	%	Numerator	Denominator	%
CKD Stage 3a	53	947	5.6	217	2617	8.3	157	1577	10.0
CKD Stage 3b	31	304	10.2	125	901	13.9	127	918	13.8
CKD Stage 4	23	131	17.6	54	290	18.6	64	328	19.5

UNDERSTANDING BARRIERS AND SOLUTIONS TO OBTAINING AND UTILIZING AN X-WAIVER AMONG VETERANS AFFAIRS PRIMARY CARE PROVIDERS

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BACKGROUND: Opioid use disorder (OUD) and chronic pain are common, often co-occurring, conditions that are highly prevalent among Veterans. Within the San Francisco Veterans Affairs Healthcare System (SFVAHCS), only 33.0% of Veterans with OUD are prescribed pharmacotherapy treatment and over 1,000 have risk factors for developing OUD (e.g., prescribed chronic opioids). Buprenorphine, an evidence-based and highly effective treatment for both OUD and pain, can be prescribed by primary care providers (PCPs) with additional training and an X-waiver from the DEA. Of the 87 SFVAHCS PCPs, 17 (19.5%) are waivered; however, only 7 (8.0%) have prescribed buprenorphine within the past 6 months. We sought to understand barriers to obtaining an X-waiver, and identify interventions to increase buprenorphine prescribing from primary care.

METHODS: We created and distributed an online survey to all SFVAHCS PCPs (n=87) who work in geriatric, infectious disease, tele-primary care, and rural and urban primary care settings. Non-waivered providers were surveyed to evaluate interest in becoming waivered and barriers to obtaining a waiver. Waivered providers were surveyed to evaluate barriers to prescribing buprenorphine and solutions to increase prescribing.

RESULTS: Of the 40 survey responders (46.0% response rate), 25 (62.5%) were not waivered and 15 (37.5%) were waivered. Some non-waivered providers expressed interest in obtaining an X-waiver (mean 3.60 on a 5-point Likert scale, where 5=very interested). The most frequently reported barriers to becoming waivered were: 1) lack of time to complete training (n=17); 2) limited access to training (n=9); and 3) lack of incentive to become waivered (n=8). Among waivered providers, the most commonly reported barriers to prescribing were: 1) lack of knowledge and/or experience (n=9); 2) lack of clinic support/infrastructure (n=8); and 3) lack of time to counsel patients during visits (n=6). Interventions that waivered providers were interested in included: 1) a "buprenorphine mentor" to call as needed (mean 4.57 on a 5-point Likert scale, where 5=very interested); 2) educational materials (mean 4.14); 3) a 1-hour refresher course (mean 4.00); and 4) data identifying potential candidates for buprenorphine (mean 4.00).

CONCLUSIONS: Based on our survey of SFVAHCS PCPs, there are simple, actionable strategies that may increase the proportion of Veterans who have access to evidence-based treatment for OUD and chronic pain. Providing time, training resources, and employee incentives could increase the number of waivered PCPs. Once waivered, PCPs need further support to ensure confidence and skills in routine prescribing of buprenorphine. Strategies include mentorship, provider educational materials, and establishing clinic infrastructure to reduce the administrative burden of prescribing buprenorphine.

UNDERSTANDING CLINICIAN ATTITUDES TOWARD SCREENING FOR SOCIAL DETERMINANTS OF HEALTH IN A PRIMARY CARE SAFETY-NET CLINIC

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BACKGROUND: Social determinants of health (SDoH) play a significant role in health outcomes, but little is known about care teams' attitudes about addressing SDoH. Our safety-net clinic has begun to implement SDoH screening and referral systems, but efforts to increase clinical responses to SDoH necessitates an understanding of how providers and clinical teams see their roles in responding to particular SDoH concerns.

METHODS: An annual survey was administered (anonymously) to clinical care teams in an urban safety-net clinic from 2017-2019, asking about ten SDoH conditions (mental health, health insurance, food, housing, transportation, finances, employment, child care, education and legal Aid). For each, respondents rated with a 4-point Likert-scale whether they agreed that health systems should address it (not at all, a little, somewhat, a great deal). They also indicated their agreement (using strongly disagree, somewhat disagree, somewhat agree, strongly agree) with two statements 1) resources are available for SDoH and 2) I can make appropriate referrals.

RESULTS: 232 surveys were collected (103 residents, 125 faculty and staff (F/S), 5 unknown) over three years. Of note, mental health (84%) and health insurance (79%) were seen as very important for health systems to address, with other SDoH items seen as very important by fewer respondents. They reported little confidence that the health system had adequate resources (51%) and were unsure how to connect patients with services (39%).

When these results were broken out by year, we found the following: In 2017 (n=77), approximately 35% of respondents thought the issues of employment, childcare, legal aid, and adult education should be addressed "a little," but in 2018 (n=81) and 2019 (n=74) respondents found the health system should be more responsible, with over 35% of respondents stating that these four issues should be addressed "somewhat" by health systems. In addition, half of respondents in 2019 felt that financial problems should be addressed "a great deal," up from 31% in 2017. Across all years, food, housing, mental health, and health insurance were seen as SDoH that should be addressed "a great deal". It is of note that respondents across all years reported limited understanding of referral methods and options available to their patients.

CONCLUSIONS: Many of the SDoH conditions were seen by respondents as outside the purview of health systems. However, over the three years, more members increased the number of SDoH conditions that should be addressed a "great deal." Responses also indicated that many of the team members do not feel prepared to deal with "unmet social needs". Additional examination of clinic SDoH coding, referral rates, resources, and team member perspectives will deepen our understanding of how we can cultivate a culture that enables team members to respond to SDoH in a way that is sensitive to their needs and patient needs.

UNIVERSAL SCREENING FOR SOCIAL DETERMINANTS OF HEALTH AND UNMET SOCIAL NEEDS DURING WELL VISITS AT THE INTERNAL MEDICINE-PEDIATRICS PRIMARY CARE GROUP PRACTICE

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BACKGROUND: Children raised in poverty commonly face unmet basic needs, such as food insecurity and unstable housing, and are at higher likelihood of exposure to violence. As a result of these unmet social needs, they are more likely to experience poorer health than children from more advantageous background. The link between social determinants of health and well-being is not limited to children. The American Academy of Pediatrics recommends universal screening for social determinants of health at all well-child checks, however there was no standardized system for screening children or adults at the University of Chicago Primary Care Group Medicine-Pediatrics clinic, which serves primarily low-income families on Chicago's South Side. We aimed to design and implement a protocol for universal screening of social determinants of health at every well child visit, then expand to include adult physicals.

METHODS: The validated WE CARE and IHELLP social determinants of health screening tools were modified to create a specific survey for our clinic, in collaboration between physicians and the clinic social worker. Based on identified community needs, our screening tool focused on housing insecurity, food insecurity, difficulty paying for utilities, difficulty with transportation to medical appointments, need for childcare, and exposure to domestic or community violence. We ensured all modifications maintained appropriate language for families with low health literacy. The medical assistants distributed the survey during the rooming process for every well-child check in our clinic, and now expanded to all adult physicals. Practitioners reviewed the questionnaire during the visit. If any the questions screened positive, shared a standardized resource with a list of community services that addressed the specific need.

RESULTS: In our initial sample of 93 screened families, 19% of our screeners were positive in one or more category. Of the positives, 44% were positive in two or more categories. The most common needs raised were affordable childcare (9.6%, n=9) and paying for utilities (8.6%, n=8). Five percent of our population screened positive for food insecurity and two percent positive for housing insecurity. Nearly all families that screened positive in one or more area were interested in receiving resources to address their needs.

CONCLUSIONS: Physicians have the capability to impact the link between unmet basic needs and health. We implemented a screening process for social determinants of health within an academic medicine-pediatrics clinic using a team-based care model and found a high rate of positive social determinants of health. By identifying unmet basic needs and linking families with appropriate community services, we can intervene and help support better health in the South Side of Chicago, impacting both short and long-term health. We are currently in the process of surveying families that screened positive to determine the effectiveness of our intervention and areas for improvement.

UNMET MEDICAL CARE NEEDS AMONG CALIFORNIA ADULTS DISPLACED DUE TO HOUSING COST

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BACKGROUND: Over 30% of all Americans and 40% of Californians face displacement from their communities as they struggle with burdensome housing costs, defined by the U.S. Department of Housing & Urban Development as housing expenses above 30% of household income. Displacement has the potential to exacerbate neighborhood segregation and health disparities. Previous studies linked the burden of housing cost to delays in seeking and receiving medical care, but little is known about health care access after displacement occurs. The objective of this study was to evaluate the health consequences of displacement in the context of housing cost.

METHODS: We performed a secondary analysis of all adult respondents in the California Health Interview Survey (CHIS) from 2011-2017 (n=146,417). The CHIS sample design excluded institutionalized or homeless individuals and anyone without a phone. All measures were self-reported. The primary independent variable was move history in the past 5 years, coded in 3 categories: moved due to housing cost, moved for other reasons, and did not move. The two outcome variables were recent unmet medication need and other recent unmet health care needs. We used logistic regression to model the association between move history and the odds of each unmet-need outcome, adjusting for sex, age, race/ethnicity, income, employment, education, family composition, and neighborhood

type as potential confounders. Analyses were stratified by income and by general health to assess moderation.

RESULTS: In our sample, 51% were female with a mean age of 46 years; 36% had incomes below 200% of the federal poverty level, and 5% had moved in the past 5 years due to housing cost. Unmet medication need was reported by 11% of total sample, and other unmet health care needs were reported by 14%. Compared to those who did not move, people who moved due to housing cost had increased odds of both unmet medication need (OR 1.54 [95% CI: 1.31-1.81]) and other unmet health care needs (OR 1.45 [95% CI: 1.23-1.69]). Moves for other reasons were associated with smaller increases in odds of both outcomes (OR 1.17 [95% CI: 1.07-1.28] and OR 1.20 [95% CI: 1.10-1.30], respectively). In stratified analyses, those with lower income and worse general health had higher prevalence of unmet needs but smaller effect sizes for the associations between move status and unmet needs.

CONCLUSIONS: Our results indicate that moves due to housing cost are associated with increased risk of unmet medical needs. To our knowledge, this was the first study to examine displacement using the California Health Interview Survey, which provided a large, diverse sample focused on a state at the center of debates on affordable housing and displacement. These findings highlight the potential for housing policy to promote health equity. Future interventions are merited to ensure care continuity during residential moves in the short term and to prevent displacement in the long term.

UNSHELTERED STATUS AMONG HOMELESS-EXPERIENCED VETERANS IS ASSOCIATED WITH SOCIAL VULNERABILITY, ADDICTION, OVERDOSE AND PAIN: RESULTS OF A NATIONAL SURVEY

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BACKGROUND: Homelessness varies from sleeping in places not meant for habitation (e.g., outdoors) to shelters, to another's home. Unsheltered status draws attention because it is visible, and it may vary by regional factors. Even after a residence is found, a history of having been unsheltered may connote unique vulnerability, but this has not been surveyed. Analyzing a national survey of Homeless-Experienced Veterans (HEVs), we hypothesized that unsheltered experience would be most common in the West and that it would be associated with greater health and social vulnerability.

METHODS: We surveyed 5766 HEVs from 26 VA Medical centers across 4 US census regions: West (n=9 VAMCs, n=2545 HEV), South (n=10, n=2154), Northeast (n=3, n=443) and Midwest (n=4, n=624). "Unsheltered" experience was based on endorsing ≥ 7 nights unsheltered (i.e. outside) in the 6 months before survey. Surveys queried: (a) sociodemographics; (b) social support (endorsing ≥ 4 out of 6 forms of support rated as "good"), marital status, difficulty affording basic necessities, income >$1000, and employment; (c) health conditions included a count of medical conditions, severe chronic pain, psychiatric symptoms on the Colorado Symptoms Index, alcohol and drug problems on a validated screener, and alcohol/drug overdose requiring emergency care. Analyses compared HEVs with and without unsheltered experience.

RESULTS: The percentage with ≥7 unsheltered nights was higher in the South (10%) and West (10%) than Midwest (5%) and Northeast (5%) (p<.001). Age, race and gender did not differ substantially by shelter status. Unsheltered HEVs were more likely to have been chronically homeless in the past 3 years (61% vs 12%); to have income ≤$1000/month (54% vs 38%); to be unemployed (27% vs 16%); to report problems paying for necessities (72% vs 51%). They were less likely to have good social support (56% vs 75%). They had greater prevalence of self-reported overdose, drug and alcohol problems and pain. This study's response rate (40%) was modestly lower than that reported for VA's patient experience survey in its 2012 Patient Centered Medical Home Evaluation (47%).

CONCLUSIONS: While unsheltered homeless experience was not common in this sample, 1 in 10 HEVs in the South and West reported 7 or more nights without shelter in the last 6 months. Unsheltered experience was associated with social and health vulnerabilities. For individuals coming out of homelessness, unsheltered experience signals a likely need for intensified services focused on addiction, overdose risk, and establishing economic and social resources.

Characteristic (*p<.05; ** p<.001)	Unsheltered ≥ 7 nights	Sheltered
Overdose in prior 3 years*	9%	6%
Alcohol problem**	39%	27%
Drug problem**	27%	12%
Severe chronic pain, %**	50%	36%
Psychiatric symptoms (0-24)(sd)**	10.2 (±7.2)	6.6 (±6.3)
Medical conditions (0-8) (sd) (NS)	2.0 (±1.6)	1.9 (±1.5)

USE AND PERCEPTIONS OF ONLINE DOCTOR RATINGS AMONG OLDER US ADULTS

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BACKGROUND: Online ratings are widely available for many consumer products, and are increasingly available for doctors. Such information could be particularly helpful to older adults, who generally see more doctors than younger individuals and thus have more opportunities to make decisions about which doctors they will visit. Yet, little is known about how older adults use and perceive online doctor ratings.

METHODS: In May 2019, 2,256 Ipsos KnowledgePanel participants 50 to 80 years of age completed an online survey as part of the National Poll on Healthy Aging (completion rate 76%). Participants were asked whether they had ever used online doctor ratings. If so, participants were asked when, and how, they had used such ratings. All participants were asked to rate the importance of online ratings and other factors when choosing a doctor. Sample weights were used to generate nationally representative estimates of use and perceptions of online doctor ratings. Weighted multivariable logistic regression was used to measure associations between participants' age, gender, race/ethnicity, income, education, health status, and region and their use and perceptions of online doctor ratings.

RESULTS: Among older adults, 43% had ever reviewed online doctor ratings (14% more than once in the past year, 19% once in the past year, and 10% more than one year ago). Only 7% of respondents had ever posted an online rating of a doctor. Among those who reviewed ratings more than once in the past year, 67% had chosen a doctor due to good ratings and 57% reported not choosing a doctor due to poor ratings. Female gender [odds ratio (OR) 1.62], having a college degree (OR 1.98), annual household income > $100,000 (OR 1.78), and having a chronic condition (OR 1.34) were all associated with ever using online doctor ratings. In choosing a doctor, 20% of participants thought that online doctor ratings were very important. A similar percentage of respondents (23%) felt word of mouth recommendations from family or friends were very important, but more felt time to get an appointment (61%), a doctor's years of experience (42%), and a recommendation from another doctor (40%) were very important. Non-white individuals were more likely to perceive online ratings as being very important (OR 1.62) when choosing a doctor.

CONCLUSIONS: More than 4 in 10 older US adults have used online doctor ratings. Women and individuals with more education, higher incomes, or a chronic condition are more likely than others to have ever used this information. When selecting a doctor, older adults are just as likely to perceive online ratings as being very important as a word of mouth recommendation, though other factors are more commonly seen as very important. As more people of all ages seek online ratings when choosing a doctor, clinicians, patients, and policymakers should be aware of the benefits, and potential risks, of using rating sites for these important decisions.

USE OF CHART-STIMULATED RECALL TO EXAMINE UNCERTAINTY IN MEDICAL DECISION-MAKING AMONG SENIOR INTERNAL MEDICINE RESIDENTS

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BACKGROUND: Errors in medical decision making are common and have been linked to adverse events and patient harm, particularly when uncertainty exists. Prior studies have explored resident uncertainty, often through critical incident technique, but were limited by use of written format, use of hypothetical cases, or by hindsight and/or recall bias. Chart-stimulated recall (CSR, an educational and research method that pairs review of a patient chart with an oral interview) has potential for use in this setting, both to explore uncertainty in real-time, and to promote reflection as a means of improving decision-making. In this study, we utilized chart-stimulated recall-based interviews to qualitatively examine uncertainty in medical decision-making among senior internal medicine (IM) residents. We also sought to evaluate the utility of CSR as an educational tool to promote reflection about uncertainty in decision-making.

METHODS: We invited senior IM residents rotating on inpatient night float at the University of Pittsburgh Medical Center from February to September 2019 to participate. Each participant completed one, 20-minute CSR session based on a self-selected case from the prior evening's shift in which there was uncertainty in medical decision-making. Interviews explored the nature of, approach to, and communication about uncertainty, and were audio-recorded, de-identified and transcribed verbatim. A codebook was then developed and refined. Two coders independently applied the codes to interview transcripts and interviews were subsequently analyzed for themes. Residents also completed a feedback survey about the educational value of the reflective exercise.

RESULTS: Between February and September 2019, 41 out of 45 (91%) eligible residents participated in the study. The most frequently cited sources of uncertainty were 1) patient history, 2) medication-related, 3) presence of a severe/life-threatening condition and 4) need for a consultant overnight. The most frequently cited approaches to uncertainty were 1) review/obtain further history, 2) use of physical exam and 3) use of consultants. The majority of residents reported communicating their uncertainty to patients/families and at sign-out to daytime providers. Residents felt comfortable discussing their uncertainty (87% agree/strongly agree) and felt that the opportunity to think aloud during the exercise was valuable (60% agree/strongly agree).

CONCLUSIONS: Our study demonstrated a novel approach to the exploration of uncertainty in medical decision-making, with the use of CSR. The common use of history, physical exam and consultants as approaches to uncertainty reinforces the need for continued quality education in these areas to improve patient care. Finally, communication of uncertainty to patients and other providers is common and suggests the need to optimize that communication in order to strengthen patient-provider and provider-provider relationships.

USE OF TWO-STEP ALGORITHM TO REDUCE UNNECESSARY TESTING FOR CLOSTRIDIOIDES DIFFICILE INFECTION AT A COMMUNITY BASED HOSPITAL.

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BACKGROUND: Diagnosis of Clostridioides difficile infection (CDI) is challenging due to non-specificity of symptoms, the lack of reliable tests to distinguish CDI from non-CDI related symptoms and the high prevalence of colonization in the general population. According to the most recent CDC report on antibiotic resistance. There were 223,900 documented cases of C difficile in hospitalized patients in 2017. 12,800 estimated deaths were reported in 2017 as well. Our project aims to optimize pre-test probability and reduce the number of unnecessary tests for CDI.

METHODS: This is an intervention study that aims to reduce the rate of unnecessary CDI tests at Saint Francis Hospital. A multidisciplinary team was formed to redesign the process of CDI diagnosis. A lab ticket was created to ensure that certain conditions are met before the sample is sent to the lab. The ticket was then hardwired to the electronic health record (EHR) as part of the CDI diagnosis orderset, that aimed to improve the pre-test probability. Once the sample is deemed appropriate; a 2-step approach was implemented. Glutamate Dehydrogenase and toxin enzyme-linked immunosorbent assay (EIA) were performed as part of the first step. If both tests are positive then the diagnosis of CDI is confirmed. If both are negative then the diagnosis is excluded. A positive GDH with negative toxin EIA will trigger PCR testing to confirm or exclude the diagnosis. Initial tests were then moved on-site in order to expedite the test results. All positive tests were sent to the national database in order to calculate the Standardized infection ratio.

RESULTS: In the first quarter of 2018, a total of 155 patients were tested for CDI out of 1,965 patients admitted. In the first quarter of 2019, after implementing our protocol, 120 patients were tested for CDI out of 1,998 (p=0.021). 29 out of the 155 patients were positive for CDI in the first quarter of 2018 and 17 out of 120 were tested positive for CDI in the first quarter of 2019 (p=0.075). Therefore, our protocol decreased the number of unnecessary tested cases for CDI without significantly decreasing the number of positive tests.

The standardized infection ratio also decreased from 0.90 to 0.70. After moving the initial set of tests on-site, average turn-around time improved by 87%. This translated to an estimated drug cost savings per quarter of $16,500.00.

CONCLUSIONS: This study suggests that implementing a 2 step approach to CDI diagnosis results in significant reduction in unnecessary treatment and improves antibiotics use in the hospital.

USE OF UNANNOUNCED STANDARDIZED PATIENTS AND AUDIT/FEEDBACK TO IMPROVE PHYSICIAN RESPONSE TO SOCIAL DETERMINANTS OF HEALTH

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BACKGROUND: While much is known about the importance of addressing Social Determinants of Health (SDoH), less is known about how physicians elicit, respond to, and act upon their patients' SDoH information. We report on the results of a study that 1) sent Unannounced Standardized Patients (USPs) with programmed SDoH into clinics to assess whether providers uncovered, explored and acted upon the SDoH, 2) provided audit/feedback reports with educational components to clinical teams, and 3) tracked the impact of that intervention on provider response to SDoH.

METHODS: Highly trained USPs (secret shoppers) portrayed six scenarios (fatigue, asthma, Hepatitis B concern, shoulder pain, back pain, well-visit), each with specific housing (overcrowding, late rent, and mold) and social isolation (shyness, recent break up, and anxiety) concerns that they shared if asked broadly about. USPs assessed team and provider SDoH practices (eliciting, acknowledging/exploring, and providing resources and/or referrals). 383 USP visits were made to residents in 5 primary care teams in 2 urban, safety- net clinics. 123 visits were fielded during baseline period (Feb 2017-Jan 2018); 185 visits during intervention period (Jan 2018–Mar 2019) throughout which quarterly audit/feedback reports of the teams' response to the USPs' SDoH and targeted education on SDoH were distributed; and 75 follow-up phase visits were fielded (Apr-Dec 2019). Analyses compared rates of eliciting and responding to SDoH across the 3 periods (chi- square, z-scores). One team, by design, did not receive the intervention and serves as a comparison group.

RESULTS: Among the intervention teams, the rate of eliciting the housing SDoH increased from 46% at baseline to 59% during the intervention period (p=.045) and also increased, but not significantly, for the social issue (40% to 52%, p=.077). There was a significant increase from baseline to intervention in providing resources/referrals for housing (from 7% to 24%, p=.001) and for social isolation (from 13% to 24%, p=.042) (mostly resources, very few referrals were made). The comparison team's rates followed a different pattern: eliciting the housing issue and the social isolation issue decreased from baseline to the intervention period (housing: 61% to 45%; social isolation: 39% to 33% of visits) and the rate of providing resources/referrals stayed steady at 13% for both. In the cases where SDoH were most clinically relevant, baseline rates of identifying the SDoH were high (>70%) but rates of acting on the SDoH increased significantly from baseline to intervention. Increases seen in the intervention period were not sustained in the follow-up period.

CONCLUSIONS: Giving providers SDoH data along with targeted education was associated with increased but unsustained rates of eliciting and responding to housing and social issues. The USP methodology was an effective means of presenting controlled SDoH and providing audit/feedback data. Ongoing education and feedback may be needed.

USING 24-HR DIETARY RECALL TO VALIDATE AND OPTIMIZE DAILY SODIUM INTAKE ESTIMATES MADE BY DASH-Q

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BACKGROUND: Hypertension is a leading risk factor for cardiovascular and cerebrovascular injury and mortality worldwide. Salt intake reduction has been shown to effectively lower blood pressure. However, evaluating patients' dietary habits is challenging and time intensive. The current gold standard using 24-hour dietary recall is an arduous 20-60 min process that requires trained personnel and multiple administrations. The DASH-Q, a subscale of the Hypertensive Self-Care Activity Level Effect (H-SCALE), is a self-reported dietary assessment consisting of 12 items that describe the number of days per week certain diet criteria are followed. Although previous studies have demonstrated a relationship in the expected direction between DASH-Q score and systolic blood pressure, limited data currently exist evaluating the ability of the DASH-Q score to identify diets that exceed the daily 1500mg of sodium recommended by the American Heart Association. This study aims to assess the accuracy of and to optimize the DASH-Q score to identify dietary salt intake greater than 1500mg/day by comparing it to the 24-hour dietary recall method.

METHODS: Subjects were prostate cancer survivors with hypertension recruited from the New York City area. Data from participants' 24-hour dietary recall was inputted into a computerized software program (Nutritionist Pro) to estimate daily salt intake. DASH-Q assessments completed by each participant were scored from 0-84 with higher scores representing healthier diets. Using scoring guidelines recommended by the H-SCALE committee, DASH-Q scores less than 57 were labeled "unhealthy" and the rest were labeled "healthy." Sensitivity and specificity for an "unhealthy" DASH-Q score to identify daily sodium intake greater than 1500mg were calculated. Furthermore, we assessed the performance of the DASH-Q at each possible cutoff score using the receiver-operating characteristic (ROC) analysis. The optimal threshold value was determined using Youden's J Index (sensitivity + specificity - 1).

RESULTS: A total of 68 dietary recalls and DASH-Qs were analyzed. Average daily sodium intake in this population was 1975mg. Using the recommended cutoff of <57, the sensitivity and specificity of the DASH-Q score to correctly identify patients with daily sodium intake greater than 1500mg were 29.3% and 96% respectively. Applying Younden's J Index to our ROC analysis found that a DASH-Q cutoff of <66 was associated with 78% sensitivity and 66% specificity.

CONCLUSIONS: For this population, current DASH-Q guidelines do a poor job of accurately identifying patients with a high-salt diet. A cutoff score of <66 should be used to more accurately identify patients with high-salt diets.

USING ARTIFICIAL INTELLIGENCE TO INFORM A DIFFERENTIAL DIAGNOSIS FOR SKIN COMPLAINTS

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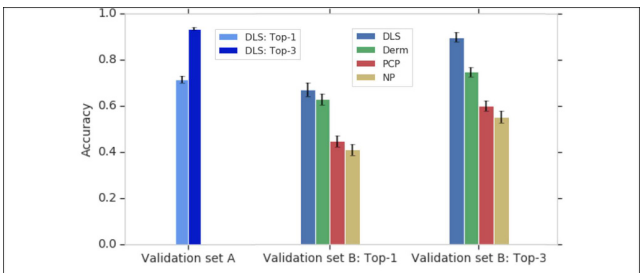
BACKGROUND: An estimated 1.9 billion people have a skin condition and, due to a shortage of dermatologists, many are seen by generalists instead. In the U.S., up to 37% of patients seen in clinic have at least one skin complaint and more than half are seen by non-dermatologists. However, studies show a significant gap in the accuracy of skin condition diagnoses, with the accuracy of non-dermatologists between 24% and

70%, compared to 77-96% for dermatologists. This can lead to suboptimal referrals, delays in care, and errors in diagnosis and treatment.

METHODS: Using de-identified cases (images, history) referred to a teledermatology practice from 17 clinical sites, we developed an artificial intelligence (AI) model based on a deep learning system (DLS) to evaluate the most common skin conditions seen in primary care. The first 14,021 cases were used for development and the last 3,756 cases for validation. A rotating panel of three board-certified dermatologists reviewed each case to determine the reference standard used to evaluate the DLS' accuracy. Additional clinicians who did not participate in formulating the reference standard were also tested against the reference standard.

RESULTS: On the validation set A, the DLS achieved 0.71 and 0.93 top-1 and top-3 accuracies respectively, indicating the fraction of cases where the DLS's top diagnosis and top 3 diagnoses contains the correct diagnosis. 18 clinicians evaluated a stratified random subset of the validation set (n=963 cases) for comparison. On this subset (Validation set B), the DLS achieved a 0.67 top-1 accuracy, non-inferior to board- certified dermatologists (Derms, 0.63, p<0.001), and higher than board-certified internal medicine or family medicine primary care providers (PCPs, 0.45) and independently-practicing nurse practitioners (NPs, 0.41). The top-3 accuracy showed a similar trend: 0.90 DLS, 0.75 Derms, 0.60 PCPs, and 0.55 NPs.

CONCLUSIONS: The DLS distinguishes between 26 of the most common skin conditions (representing roughly 80% of the volume of skin cases seen in clinic) with an accuracy on-par with U.S. board-certified dermatologists. This study highlights the potential of AI to augment the ability of general practitioners to accurately diagnose skin conditions by suggesting differential diagnoses that may not have been considered. Future work will be needed to prospectively assess the clinical impact of using this tool in actual clinical workflows.



The DLS's leading (top-1) differential diagnosis is substantially higher than PCPs and NPs, and on par with dermatologists. This accuracy increases substantially when we look at the DLS's top-3 accuracy, suggesting that in the majority of cases the DLS's ranked list of diagnoses contains the correct ground truth answer for the case.

USING A SIMULATED NIGHT-ONCALL TO ASSESS NEAR-GRADUATE READINESS-FOR-INTERNSHIP

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BACKGROUND: To measure readiness for transition-to-residency of near-graduating medical students, we designed an end-of-medical school simulation and describe results across two medical schools.

METHODS: Night-onCall (NOC) is an immersive educational experience that provides near-graduating medical students with the opportunity to play the role of an intern as they complete a series of authentic clinical activities during a simulated "night on call" while assessed by multiple standardized raters from different perspectives. Most NOC activities are rated on a scale of "not done", "partially done", or "well done". Activities that are fundamental to the NOC experience include standardized patient (SP) encounters with a standardized nurse (SN) present, an oral case presentation to a standardized attending (SA), an evidence-based medicine (EBM) activity where students are required to form a clinical question for one of the cases and search the literature to answer it, and a handoff of the cases to a standardized intern (SI). The patient cases common across the 2 versions of NOC include a post-operative oliguria (Ol) case, an urgent case with patient presenting with a headache with hypertension (Hyp), and an informed consent (IC) case with a family member present at the bedside.

RESULTS: 346 students across two institutions participated in NOC – Institution-A includes 3 cohorts and Institution-B includes 1 cohort. Results are presented as the mean % of items well done (WD) ± standard deviation. Learners demonstrated strong communication skills from the SP perspective across the patient cases: Ol 76% ± 22, Hyp 83% ± 19, IC 76% ± 23. In the 2 cases where learners also interacted with a SN, communication and relationship building performance was also strong: Ol 74% ± 32, Hyp 80% ± 25. However, learners struggled to know how to engage the SN during patient encounters: Ol 51% ± 22, Hyp 63% ± 25, and faced challenges with the physical exam: Ol 43% ± 20, Hyp 42% ± 18. In the EBM activity, reporting on % competent items, students were able to find high-quality evidence (91% ± 25) and use appropriate resources (96% ± 13), however effective search strategies and forming the clinical question were poor (33% ± 34 and 50% ± 39). Students also struggled with the quality of their handover to the SI (47% ± 36).

CONCLUSIONS: Graduating medical students demonstrated strong NOC communication performance, probably reflecting a strong curricular focus on communication skills. Lower mean scores and great performance variability in activities such as physical exam, involving the SN, parts of EBM, and handover are areas needing support in the transition-to-residency. Student may struggle when having to "put it all together", integrating many skills under time pressure. A single end-of-training immersive simulation can provide learners with a meaningful assessment focused on readiness-for-internship and educators an opportunity to make curricular changes based on actual student readiness data.

USING DATA FROM PRESCRIPTION DRUG MONITORING PROGRAMS TO IDENTIFY PATIENTS' RISK OF BECOMING LONG-TERM OPIOID USERS: A COHORT STUDY

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BACKGROUND: Patients who are prescribed opioids and take them continuously for ≥90 days tend to remain on opioids for years and are susceptible to opioid-related harms. Strategies that help clinicians identify new prescription opioid users likely to become long-term users may help reduce inappropriate incident long-term prescription opioid use.

METHODS: We conducted a cohort study to examine whether data contained in prescription drug monitoring programs (PDMPs; statewide databases that record all outpatient controlled substance prescriptions and that clinicians can check in real time) could predict incident long-term prescription opioid use. Data were 2008-2018 prescription data from California's PDMP. Our cohort comprised all patients with an incident opioid analgesic prescription during 2010-2017 and no opioid prescriptions in the prior 2 years. The outcome was incident long-term opioid use, defined as having ≥3 opioid prescriptions comprising an episode of opioid use lasting >90 days after the date of a patient's incident opioid

prescription ("day 0"). Patients prescribed ≥500 mg morphine equivalents per day on day 0 were excluded. We constructed 3 logistic regression models: day 0 (using PDMP data available through day 0), day 30 (using data through day 29), and day 60 (using PDMP data through day 59). Independent variables were age, sex, number of pills per opioid prescription, opioid prescriptions per opioid prescriber, having >1 unique opioid prescriber, using >1 pharmacy, opioid formulation (pill, liquid, other), any long-acting opioid prescription, any active benzodiazepine prescription, any other active controlled substance prescription, any prescription from prescribers in the top 5th percentile of statewide opioid prescribers, and (for day 30 and day 60 models) change in total pills prescribed on day 30 or 60 versus day 0. Models accounted for year and area-level characteristics (rural vs urban and socioeconomic status) using census data based on patent ZIP code. Model fit was evaluated by area under the receiver operating characteristic curve (AUC).

RESULTS: Our cohort included 30.5 million (~3.8 million per year) previously opioid naïve patients with an incident opioid prescription; 1.9 million (6.2%) became long-term opioid users. AUC for the day 0, day 30, and day 60 models were 0.81, 0.88, and 0.94, respectively. Odds ratios for all variables were statistically significant; variables with large odds ratios included active benzodiazepine prescription, >1 unique opioid prescriber, any long-acting opioids, and any "other" (vs pill or liquid) opioid formulation.

CONCLUSIONS: Patients' risk of becoming long-term opioid users after an incident opioid prescription can be accurately predicted with data contained in PDMPs. Risk prediction algorithms based on PDMP data could help clinicians identify patients likely to become long-term opioid users, and so are a promising strategy for reducing inappropriate incident long-term opioid use.

USING ELECTRONIC HEALTH RECORD DATA TO IDENTIFY PHYSICIAN PHENOTYPES WITH DIFFERENTIAL RESPONSES TO A NUDGE FOR INFLUENZA VACCINATION

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BACKGROUND: Less than 40% of adults in the United States receive the influenza vaccination annually. An active choice nudge in the electronic health record (EHR) significantly increased flu vaccination rates at Penn Medicine primary care clinics by 9.5-percentage points. While the overall impact was positive, the nudge may not have been effective for some physicians. The objective of this study was to use EHR data to identify physician phenotypes and assess differential responses to the nudge.

METHODS: During the 2016-2017 flu season, 3 primary care practices at Penn Medicine implemented a BestPractice Advisory that prompted medical assistants to ask patients about flu vaccination and template the order for physicians to review during the visit. Latent class analysis was used to identify physician phenotypes based on 9 demographic, training, and practice pattern variables. A difference-in-differences approach was used to compare changes in influenza vaccination rates. Physicians from the 3 intervention and 7 control sites who saw patients throughout the 2015-16 (pre-intervention) and 2016-17 (intervention) flu seasons were included. Patients were eligible if they visited their primary care physician for a new or return visit and were due for vaccination. Data was obtained from the EHR and publicly available sources.

For each physician latent class, a generalized linear model with logit link was fit to the binary outcome of influenza vaccination at the patient visit level. These models adjusted for patient demographics, comorbidity and insurance, had practice site and month fixed effects, included interaction terms for year and group, and were clustered by physician. The adjusted differences in vaccination rates and 95% confidence intervals were generated via the bootstrapping procedure, resampling patients 1000 times. Resampling of patients was conducted by physicians to maintain clustering at the physician level.

RESULTS: The sample comprised 56 physicians and 45,410 patient visits. The model segmented physicians into classes that had higher (N=41) and lower (N=15) clinical workloads. Physicians in the higher clinical workload class had a mean (SD) of 819 (429) encounters, 12 (5) appointments per day, and 4 (1) days per week in clinic. The lower clinical workload class had a mean (SD) of 344 (129) encounters, 8 (3) appointments per day, and 3 (1) days per week in clinic. Among higher clinical workload physicians, the nudge was associated with a significant increase in influenza vaccination (adjusted difference-in-difference in percentage points, 7.9; 95% CI, 0.4-9.0; P=.01). The lower clinical workload class was not associated with a significant difference (adjusted difference-in-difference in percentage points, -1.0; 95% CI, -5.3-5.8; P=.90). **CONCLUSIONS:** This is one of the first studies to identify physician phenotypes with differential responses to an EHR intervention for flu vaccination. Findings reveal new opportunities for targeted implementation of EHR nudges to combat alert fatigue.

USING EXPERIMENTAL DATA FROM MOVING TO OPPORTUNITY TO INVESTIGATE THE LONG-TERM IMPACT OF NEIGHBORHOODS ON HOSPITAL ADMISSIONS FOR SPECIFIC CLINICAL CONDITIONS

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BACKGROUND: Federal policymakers are currently considering modifications to housing programs designed to reduce neighborhood poverty exposure. Evaluating the association between housing and neighborhood environments with subsequent healthcare use has been challenging due to non-random decisions families make about where to live and lack of data on long-term outcomes. Recent research linked the Moving To Opportunity (MTO) experiment's participants with up to 20 subsequent years of administrative data for hospital utilization and found that children randomized to receive a housing voucher —which enabled moves out of high poverty neighborhoods—had sustained reductions in hospital use. In follow-on analyses, we investigated whether the observed long-term impact of voucher receipt on hospital use was for specific clinical conditions.

METHODS: The MTO experiment randomized families living in public housing within high-poverty neighborhoods in Baltimore, Boston, Chicago, Los Angeles, or New York during 1994-1998 to three study groups: (1) experimental housing voucher to be used in a low poverty (<10% poverty) neighborhood, (2) traditional housing voucher without restrictions, and (3) control group. We linked MTO participants to all- payer hospital discharge data (from 1995-2015) and Medicaid data (from 1999-2014) and identified hospitalizations for asthma, other respiratory conditions, injuries, mental health, diabetes, obesity, and hypertension. Differences in the rates of annual, condition-specific hospitalizations were estimated between study groups with an Intention-To-Treat framework and negative binomial, longitudinal models.

RESULTS: Among those randomized as adults, 4,142 (90.0%) were linked to claims data, giving a median of 13.4 years of follow-up time (up to 21 years after randomization, N=56,462 person-years); 98% were female with a median initial age of 32. Among those randomized as children, 9,170 (81.2%) were linked to claims data (N=127,300 person-

years); 50% were female with a median initial age of 8. For adults at randomization, we did not observe significant differences between study groups for the number of hospitalizations for any of the seven conditions. For children at randomization, those in the two voucher groups had lower admissions rates for mental health disorders (Incidence Risk Ratio 0.70, 95% Confidence Interval [CI] 0.51, 0.95) and asthma (IRR 0.64, 95% CI 0.41, 1.00) compared to the control group; results did not reach statistical significance for other conditions. A 10-percentage point increase in neighborhood poverty for children was associated with a 34% increase (95% CI 1.01, 1.78) in hospital admissions for mental health disorders over the long-term follow-up.

CONCLUSIONS: Housing policies that reduce neighborhood poverty exposure may lead to long-term savings for hospitalizations related to asthma and mental health among children as they become young adults and thus help offset the costs of the housing subsidies.

USING FOCUS GROUPS OF CAREGIVERS OF INDIVIDUALS WITH IDD TO IDENTIFY TARGETS FOR LTC PLANNING INTERVENTIONS

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BACKGROUND: Individuals with intellectual/developmental disabilities (IDD) are expected to outlive their caregivers. Although many caregivers of individuals with IDD worry about their relative's future, few develop solid long-term care (LTC) plans. The goal of this project was to identify targets for LTC planning interventions for caregivers of individuals with IDD. As a result, we plan to build a LTC planning website intervention in order to help families plan the lifespan for individuals with IDD. We conducted focus groups with caregivers of individuals with IDD in order to receive suggestions for a LTC planning tool in the form of a website.

METHODS: Between April 2018 and October 2019, focus groups were conducted across five states with caregivers of individuals with IDD. Participants completed a survey that included demographic questions, Waisman Activities of Daily Living Scale (W-ADL), and Scales of Independent Behavior-Revised, Problem Behavior Scale (SIB-R). Caregivers were shown two LTC planning websites. Caregivers then participated in focus groups where they were asked about perceived barriers and facilitators of LTC planning and suggestions for tools to promote LTC planning among families like theirs. Focus group recordings were transcribed verbatim and coded using the constant comparative method to identify major themes.

RESULTS: Forty-nine caregivers participated in focus groups (mean age, 55.9). Individuals with IDD ranged from 7-40 years old (mean, 22.7); 83% had $\geq$ 1 problem behavior. The mean W-ADL score was 1.1, meaning that most individuals with IDD need assistance with activities of daily living. Focus groups revealed multiple facilitators and barriers to planning, which are especially prominent when services are lost during transition to adulthood. Suggestions for online tool characteristics included: a resource database; accurate LTC planning information; and a timeline to help with knowing when to plan for certain things. Additionally, participants suggested an interactive planning tool. They had more specific website suggestions for accessibility, finances, housing, insurance, and resources in order to help them plan for the rest of their relative's life in the case that they outlive their parents.

CONCLUSIONS: Interventions for LTC planning may improve quality of life, independence, and personal choice of adults with IDD and their caregivers. Information gathered will be used to develop an online planning tool to aid as an intervention to the planning process.

USING POSITIVE DEVIANCE IN MEDICAL EDUCATION TO EMPOWER LEARNING

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BACKGROUND: Positive deviance (PD), a form of workforce empowerment that is consistent with complexity science (CS) leadership, has been used successfully in clinical care but not applied to medical education. We introduced PD into a low-stakes setting, improving residents' tactics to speed the handling outpatient test results, in order to: 1) improve the clinical process, and 2) expose trainees to PD.

METHODS: Each resident attended a PD seminar of 7 to 8 residents. The agenda PD items (CS category) were: goal setting (community building), collect each resident's tactics (information gathering), identify deviants and determine unique tactics (information sensemaking), develop best practice (information using). At each step of the seminar, residents' opinions were collected with a RedCap survey. Prior to the seminar, forest plots determined our overall proportion of results handled within 2 days (timely rate, TR), the TR of each resident, and the heterogeneity (I2) of the group. The forest plots were anonymized and emailed before the seminar to each resident with their own result identified.

RESULTS: Our baseline TR was 52% (range 0% to 97%; I2 = 85%) with a mean of 7.4 days. Residents' predicted mean was 8 days. The residents voted for a TR goal of 2 days. In each seminar, after collecting and showing each member's tactics without attribution, 72% and 58% of residents voted to encourage the deviants and all participants, respectively, to identify themselves. After the seminar, 83% of residents either agreed or strongly agreed with "Overall, this component of our curriculum compares favorably to other components" ($p = 0.96$ for comparison of this same question to other components in our last year-end curriculum survey). Regarding the leading of PD seminars, our informal impression is: 1) the RedCap survey with real-time group feedback, once optimized, helped guide the seminar, and 2) at least 3 sessions were needed before teachers new to PD were able to guide discussions of best tactics. The impact of the seminars on the TR is being measured.

CONCLUSIONS: In this initial use of PD to empower learning on a mundane task, the residents' received the experience similarly to established components of our curriculum. The finding that 72% of residents encouraged identifying positive deviants suggests that about a quarter of residents were uncomfortable with this introduction to PD. Measurement of the impact on clinical workflow is pending.

USING TEXT MESSAGES TO CONNECT NEWLY ENROLLED MEDICAID BENEFICIARIES TO PRIMARY CARE: A RANDOMIZED CONTROLLED TRIAL

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BACKGROUND: Navigating the health system and accessing primary care is often difficult for newly insured Medicaid beneficiaries. Having a primary care provider may be critical for receipt of preventive services, identification of chronic illness, and deterring unnecessary emergency

department use. Automated tailored text messages have successfully helped patients navigate the health system but have never been tested as a means of helping patients visit primary care for the first time.

METHODS: We studied newly enrolled beneficiaries of a large California Medicaid plan. All enrollees were randomly allocated to automated text messages and traditional new member communication (intervention) versus traditional new member communication alone (control). The automated text messages were delivered during a 16-week program by a company specializing in text messaging systems. The system delivered information via text and was able to respond to participant free-text responses using natural language processing. All outcome data were obtained from the health plan's administrative data or the text message company. Our primary outcome was completion of one or more primary care visits within 120-days.

Secondary outcomes included completion of the initial health assessment by primary care (a requirement of all California Medicaid plans); diagnosis of a chronic disease; and utilization within 120-days and within 1 year. We present an intention to treat analysis, and due to low uptake, we also obtained adjusted differences and p-values through an instrumental variable analysis (not shown, as it did not change any findings).

RESULTS: 8432 beneficiaries (4201 texting group; 4231 control group) were randomized; mean age was 37 years and 24% were White. In the texting group, 31% engaged with text messages. In the texting vs control group after 120 days, there were no differences in having a primary care visit (44.9% vs 45.2%; difference, -0.27%; p=0.802) or emergency department use (16.2% vs 16.0%; difference, 0.23%; p=0.771). After 1 year, there were no differences in diagnosis of a chronic disease (29.0% vs 27.8%; difference, 1.2%; p=0.213) or appropriate preventive care (for example, diabetes screening: 14.1% vs 13.4%; difference, 0.69%; p=0.357). Emergency department use (32.7% vs 30.2%; difference, 2.5%; p=0.014) was greater in the texting group.

CONCLUSIONS: Newly enrolled Medicaid beneficiaries who received automated text messages were not more likely to receive primary care, receive preventive services, or a diagnosis of chronic disease. However, the intervention arm was more likely to use the emergency department. To our knowledge, this is the first randomized controlled trial to analyze whether text messages help newly enrolled patients obtain primary care. Automated text messages as a means of helping newly enrolled Medicaid beneficiaries navigate the health care system and obtain primary care were ineffective.

USING THE SUMMARY OF DIABETES SELF CARE ACTIVITIES MEASURE TO EVALUATE SATURATED FAT INTAKE IN PATIENTS WITH TYPE 2 DIABETES

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BACKGROUND: The American Diabetes Association (ADA) provides nutritional recommendations as part of diabetes management and specifically recommends less than 10% calories from saturated fat, since saturated fat raises blood cholesterol levels and thus increases risk for cardiovascular disease. The 24-hour diet recall is the gold standard for determining dietary intake; however, it is cumbersome and time-consuming to administer and is not used in usual clinical practice. While shorter diet assessments are available, it is not clear if they accurately reflect dietary intake. We undertook this study to assess how the Summary of Diabetes Self Care Activities Measure (SDSCA) performs in capturing saturated fat intake in patients with type 2 diabetes.

METHODS: We are currently enrolling breast cancer survivors with type 2 diabetes for a prospective study and a research assistant administered both the 24-hour diet recall and SDSCA. Dietary recall was recorded into Nutritionist Pro, a computerized software program that estimates daily saturated fat intake and calculates percent calories from saturated fat. Participants whose saturated fat intake was >10% of total calories were considered nonadherent to diet recommendations. The SDSCA asks participants "On how many of the last seven days did you eat high fat foods such as rec meat or full-fat dairy products?" We computed the sensitivity and specificity of this question for identifying participants who were nonadherent based on 24- hour dietary recall.

RESULTS: To date, a total of 40 patients have completed the 24-hour diet recall and SDSCA. Mean percent calories consumed from saturated fat was 11.2% (ranging from 4% to 37%). Patients who reported a high fat diet for ≥4 days consumed on average 15.4% of their calories from saturated fat. Sensitivity and specificity of the SDSCA to identify these patients' adherence to the ADA guidelines were 25% and 85%, respectively. When lowering the cutoff to ≥3 days of reported high fat diet, sensitivity and specificity were 45% and 80%, respectively. Sensitivity and specificity were both 55% when further lowering the cutoff to ≥2 days of reported high fat diet.

CONCLUSIONS: In this population, the SDSCA does not accurately identify patients' adherence to ADA guidelines regarding recommended intake of saturated fat. There is a need to develop more sensitive, clinically-useful short survey questions to capture patients' dietary intake.

US WOMEN'S KNOWLEDGE THAT BREASTFEEDING REDUCES BREAST CANCER RISK

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BACKGROUND: As breast cancer affects one of every eight women in the United States, modifiable risk factors are of great importance to public health. In the 1960's, studies demonstrated that mothers who breastfed their infants were less likely to develop breast cancer. Since then, multiple studies have confirmed that breastfeeding reduces maternal risk of breast cancer mortality. However, relatively few US women breastfeed their infants as recommended by the US Centers for Disease Control and Prevention.

METHODS: To estimate awareness of the relationship between breastfeeding and breast cancer risk, we analyzed population-representative data collected by the National Survey for Family Growth 2015-2017 from a sample of 5554 women aged 15-49. We used multivariable logistic regression to examine the effects of age, parity, breastfeeding history, race, ethnicity, prior mammogram, family and personal history of breast cancer, tobacco and alcohol use on women's awareness of this modifiable risk factor.

RESULTS: Only 38.4% of US women were aware that breastfeeding reduces risk of breast cancer. Nulliparous women (29% vs 46%, p<.0001; adjusted OR=0.46, 95% CI=0.38-0.55) and women older than 45 (38% vs 43%, p=.0018, adjusted OR 0.54, 95% CI=0.37-0.79) were less likely to know that breastfeeding reduces risk of breast cancer. In addition, women who had personal history of breast cancer were less likely to say that breastfeeding prevents breast cancer (23% vs 39%, p=.04, adjusted OR=0.24, 95% CI=0.06-0.96). Awareness of this modifiable risk factor did not vary by race, ethnicity, family history of breast cancer, alcohol use,

or smoking status. Additional subset analysis of parous women demonstrated that parous women who had never breastfed were less likely than those who had breastfed to be aware that breastfeeding reduces risk of breast cancer (30% vs 57%, p<0.001, adjusted OR=0.35, 95% CI=0.26-0.46).

CONCLUSIONS: Almost two-thirds of US women remain unaware that breastfeeding reduces risk for breast cancer. When providing preconception counseling and lactation support, it is of vital importance that women are educated regarding the dose-dependent breast cancer risk reduction that breastfeeding provides.

UTILITY OF AN ELECTRONIC HEALTH RECORD REPORT TO IDENTIFY PATIENTS WITH DELAYS IN TESTING FOR POORLY CONTROLLED DIABETES

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BACKGROUND: Patients with poorly controlled diabetes require frequent hemoglobin A1c (HbA1c) monitoring to inform treatment decisions, with American Diabetes Association (ADA) guidelines recommending testing every 3-6 months. Electronic tools, including reports that extract data from the electronic health record (EHR), are often used to identify patients who are overdue for testing. However, incomplete electronic data may limit the accuracy of EHR reports to identify testing delays. We evaluated whether an EHR report can appropriately identify patients with poorly controlled diabetes who are overdue for HbA1c testing and assessed contributing factors to confirmed delays.

METHODS: We developed an EHR report to identify patients >18 years old with a HbA1c >9% between October 1, 2017 and March 30, 2018 ordered by a primary care provider (PCP) affiliated with a single academic medical center using a shared EHR. Then, we conducted a retrospective chart review of 200 randomly sampled patients who appeared to have a delay in testing based on the report, i.e. no repeat HbA1c within 6 months of the original test. The primary outcome was the proportion of patients who were misclassified as having a delay when a repeat HbA1c was documented in the EHR within the 6-month follow-up period. We further reviewed records with confirmed delays among the first 100 randomly sampled charts to describe potential contributors to delays.

RESULTS: We identified 1923 patients with 2955 HbA1c results >9% ordered by 173 PCPs during the study period. Approximately 35% of patients (n=685; 52% male, 45% African American, median age 55) had a suspected delay in testing. Among the charts reviewed to date (n=120), a repeat HbA1c within 6-months was identified in 12% (n=14, 95% CI: 7-20%), primarily in scanned outside records (13/14). Interestingly, an additional 9% of patients (n=11, 95% CI: 5-16%) were not expected to continue care after the initial HbA1c (e.g., moved out of state). Among the 90 patient records further reviewed for contributing factors to delays, only 44 had documented discussions about repeat testing for hyperglycemia, with the majority (n=35, 80%, 95% CI: 65-90%) focused on self-monitoring. Additionally, 63% of patients (n=57, 95% CI: 52-73%) missed or cancelled an appointment without rescheduling during the 6-month follow-up window.

CONCLUSIONS: A meaningful number of patients were misclassified by an EHR report as having delays in testing for poorly controlled diabetes when they either had timely testing or were not expected to continue care. Clinical decision support tools using this report, therefore, would not accurately identify the target population for intervention. Improving documentation of outside lab results would lead to more accurate EHR reports. Both patient and provider behaviors appear to influence timeliness of HbA1c testing. Additional studies on contributing factors to delays in care will help to identify possible interventions.

UTILIZATION OF TRANSITIONAL CARE MANAGEMENT FOLLOW-UP VISITS ON 30-DAY READMISSION

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BACKGROUND: The US spends one-sixth of its total expenditures on medical care, and multiple hospitalizations account for a quarter of all Medicare expenditures. Post-discharge follow-up visits have been associated with reduction in 30-day readmission and the Centers for Medicare and Medicaid Services incentivized post-discharge follow-ups by reimbursing providers who had follow-up contact with discharged patients within 48 hours and a follow-up visit within 2 weeks with higher relative value units through transitional care management (TCM). The TCM visits are designed to improve the transition to home or rehab facility after a hospitalization and have been associated with decreased readmission rates. Using data from a large health system, we examined the patient characteristics associated with TCM visit usage and their 30-day readmissions.

METHODS: This analysis includes ambulatory appointments within 14 days of discharge from one of 13 hospitals in an Integrated Delivery Network from January 12, 2018 to January 12, 2020. We included follow- up appointments in the Medicine, Cardiology, or Neurology division because other specialties rarely utilized TCM visits. The primary outcome was readmission within 30-days post-discharge. We used the chi-squared test for categorical variables and Kruskal-Wallis for continuous variables to examine characteristic associated with a TCM versus non-TCM visits. We ran both an unadjusted and adjusted logistic regression model to determine the odds ratios for association between TCM utilization and 30-day readmission.

RESULTS: Of the 48,483 visits, 6,404 (13.2%) were TCM visits and 42,079 (86.8%) were non TCM visits within 14 days of discharge. Patients with TCM visits had lower 30-day readmissions (10.7%, n=684) compared to those who had non-TCM follow-up (14.6%, n=6,149) (p-value<0.001). A higher percentage of non-Hispanic Whites used TCM visits compared to racial/ethnic minorities and patients admitted to the Medicine service had a higher usage compared to non-Medicine services (p-value<0.001). In adjusted multivariable logistic regression, TCM visits were associated with decreased odds of 30-day readmission compared to normal follow-up visit (OR=0.65 [0.60-0.71], p-value<0.001) adjusting for covariates.

CONCLUSIONS: Our study contributes to the evidence that TCM follow-up visits decrease the odds of 30- day readmission compared to non-TCM visits and further identifies patient characteristics associated with the TCM visit utilization. Expanding TCM visits to include more racial/ethnic minority populations may help to decrease risk of 30-day readmission among these groups. Health system level strategies to target non-TCM utilizers will be critical in reducing overall 30-day readmission.

VARIATION IN SUBSTANCE USE SCREENING OUTCOMES WITH COMMONLY USED SCREENING STRATEGIES IN PRIMARY CARE: FINDINGS FROM A MULTI-SITE IMPLEMENTATION STUDY

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BACKGROUND: Screening for alcohol use in adult primary care patients has been guideline-recommended for decades, but has proven challenging to implement. A new draft recommendation from the US Preventive Services Task Force on screening for drug use is expected to increase both the interest in screening and the challenges to integrating it into practice. Primary care clinics seeking to implement screening for substance use struggle to choose the approach that is best suited to their resources, workflows, and patient populations. To inform these decisions, we conducted a multi-site study in the NIDA Clinical Trials Network to inform the implementation and feasibility of electronic health record (EHR)-integrated screening.

METHODS: In two urban academic health systems, researchers worked with stakeholders from six clinics to define and then implement their optimal screening approach. The implementation process, guided by the Knowledge-to-Action framework, involved qualitative interviews, development and usability testing of EHR- integrated screening and decision support tools, then introduction of screening and monitoring of implementation outcomes. All clinics used single-item screening questions for alcohol/drugs followed by the AUDIT-C/DAST-10 for patients screening positive. Clinics chose between screening at routine vs. annual visits; and staff-administered vs. electronic self-administered screening. Results were recorded in the EHR, and data was extracted quarterly to describe implementation outcomes, including screening rate and detected prevalence of unhealthy (moderate-high risk) use among those screened. Findings are from the first year after implementation at each clinic.

RESULTS: Across all clinics, of the 93,114 patients with primary care visits, 72% were screened for alcohol and 71% were screened for drugs. Screening at routine encounters, in comparison to annual visits, achieved higher screening rates for alcohol (90-95% vs. 24-72%) and drugs (90-94% vs 25-70%). Clinics using staff- administered screening, in comparison to patient self-administered screening, had lower rates of detection of unhealthy alcohol use (1.6% vs. 14.7-36.6%). Detection of unhealthy drug use was low at all clinics, ranging from 0.5-1.0%.

CONCLUSIONS: EHR-integrated screening was feasible to implement in all six clinics, though one had consistently lower screening rates (24-25%) than the others. Screening at routine primary care visits with a self-administered approach offered the most opportunities for identifying unhealthy alcohol use. Detection of drug use was low regardless of screening approach. Although limited by differences among clinics and their patient populations, this study provides insight into outcomes that may be expected with commonly used screening strategies in primary care.

VARIATIONS IN THE QUALITY AND COST OF CARE AMONG PHYSICIANS

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BACKGROUND: While efforts to improve the value of care have a national scope, most health care decisions remain local. Patients and families choose among providers close to home. Employers and payers contract with local providers for their insurance plans. While literature on variations in quality and cost between regions has been vastly influential, between-region variations are not necessarily actionable for patients, payers, or providers. To date, data are lacking on physician-level variations in quality and cost within regions.

METHODS: Using 2012-2018 claims from multiple insurers, we examined physician-level variation in quality and cost across 10 key clinical domains within 5 major markets in the U.S. The domains comprised: CAD care by cardiologists, diabetes care by endocrinologists, GI care by gastroenterologists, COPD care by pulmonologists, prenatal care and delivery by obstetricians, joint replacement care by orthopedists, low back care by orthopedists or neurosurgeons, preventive care by PCPs, acute disease management by PCPs, and chronic disease management by PCPs. We measured physician performance within defined clinical scenarios posed by clinical guidelines. In statistical analyses, differences in performance between physicians within specialty were adjusted for patient health and socioeconomic status.

RESULTS: Within each region, physicians varied in quality and cost of care across the 10 clinical domains. For example, among patients with chronic CAD, the top performing quintile of cardiologists had, on average, 64.7% of their patients on a statin (high value). By comparison, 59.1% of such patients were on a statin among cardiologists in quintile 2, 54.0% in quintile 3, 49.1% in quintile 4, and 39.2% in quintile 5. Variation in stress testing among patients with stable coronary artery disease (lower value) varied from 8.3 per 100 patients per year in quintile 1 to 31.6 per 100 patients in quintiles 5. CAD-related spending ranged from $2,775 per patient per year in quintile 1 to $8,059 in quintile 5. Adjusted differences between quintile 1 and other quintiles were all significant at $p<0.001$. Other specialists and PCPs demonstrated analogous variations. The correlation between quality and cost at the physician level varied across clinical domains, though was generally weak across these clinical domains.

CONCLUSIONS: Consistent and substantial physician-level variations in quality and cost of care were observed across 10 clinical domains within 5 major U.S. markets. Our results suggest that practice pattern variations within specific, common clinical scenarios among similar specialists are large. These differences within regions are not likely due to between-region differences, but differential coding and selection within-region remain plausible. Understanding physician-level variations in quality and costs may help patients, employers, and payers become more effective consumers and purchasers of health care, as well as help physicians compete on quality at the local level.

VA'S PRIMARY CARE INTENSIVE MANAGEMENT (PIM) PATIENTS' TOP CITED BARRIERS AND FACILITATORS TO ENGAGEMENT

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BACKGROUND: Patient engagement among complex high-need patients in intensive primary care programs can be challenging, as many patients experience medical, social, and behavioral barriers to active participation in their care. The Veterans Health Administration (VA) has

implemented and tested intensive primary care programs called PACT Intensive Management (PIM). Our goal was to qualitatively investigate the barriers and facilitators these patients encountered in becoming engaged in their care and the PIM program.

METHODS: Semi-structured interviews were conducted with 51 patients who had at least four encounters with the PIM team regarding their experiences with and reflections on PIM. Interviews were recorded, professionally transcribed, coded in ATLAS.ti, and analyzed to identify patients' self-reported barriers and facilitators to engagement, both prior to and during their enrollment with PIM.

RESULTS: The top barriers to patient engagement most frequently cited by patients were 1) delay or lack of follow-up from providers; 2) changes or turnover in providers/staff; 3) transportation difficulties; and 4) uncontrolled pain. Patients discussed instances of waiting to hear back on the status of test results, but one patient recounted how with the PIM team it was the opposite: "[They] make sure that nothing gets dropped or overlooked.". Provider and staff changes/turnover caused difficulties for some patients because they did not know who to talk to ("I've got to totally get someone else new to help [me]". Getting to appointments presented difficulties for others, due reasons such as an inability to drive, having limited access to a car, or not being able to climb the VA bus steps. Some patients discussed how their uncontrolled pain impeded their ability to take their blood pressure or make it to exercise classes or "back camp". Other barriers included housing difficulties, financial insecurity (e.g., not being able to afford more healthy food), difficulty navigating around the VA Medical Center, and long wait times for appointments. The most frequently mentioned facilitator to engagement was provider availability/quick response time. For instance, one patient said, "I think I'm doing a little better actually because I can go see them at any time if I need to and I don't have to try and schedule an appointment." Other facilitators were providers demonstrating caring and concern, providers following up or holding patients accountable, home visits, personalized care delivery, providers facilitating access to specialty care, and providers having extra patience and not rushing.

CONCLUSIONS: Patients in PIM identified numerous personal, provider, and system-level factors that impeded or facilitated their engagement with their healthcare, with the PIM program, or with the VA. Increased awareness of barriers and facilitators to patient engagement among high-risk patients may inform intervention design for intensive primary care programs and other services for high-need patients.

VERY LOW-CALORIE MEALS FOR INTENSIVE WEIGHT LOSS PREFERRED BY MEDICALLY UNDERSERVED PATIENTS WITH OBESITY-ASSOCIATED CHRONIC CONDITIONS AND PERCEIVED BARRIERS TO EATING HEALTHY

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BACKGROUND: The prevalence of obesity and obesity-associated conditions, such as diabetes and hypertension, has increased globally in the past decade. Unfortunately, people who are of lower socioeconomic status and those who are uninsured have disproportionally high diabetic complications and morbidity. Lifestyle changes, like intensive changes to diet, can be employed to reverse the effects of obesity. Intensive low-calorie diets that induce weight loss have been able to achieve remission of obesity-related chronic conditions. In this study, we examined patients' interest in a plant-based healthy eating program and the barriers to healthy eating among the medically underserved in Memphis, Tennessee.

METHODS: Patients with obesity and at least one obesity-associated chronic condition were identified using a regional Diabetes, Prevention, and Wellness Coalition registry. Patients were recruited by phone. Four focus groups and concurrent surveys were conducted with patients of a Federally Qualified Health Center in Memphis, Tennessee. Interview questions addressed what patients perceived as barriers to eating healthy, and what specific low-calorie foods and meals they would be willing to prepare and eat for breakfast, lunch, and dinner. Focus Groups were audio-recorded and transcribed using dragon dictation software. Qualitative analysis was done using NVivo 12 software to identify common themes of conversation.

RESULTS: 17 patients participated, with an average age of 49.3. 76% of patients indicated they would be very interested in a plant-based eating program. Specific meals that patients chose frequently incorporated foods that were already familiar to them. Meals were rated from 1-5, with 1 being their favorite meal and 5 being their least favorite meal. The most popular meals for breakfast, lunch, and dinner respectively were spinach, tomato, and onion omelet (avg. rating 2.2), Chicken, black eyed peas, and greens (avg. rating 2.1), and Baked chicken with green beans and carrots (avg. rating 2.2). Many participants indicated they currently do not eat fruits or vegetables frequently but would be interested in switching to a plant-based diet if it would help cure a potential obesity-associated chronic condition. 54% of patients said the cost of fruits and vegetables was a major barrier to eating healthy. Focus groups confirmed this sentiment, as well as patients indicating they had a lack of knowledge of healthy foods which lessens the variety of healthy foods that they eat.

CONCLUSIONS: This study suggests patients with obesity in medically underserved areas are interested in a plant based healthy eating program. The incorporation of foods that are already familiar to the patient is more likely to be implemented into the very-low calorie diets of the medically underserved. Cost of fruits and vegetables is the barrier most concerning to patients, which could be ameliorated through clinic and community-based healthy eating and weight loss programs.

VETERANS' CARE NEEDS AFTER EMERGENCY DEPARTMENT VISITS FOR AMBULATORY CARE SENSITIVE CONDITIONS

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BACKGROUND: Poor coordination across care transitions for patients with chronic ambulatory care sensitive conditions (ACSCs) leads to adverse clinical outcomes, inefficient care, and less favorable patient experiences. Prior work has shown that Veterans are at high risk for post-emergency department (ED) adverse outcomes; more knowledge is needed regarding Veterans' care needs after "treat-and-release" ED visits for ACSCs in order to plan interventions that mitigate those adverse outcomes. To better understand follow-up care needs among ACSC treat-and-release ED visits at VA Greater Los Angeles (GLA), we assessed the prevalence and types of ED provider recommendations for specific follow-up care.

METHODS: We identified treat-and-release GLA ED visits, from 10/1/2017 to 6/30/2018, with an ACSC diagnosis of asthma, chronic obstructive pulmonary disease (COPD), heart failure (HF), diabetes, or hypertension. For 250 randomly-selected visits, a trained nurse abstractor, using

a structured abstraction tool, reviewed Veterans' ED medical records to assess for ED provider recommendations for specific follow-up care needs. Further, because miscommunications around medications changes are a common etiology for adverse events across transitions in care, we also assessed for ED provider changes to Veterans' home medications.

RESULTS: Among the 250 encounters, 36% were for hypertension, 30% COPD, 18% diabetes, 16% asthma, and 7% HF; 6% of the visits involved two ACSC conditions. In 44% of visits, a new medication was prescribed. Medication dose or frequency was changed in 10% of visits and, in 3%, a medication was stopped. The ED provider made at least one specific follow-up care recommendation in 68% of visits, including symptom checks (41% of all visits), medication adjustments (22%), blood pressure measurements (14%), medical or surgical specialty care appointments (8%), laboratory test or result follow-up (5%), specialized testing (e.g., cardiac or pulmonary tests, 2%), radiology test or result follow-up (3%), social work services (e.g., housing, 1%), mental health care (1%), nutrition counseling (1%) and weight measurement (<1%). Forty percent of visits specified one follow-up care need, 23% specified two needs, and 4% specified three or more needs. By condition, care needs were specified in 71% of HF, 70% of COPD, 68% of hypertension, 66% of diabetes, and 60% of asthma visits.

CONCLUSIONS: Most Veterans with treat-and-release ED visits for ACSCs have primary care, specialty care, and/or social work follow-up care needs. Some have multiple needs. Veterans with complex or multiple care needs, and/or diminished capacity for obtaining needed care, may need care coordination assistance following ED visits. Future work should identify which Veterans need such assistance, and investigate mechanisms for effectively providing it, in order to optimize Veteran post-ED outcomes and experiences.

VIDEO-BASED EDUCATION: THE GLOBAL REACH OF NEJM VIDEOS IN CLINICAL MEDICINE

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BACKGROUND: The use of video-based education in medical education is rapidly increasing, although it is unclear which learner groups are watching these videos and how they are being used. The New England Journal of Medicine's (NEJM) Videos in Clinical Medicine is one example of a series of videos that are available for learners to access. The objective of this pilot study was to understand the utilization of these videos.

METHODS: We analyzed data from 50,469 unique learners (including attending physicians, residents, students, and other learners) who viewed a NEJM Video in Clinical Medicine between July 2015 and November 2019. Learners were grouped by learner type and country where the video was viewed, videos were grouped into broad specialty categories, and two-sample Wilcoxon rank-sum tests were performed.

RESULTS: Of the four learner types, most of the 50,469 learners were attending physicians (n=30,397, 60.23%). In total, these learners represented over 190 countries/territories, with the highest percentage from the U.S. (n=19,378, 38.40%). The breakdown of these countries/territories by region was: North America (n=20,421, 40.46%), Latin America and Caribbean (n=8,990, 17.81%), Western Europe (n=8,328, 16.50%), East Asia and Pacific (n=5,483, 10.86%), South Asia (n=2,630, 5.21%), Middle East and North Africa (n=2,426, 4.81%), Eastern Europe and Central Asia (n=1,076, 2.13%), Eastern and Southern Africa (n=800, 1.59%), and West and Central Africa (n=314, 0.62%), with 1 learner's country/territory not listed.

The 50,469 learners combined to view 80 videos 204,372 times. The most-viewed video was the Clinical Examination of the Shoulder (views=11,389) and the least-viewed video was the Tympanocentesis in Children with Acute Otitis Media (views=338). Categorizing the 80 videos included 27 videos in the anesthesia/surgical specialty category (views=78,654); 39 videos in the bedside/ambulatory procedures category (views=94,209); and 14 videos in the medical specialty category (views=31,509). There was a statistically significant difference between the viewing of anesthesia/surgical videos ($p<0.0001$), bedside/ambulatory procedure videos ($p<0.0001$), and medical specialty videos ($p<0.0001$), where non-U.S. learners had a larger sum of ranks for the number of video views than U.S. leaners in each video category.

Additionally, there was a statistically significant difference between the viewing of anesthesia/surgical videos ($p<0.0001$), bedside/ambulatory procedure videos ($p<0.0001$), and medical specialty videos ($p=0.0115$), where attending physician learners had a larger sum of ranks for the number of video views than non- attending physician learners in each video category.

CONCLUSIONS: This preliminary study indicates that the viewing of clinically relevant videos by video category does differ by learner location and learner group. Future work could qualitatively explore how to better meet each learner group's goals and needs in order to offer personalized medical education curricula.

WEIGHING THE OPTIONS: DESPITE THE TIME BURDEN, GENERAL INTERNISTS OPT FOR LIFESTYLE COUNSELING WITHOUT MEDICATIONS FOR OBESITY

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BACKGROUND: Obesity medicine practice includes lifestyle counseling and prescribing weight loss medications, as recommended by multiple society guidelines. Weight loss medications are recommended in addition to lifestyle changes for appropriate patients with a body mass index (BMI) > 30, or > 27 with obesity-related complications. Many barriers to obesity medicine practice have been identified by general internists, including the perceived time burden, and unease with weight loss medications. To inform the development of an obesity medicine curriculum for general internists within our health system, we conducted a survey of affiliated internists to examine current obesity medicine practice patterns, barriers to treatment, and desired resources.

METHODS: Between July and October 2018, a twelve-question survey was emailed to general internists within affiliated internal medicine practices. Survey questions asked about knowledge and comfort in obesity medicine, practice patterns, resources used, barriers faced, and resources desired to support practice.

RESULTS: 45 physicians completed the survey. Practice settings were 29% clinical researcher, 22% academic affiliate, and 42% private practice. 22% identified as very knowledgeable, and 76% as somewhat knowledgeable about obesity medicine. 16% identified as very comfortable, 73% as somewhat comfortable, and 11% as somewhat uncomfortable practicing obesity medicine. Lack of time was the most frequently cited barrier to practice (60%). 42% of respondents used weight loss medications, while 98% engaged in lifestyle counseling. Bariatric surgery (84%) and nutrition (88%) were the most common referrals. Those not prescribing medications cited adverse effects (81%) and clinician preference for alternatives (65%) as the most common reasons. Among those prescribing medications, off-label metformin was most commonly prescribed (63%), followed by phentermine/topiramate (58%) or GLP-1 agonists (58%).

CONCLUSIONS: Knowledge and comfort with obesity medicine practice are suboptimal among general internists within our health system. While counseling was the most common practice method, physicians cited time as a barrier, which may limit efficacy. Bariatric surgery referrals were very common; however, most physicians desired greater obesity medicine expertise availability. Only 42% of physicians prescribed weight loss medications, most commonly off-label metformin, likely due to its long track record of safety in spite of relatively modest weight loss efficacy. Our findings suggest internists are out of step with obesity medicine guidelines; and low medication usage is apparently influenced by concerns over medication safety and side effects. General internists within our health system would benefit from additional training in weight loss medication prescribing, and greater obesity medicine specialist availability.

WHAT DO HOMELESS EXPERIENCED VETERANS WANT US TO KNOW WHEN WE SURVEY THEM ABOUT THEIR CARE? ANALYSIS OF COMMENTS FROM THE PCQ-HOST STUDY.

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BACKGROUND: Patients experiencing homelessness face major challenges and report poor experiences with health care systems. Developing better services and conducting robust research requires learning the right questions to ask these patients. The Primary Care Quality and Homeless Service Tailoring (PCQ-HoST) Study sought to compare experiences of homeless-experienced veterans (HEVs) receiving primary care (PC) in the VA from either mainstream or Homeless Patient Aligned Care Teams (H-PACT) through a mail-based survey. We explore unprompted comments written in the margins to understand topics where surveys may fall short.

METHODS: The sample included HEVs who used VA PC and completed a survey by mail. Survey items were close-ended, derived from validated instruments and explored domains of PC satisfaction and health. We copied HEVs' unprompted written comments verbatim into NVIVO. We enumerated comment frequency by domain and used a content analysis approach to group comments into themes.

RESULTS: A total 657/5337 (12%) respondents offered 1935 comments. The most frequently commented domains are summarized in Table 1. In the *Primary Care* domain when asked to describe their experience with PC providers, HEVs noted the specific provider they were referencing. When asked about current use of *Drugs and Alcohol*, HEVs declared being in recovery or not using substances at all and clarified specific substances they had used. When asked about their *Social Environment*, HEVs added unexpected social supports, including dogs, God and their health care providers. On standard employment and education *Sociodemographics* items, HEVs noted reasons for not working (like disability) and specific degrees earned. In the *Quality of Life and Pain* domain, HEVs detailed pain sources and that pain exceeded the provided Likert scale (e.g., "plus 4").

CONCLUSIONS: One in eight HEVs added unprompted written comments to a validated mailed patient experience survey, suggesting surveys missed important patient concerns. Among them, HEVs wanted to specify which clinician they referenced when delivering feedback on their PC experience. Standard questions about drug and alcohol use failed to ask about recovery, and these respondents wanted us to know. The present study suggests HEVs participate in health systems research, and want to assure researchers understand the reasons behind their responses. In short, to increase the patient centeredness of surveys for people experiencing homelessness, the "*not applicable"* response option is not enough. Open-ended text could help improve future surveys.

DOMAIN (# OF COMMENTS)	EXAMPLE
Primary care (422)	*Love Dr. [name] & Staff!!!*
Drugs and alcohol (254)	*"Been sober for 9 months in A.A"*
Social environment (204)	*"God" (re: social support)*
	"Can always improve, but tough to set, get, and keep appointments" (re: social activities)
Homelessness (155)	*"Close to 8 years"*
Demographics (130)	*"Plumber trade school"*
Quality of Life & Pain (93)	*"Due to surgery on left arm"*

WHAT HAPPENS WHEN A PATIENT VOLUNTEERS A FINANCIAL INSECURITY ISSUE? PRIMARY CARE TEAM RESPONSES TO SOCIAL DETERMINANTS OF HEALTH RELATED TO FINANCIAL CONCERNS

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BACKGROUND: While much is known about the importance of addressing Social Determinants of Health, less is known about how members of the care team respond to patient-volunteered SDoH - especially when the determinant is related to financial insecurity. With increasing calls for universal screening for SDoH - what do teams do when a patient shares a financial concern? We report on the use of Unannounced Standardized Patients (USP) to assess how primary care teams respond to volunteered information about financial insecurity and whether an audit/feedback intervention (with targeted education included) improved that response.

METHODS: Highly trained USPs (secret shoppers) portrayed six common scenarios (fatigue, asthma, Hepatitis B concern, shoulder pain, back pain, well visit). USPs volunteered a financial concern (fear of losing job, challenges with financially supporting parent, trouble meeting rent) to the medical assistant (MA) and then again to their provider and assessed the response of both the MA (did they acknowledge and/ or forward the information to the provider?) and the provider (did they acknowledge/ explore and/or provide resources/referrals?). A total of 383 USP visits were delivered to 5 care teams in 2 safety-net clinics. Providers were medicine residents. 123 visits were fielded during the baseline period (Feb 2017-Jan 2018); 185 visits during the intervention period (Jan 2018–Mar 2019) throughout which quarterly audit/feedback reports of the teams' response to the USPs' SDoH and targeted education on SDoH were distributed. 75 follow-up phase visits were fielded (Apr-Dec 2019). Analyses compared rates of MA and provider response to the volunteered financial insecurity issue across the 3 periods (chi-square, z-scores).

RESULTS: The baseline rate of responding in some way to the volunteered information was high for both the MA (86% acknowledged) and the providers (100% responded). These overall rates of response did

not change substantially or significantly across the three time periods (MA: Intervention period = 87%, Follow- Up period=90%; Provider: Intervention period=98%; Follow-Up period=98%). Rates of acting upon the volunteered information also remained quite consistent across the time periods: from 29 to 35% of MA forwarded the information to the provider across the 3 time periods and from 22 to 28% of providers in each intervention period gave the patient resources or a referral (mostly resources).

CONCLUSIONS: Our findings highlight the importance of patients directly telling team members about a financial concern. Future research should explore whether screening tools are effective in instigating a response. Audit/feedback reports with targeted educational components did not appear to influence the teams' response unlike what we found for housing and social concerns that had to be elicited. Whether this is due to differences in volunteered vs. elicited SDoH or to the nature of the SDoH (financial vs housing/social) warrants further investigation.

WHAT IS THE RELATIONSHIP BETWEEN HOSPITAL STAFF ENGAGEMENT AND MORTALITY?

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BACKGROUND: Health care workforce research has focused on burnout and its consequences. We extend this work, hypothesizing that workforce well-being, specifically engagement, may promote organizational performance.

METHODS: We measured workforce engagement with three questions from the National Health Services's (NHS) Staff Surveys that mapped to the three factors of the validated UWES-9 survey: vigor, absorption, and dedication. We studied organizational performance using the standardized summary Hospital-level Mortality Indicator (SHMI), available for all English hospital Trusts from 2012 to 2018. In analysis 1, SHMI was the dependent variable. Engagement was the key independent variable, studied in the years preceding, concurrent, and following the SHMI year. In analysis 2, to account for potential reciprocal associations between SHMI with engagement, we used widely accepted cross-lagged regression. Lagged regression enabled accounting for the effects of unmeasured Trust-level variables on SHMI by adjusting for prior values of SHMI, the lag duration determined from analysis 1. Lastly, heterogeneity of engagement across Trusts was assessed using 2017 data.

RESULTS: The number of participating Trusts and average number of staff responses per Trust each year ranged between 141 and 398 in 2012, to 130 and 2423 in 2018. Mean staff response rate across Trusts was 45% (range: 43.5% to 46.6%). Pooling data for all years, Trust SHMI ranged from 0.9996 to 1.0044, and engagement, 3.83 to 3.94, with no significant changes in either measure across the years. Detailed analysis of 2017 data showed high heterogeneity across Trusts ($I^2 > 85\%$) for all three factors of engagement.

In analysis 1, using pooled data for 2013 through 2017, current SHMI was significantly and negatively predicted by current engagement (ß =-0.05; p = 0.041), and further, predicted engagement in the ensuing year. However prior year engagement did not predict SHMI. Based on the observed reciprocal associations, analysis 2 with lagged regression showed that 1) engagement predicted concurrent year SHMI after adjusting for prior year SHMI (ß =-0.04; p = 0.040) and 2) SHMI predicted concurrent year engagement after adjusting for prior year engagement (ß =-0.07; p = 0.001).

CONCLUSIONS: Our finding, using current NHS human resource data, that higher levels of current workforce engagement predicts lower current mortality rates confirms previously documented findings in other industries of the immediacy of the association between engagement and performance. However, our finding of a reciprocal association is new, suggesting that good performance increases engagement and vice versa.

Despite significant associations, the small effect sizes suggest the need to capture other relevant workforce states, such as 'thriving' which adds continuous learning and improvement to engagement, that are not currently monitored by NHS. The heterogeneity in rates of workforce engagement suggests opportunities to foster mutual learning across Trusts.

WHEN TO ADAPT WITH PROTON PUMP INHIBITORS (PPIS): IMPLEMENTATION OF PPIS IN HIGH RISK PATIENTS

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BACKGROUND: The use of Dual Anti-Platelet Therapy (DAPT) following acute coronary syndrome (ACS) and percutaneous coronary intervention (PCI) increases the risk of gastrointestinal bleeding (GIB) twofold in high risk patients. The use of proton pump inhibitors (PPIs) have been shown to decrease this unwanted complication in the ACCF/ACG/AHA 2010 Expert Consensus Document on the Concomitant Use of Proton Pump Inhibitors and Thienopyridines. Nonetheless, inadequate and at times inappropriate use of PPIs has been reported with one study reporting a rate of up to 56.4%, increasing the risk for adverse outcomes including GIB. We hypothesized that adherence to the 2010 Consensus in PPI use in this high-risk population is an issue ultimately increasing the risk for unwanted sequelae.

METHODS: Adult patients discharged on DAPT (aspirin plus clopidogrel, prasugrel or ticagrelor) from the regional medical floors, medical and cardiac intensive care and telemetry units between 1/1/2018-5/31/2018 at our community hospital were included in the analysis. Those under the surgery service or with a diagnosis of gastroesophageal reflux disease (GERD), H. pylori infection, gastric or duodenal ulcer, and gastritis prior to admission were excluded. Medical records were reviewed for reason for admission and for instruction to continue, initiate or discontinue a PPI upon discharge. Appropriateness of use of a PPI was determined by the presence of additional risk factors for GIB such as concurrent NSAID, anti-coagulation or chronic steroid use, history of GIB and/or advanced age (defined as age ≥75).

RESULTS: Two-hundred forty-eight patients met our inclusion criteria for this study. Of these patients, fifty- two (21%) were discharged on a PPI, the majority of which (55.8%, 29/52) were inappropriately prescribed. On the other hand, one-hundred ninety-six (79%) patients were not discharged on a PPI with the majority (88.8%) of these cases appropriately not prescribed these agents. Interestingly, only 24% (23/95) of patients of advanced age were placed on a PPI. More importantly, 14.3% (3/21) of patients who were inappropriately not discharged on a PPI were later readmitted for GIB.

CONCLUSIONS: Our hospital has demonstrated some adherence to the 2010 Consensus guidelines; however significant room for improvement remains as far as implementation of PPIs in high risk patients. An alarming 76% of the total patients analyzed were also not placed on a PPI in a highly susceptible group, specifically those of advanced age, demonstrating a greater need to focus on these vulnerable individuals. A hesitancy to prescribe may lie therein with the adverse effects associated with PPI use including but not limited to bone loss, pneumonia and C. difficile. We plan to provide proper education to help us ascertain our goals and ultimately improve these numbers and decrease the incidence of this preventable unwanted sequelae associated with lack of use of gastroprotective agents.

WHEN URGENCY IS NOT URGENT: THE USE OF INTRAVENOUS ANTIHYPERTENSIVE THERAPY FOR ASYMPTOMATIC SEVERE HYPERTENSION ON THE MEDICINE WARDS

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BACKGROUND: The acute treatment of asymptomatic severe hypertension (i.e. hypertensive urgency) has been increasingly identified as both unnecessary and potentially harmful to patients, particularly those that are hospitalized. Intravenous (IV) antihypertensive agents have been shown to have unpredictable effects on blood pressure, including rapid reductions in pressures that can unintentionally precipitate end-organ damage. Additionally, there is the potential for high cost burden and increased utilization of cardiac monitoring when these parenteral agents are administered.

METHODS: In this retrospective chart review, we analyzed all instances of the administration of either IV hydralazine or labetalol over a consecutive 12-month period on the medical wards at a single institution. Initial blood pressures, indications for administration, times of administration, adverse events, the need for transfer or admission to a cardiac monitoring unit, and changes to homegoing blood pressure regimens were analyzed.

RESULTS: 59 unique patients received 111 total doses of either IV hydralazine (75) or IV labetalol (36) on the wards from July 1, 2017 through June 30, 2018. 76 (69.4%) doses were given in the setting of asymptomatic hypertension including 11 (9.9%) given to patients who did not meet criteria for hypertensive urgency with systolic blood pressure (SBP) < 180 and diastolic blood pressure (DBP) < 120.

Within the severe asymptomatic hypertension group, 56 (73.6%) doses were given overnight (7PM - 7AM). There were 27 (40.5%) adverse events of a decrease of either SBP or DBP by > 25% over the next 6 hours. There were 19 transfers or direct admissions (50.0% of the group) to the cardiac monitoring unit. A one day stay in the cardiac monitoring unit was 43% more expensive than a bed on the general medicine floor for the average patient during this year. Changes to homegoing blood pressures medications were made in 31 (81.6%) of patients with severe asymptomatic hypertension.

CONCLUSIONS: The use of IV antihypertensive therapy for severe hypertension in hospitalized patients was often not indicated and was associated with high incidence of adverse events. It also increased utilization of intensive cardiac monitoring and led to increased costs of care. The majority of doses were given overnight.

WHERE ARE THE PATIENTS? HOW FIRST YEAR MEDICAL STUDENTS PERCEIVE PROFESSIONALISM.

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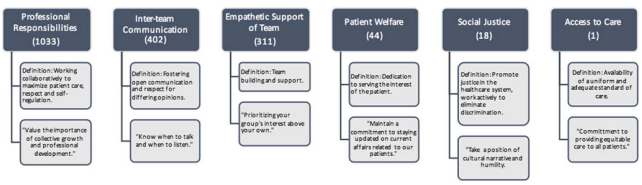
BACKGROUND: Medical professionalism is not often explicitly taught to medical students, especially as it relates to roles and responsibilities in today's collaborative medical environment. Our objective was to explore first year medical students' perspectives of medical professionalism following a workshop on professional identity.

METHODS: All first year medical students enrolled at a university-based medical school from 2017-2019 were assigned to small groups containing 5-6 peers and one faculty facilitator. Students participated in a two-part workshop series. The first session focused on defining medical professionalism, followed by a second session where students created their own professionalism charter summarizing their values related to professional relationships, code of conduct, role expectations and ground rules. We analyzed each charter using content analysis, specifically a theory-driven and data-driven approach. We first attributed value statements to principles contained within the American Board of Internal Medicine Physician's Charter which outlines fundamental principles and professional responsibilities of medical professionalism and then also created new coding topics that arose.

RESULTS: In the three-year study period, a total of 465 students and 77 small groups created 77 professionalism charters. We identified 2083 distinct principles within all charters. "Professional Responsibility" (n=1033) was the most commonly reported value statement and highlighted collaboration and mutual respect within the team. "Inter-Team Communication" (n=402) included values such as fostering open dialogue and respecting differences in opinion, while "Empathetic Support of Team" (n=311) referenced team building values. Summaries of select statements and representative quotes are shown in Figure 1. Statements related to the provider-patient interaction such as "Patient Welfare", "Social Justice", and "Access to Care" were not as commonly ranked by students.

CONCLUSIONS: Students did not focus on patient-related values and responsibilities when constructing charters about medical professionalism. This could suggest that early medical students may not be as primed to view their role as a patient care provider within the clinical system, or that they do not consider the provider-patient interaction as an aspect of medical professionalism at this early stage of their career. It will be vital that content around patient welfare, social justice and access to care be incorporated into future curricula.



WHICH STRATEGIES IMPROVE PHYSICIANS' EXPERIENCE WITH HEALTH INFORMATION TECHNOLOGY?

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BACKGROUND: While electronic health records (EHRs) have improved billing efficiency and note legibility, they may also disrupt clinical workflows, affect patient interactions, and contribute to physician burnout. This study aimed to identify effective strategies, as reported by physicians, to mitigate these EHR shortcomings.

METHODS: The Rhode Island Department of Health administers a health information technology (HIT) survey biennially to all physicians in active practice statewide. The 2019 survey asked physicians about strategies implemented personally or by their practice to improve their experience working with HIT. Physicians who selected at least one strategy were then asked if each implemented strategy was "actually useful." Survey questions were derived from prior research and developed in collaboration with a statewide healthcare stakeholder group. We piloted new questions for clarity and relevance and refined them based on physician feedback.

RESULTS: The 2019 survey was administered to 4,266 physicians, with a response rate of 43%. Office- based physicians most commonly reported

that their practices had implemented voice-recognition dictation software (48%), printers in the clinical area (43%), and staff support with EHR tasks (36%) to improve their HIT experience. The changes identified as "actually useful" by the highest proportion of office-based respondents were staff support with EHR tasks, scheduled time blocks to complete desk work, and staff support with documentation. Among hospital-based physicians, the most commonly implemented strategy was also voice-recognition dictation software (68%), followed by badge/fingerprint login (51%). The change identified as "actually useful" by the highest proportion of hospital-based respondents was touchscreen functionality.

Office- and hospital-based physicians identified self-care (e.g., exercise, meditation) as the most commonly implemented personal change (48% and 47%, respectively). 26% of office-based and 15% of hospital-based physicians reported reducing clinical hours or working part-time to improve their experience working with HIT. The changes identified as "actually useful" by the highest proportion of office-based physicians were self-care, customizing the EHR, and writing more concise notes; the highest proportion of hospital-based physicians identified talking with colleagues to learn tips and tricks, customizing the EHR, and writing more concise notes as "actually useful" strategies.

CONCLUSIONS: Most physicians reported that both they personally and their practices had implemented strategies to improve their experience working with HIT. Physicians found some strategies more helpful than others, many which differed between office- and hospital-based physicians. From a workforce and access perspective, prioritizing strategies that physicians find "actually useful" is critical, as many physicians in both settings reported reducing clinical hours to improve their experience.

WHO PAYS FOR RISING INSULIN PRICES? EVIDENCE FROM A NATIONAL COMMERCIALLY INSURED POPULATION

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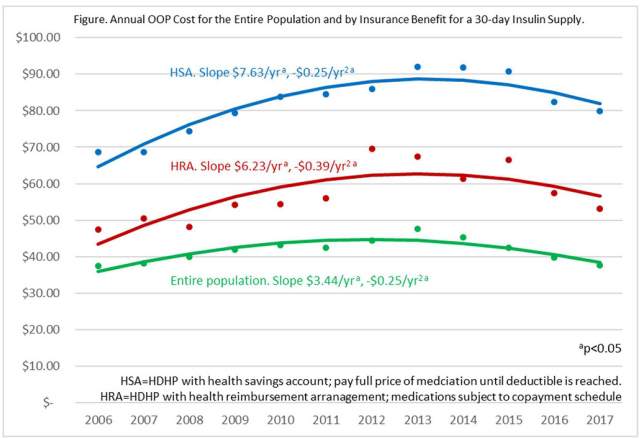
BACKGROUND: High out-of-pocket (OOP) costs contribute to delays in or termination of care. Patients with health savings account high-deductible health plans (HSA-HDHP) are uniquely exposed to high OOP medication costs until reaching their deductible. Extensive media attention suggests that insulin OOP costs are rising dramatically. No studies have assessed trends in insulin OOP payments among the commercially insured population to evaluate which groups are paying for these higher insulin costs. We hypothesized that OOP insulin costs among commercially insured members would increase during 2006-2017, with HSA- HDHP members having the highest cost-sharing and largest increases compared to non-HSA plan members. We aimed to identify trends in OOP prices and costs for insulin stratified by insurance benefit design.

METHODS: We conducted time-series claims-based analysis of a large commercially insured population of 612,071 diabetes patients during 2006-2017. We calculated inflation-adjusted annual median price and mean OOP cost per 30-day insulin fill stratified by insurance benefit and mean proportion of insulin prices paid by patients. We modeled these trends using first-order autoregressive segmented regression.

RESULTS: The median price for a 30-day insulin fill rose from $143 to $394 from 2006 to 2017. Patients' mean OOP cost per 30-day fill was $36 in 2006, peaked at $45 in 2012, then declined to $38 by 2017. Patients paid a decreasing proportion of the insulin price, from approximately 24% to 10% between 2006 and 2017. Among HSA-HDHP, OOP costs per 30-day insulin fill increased from $65 in 2006 to a peak of $89 in 2013 and then decreased to $82 by 2017.

CONCLUSIONS: Despite impressions created by news media, rising insulin prices have not translated into increased OOP costs among most commercially insured patients from 2006-2017. HSA-HDHP members had higher OOP costs, but these began declining in 2014. Insurers are absorbing the rising costs of insulin and maybe managing these rising prices by increasing premiums for all, implying a need for robust policies to address rising drug prices. While federal and state legislatures are beginning to address rising insulin costs through transparency and price capping policies additional research is needed to understand these policies' impacts.



WHY ARE THERE EMOJIS?: CLINICIAN EXPERIENCES WITH PAGER-REPLACEMENT MESSAGING APP

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BACKGROUND: Hospitals are increasingly replacing clinicians' pagers with secure, smartphone-based alternatives that accommodate more detailed bidirectional text and an expanded array of functions. In the process, clinical team communication is becoming increasingly digital and text-based. These changes have potentially large consequences for team workflow and relationships, as well as patient safety. This project seeks to assess clinician experiences with the implementation of a new pager-replacement app.

METHODS: We conducted two focus groups and seven semi-structured interviews with hospitalists and nurses at a Midwestern academic medical center. Moderators and interviewers asked participants to describe their workflow and decision-making for using the traditional pager and the new communication app, the perceived effects of the communication app, and user experiences with team communication.

RESULTS: Fifteen physicians, 6 advanced practice providers, and 7 registered nurses participated in the study. The new pager app changed the participants' communication workflow. By making two-way communication possible, the new pager app now also requires additional decision making that traditional pagers did not, especially for the conveying of non-urgent information. Participants liked the app's ease of contacting other team members, but disliked their own increased accessibility by others. Physicians, in particular, felt burdened by the volume of messages they received from nurses. The clinicians lacked consensus and shared

understandings regarding the app's purpose, and when and how to use it. For example, many physicians expressed finding the photo-taking function of the app to be a useful and convenient for consultations, while some nurses expressed a reluctance to use the feature because they did not know it to be HIPAA-compliant and had concerns about protecting patients' privacy. The lack of shared understanding and expectations led to frustrations, missed opportunities, and differing patterns of use.

CONCLUSIONS: The introduction of a pager-replacing smartphone app not only changed how clinicians communicate, but also how they make decisions about when and how to communicate with team members. However, in the absence of shared expectations and understandings for how pagers are to be replaced, professional tensions and workflow confusion can arise, with possible negative consequences for patient care. As hospitals adapt and change how clinical teams communicate, thoughtful guidance and planning are required to ensure that novel communication technologies facilitate effective and safe delivery of care.

WHY DOES PREECLAMPSIA RECUR? EXPLORING THE ROLE OF MODIFIABLE CARDIOVASCULAR RISK FACTORS

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BACKGROUND: Women with recurrent preeclampsia represent a group at uniquely high risk for maternal and perinatal morbidity, as well as, future adverse cardiovascular, renal, and metabolic outcomes throughout their life course. While it is well recognized that a history of preeclampsia in a prior pregnancy is the strongest risk factor for recurrent preeclampsia, some women with a history of preeclampsia do not go on to develop recurrent preeclampsia in subsequent pregnancies. Identifying risk factor differences between women with and without recurrent preeclampsia may lead to the delivery of targeted primary care-based interventions in the interpregnancy period that can reduce risks in future pregnancies as well as long-term health. The aim of this study is to examine the association of modifiable risk factors (obesity, hypertension) with recurrent preeclampsia. We hypothesized that women with recurrent preeclampsia develop these risk factors between pregnancy at higher rates than women without recurrent preeclampsia; and that these risk factors increase the risk of recurrent preeclampsia.

METHODS: This is a secondary data analysis of maternal participants from the Boston Birth Cohort, a birth cohort of over 8500 predominantly low-income, pregnant women and infants from racial/ethnic minority groups, with oversampling of preterm birth/low birth weight infants. For this analysis we included 619 women who had an index and subsequent pregnancy captured. The main outcome was recurrent preeclampsia (diagnosed by clinical criteria and defined as having preeclampsia in both index and subsequent pregnancies). The exposures of interest were chronic hypertension or obesity diagnosed before subsequent pregnancy. We used a $\chi 2$ test to evaluate the baseline characters of study participants with respect to their preeclampsia status at subsequent pregnancy. We then used logistic regression to assess the crude and adjusted association between 1) chronic hypertension 2) obesity and recurrent preeclampsia.

RESULTS: Of 619 women in the sample, the majority (82%) were normotensive in both their index and subsequent pregnancies. The incidence of preeclampsia was 13% (n=78) in the index pregnancy, and among these women, 42% (n=33) experienced recurrent preeclampsia. Compared to women without recurrent preeclampsia, those with recurrent preeclampsia were more likely to have a history of low birth weight or preterm birth infant in the index pregnancy; and any (new or persistent) diagnosis of chronic hypertension and obesity prior to subsequent pregnancy. The odds of recurrent preeclampsia associated with a new chronic hypertension (vs. no hypertension), was 7.6 (95% CI 2.2-26. The odds of recurrent preeclampsia associated with new diagnosis of obesity (vs. no obesity) was 3.5 (95%CI .93,12.0)

CONCLUSIONS: Modifiable risk factors of obesity and hypertension are strongly associated with recurrent preeclampsia. Primary care providers need to assess preeclampsia history as part of risk stratification.

WOMEN'S EXPERIENCES, PREFERENCES AND REACTIONS TO RECEIVING INFORMATION ABOUT PERSONAL BREAST DENSITY BY STATES' DENSE BREAST NOTIFICATION LEGISLATION STATUS AND WOMEN'S RACE/ETHNICITY

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BACKGROUND: State dense breast notification (DBN) legislation requires informing women about breast density (BD) with mammogram results. Yet little is known about how women receive or react to information about their personal BD, whether race/ethnicity has any differential impact, or how experiences align with women's preferences for receiving BD information.

METHODS: We assessed how women received, and prefer to receive, personal BD information, and reactions to such information, in a national, weekly, bilingual random digit dial telephone survey targeting a representative sample of the U.S. population. Women (N=1088) in all states aged 40-76 reporting receipt of a mammogram in <2 years, with no history of breast cancer, and who had heard the term 'breast density', were eligible. Bivariate analyses examined how outcomes varied by state DBN status and women's race/ethnicity.

RESULTS: Overall, 56% of women (N=601) reported receiving information about personal BD; women in DBN states (59%) and White women (58%) were significantly more likely to report receiving such information than women in non-DBN states (48%) and Black women (50%), respectively. Among those reporting receipt of personal BD information, most (93%) had received it by talking with their provider; 49% had also learned from a letter/notice from the provider and 20% had also learned from a website/portal. Compared to women in non-DBN states, women in DBN states were significantly more likely to have received a letter with their personal BD (52% vs. 41%) and were significantly less likely to have learned of personal BD through discussion with their provider (92% vs. 98%). White women were significantly less likely (14%) to have learned their personal BD via a website/portal compared to Black (24%) or Hispanic (27%) women. When all women were asked how they would like to learn about BD, only 13% preferred a letter/notice, 7% preferred a website/portal, and 80% preferred to learn from their provider, with no differences by state DBN status or race/ethnicity.

Of the women who had received information on personal BD, 87% felt somewhat/very informed, 14% said that knowing their BD made them feel somewhat/very anxious, and 10% felt somewhat/very confused. Black women were more likely to report feeling informed (92%) vs. White women (85%). Women in DBN states were more likely to report heightened anxiety (15%) than women in non-DBN states (7%), as were Black (18%) and Hispanic (19%) women compared to White women (10%).

CONCLUSIONS: Findings suggest that BD legislation has somewhat achieved its intended effects of notifying women about BD through written notifications, though most women preferred to receive this information directly from their provider. Differential experiences and preferences by women's

race/ethnicity suggest that efforts to educate women about BD should identify, consider, and address the differing means by which women in various groups learn, and prefer to learn, about their BD.

WOMEN'S EXPERIENCES WITH PROVIDERS REGARDING BREAST DENSITY BY STATES' DENSE BREAST NOTIFICATION LEGISLATION STATUS AND WOMEN'S RACE/ETHNICITY

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BACKGROUND: State dense breast notification (DBN) legislation requires informing women about breast density (BD) with mammogram results, to encourage women to discuss personal breast cancer (BC) risk and supplemental screening with physicians. Little is known about how such information has affected women's interactions with their providers or their plans for future BC screening, or whether women's race/ethnicity has any differential influence.

METHODS: We assessed various aspects of women's BD discussions with providers in a national, weekly, bilingual random digit dial telephone survey targeting a representative sample of the U.S. population. Women in all states aged 40-76 reporting receipt of a mammogram in <2 years, with no history of BC, who had heard the term 'breast density' were eligible to participate. Bivariate analyses assessed women's experiences discussing BD with providers, by women's DBN state status and race/ethnicity; multivariate analyses controlled for BC risk where appropriate.

RESULTS: 351 women (32% of 1088 respondents) had discussed breast density with their provider after their last mammogram, with significantly more Hispanic women (41%) and women in DBN states (35%) having had such a discussion compared to White women (29%) and women in non-DBN states (25%), respectively. When last discussing BD with a provider, women reported that most providers (90%) asked about BC risk and discussed the mammogram results (94%); 68% of providers elicited the woman's worries and concerns; 60% discussed other screening options; 63% discussed future BC risk; and 64% completely answered the woman's questions. Providers were significantly more likely to ask about BC risk (96%) and discuss mammogram results (96%) with Black women than with Hispanic women (87% and 87%).

After learning their personal BD, most women (60%) decided not to change the frequency of future mammograms, though 9% of women decided to decrease frequency and 17% decided to have them more frequently. Overall, 26% of women decided to have additional screening tests for BC after discussing BD with the provider, though this was significantly higher in DBN states (29%) than non-DBN states (14%). This difference was still significant after controlling for women's self-reported BD, family history of BC, and prior breast biopsy.

CONCLUSIONS: Only one third of respondents discussed BD with their providers, and there were few differences in the content of the discussions by state DBN legislation status. However, more women in DBN states decided to have additional screening tests for BC after discussing BD with providers. The differences in experiences and plans by women's race/ethnicity suggest that some women of color are more likely to discuss BD with providers, that such women's providers are more likely to assess BC risk, and that such women more often plan to have supplemental screening, although the reasons for these differences remain unknown.

WORK EFFORT AND THE PHYSICIAN GENDER PAY GAP: EVIDENCE FROM PRIMARY CARE

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BACKGROUND: Female physicians are a growing share of the workforce and may achieve better patient outcomes, yet they are paid less than their male counterparts. This persistent wage gap is often attributed in part to women having lower work effort, but evidence-to-date is largely limited by self-report and lack of detail on clinical revenue and known gender differences in practice style. We used a novel database to understand revenue differences by physician gender in primary care.

METHODS: Using a national sample of all-payer claims and electronic health record (EHR) data from athenahealth, we conducted a cross-sectional analysis of 16.3 million office visits in 2017 by primary care physicians (PCPs; internal medicine, family practice, or general practice specialty). Our primary predictor was physician gender and our primary outcomes were visit count, visit revenue, and observed visit length (using EHR time stamps). We estimated multivariate regression models at the annual, day, and visit level adjusting for physician characteristics (age, credential, specialty, clinic sessions per week), patient characteristics (age, gender, race/ethnicity, marital status, chronic condition count, payer, new-to-physician (defined as no prior visit with that PCP since 2011)), and practice fixed effects. We then stratified results by physician age and patient gender and performed subgroup analyses of visits for patients with 2 or more medical conditions and of specific types (same-day, problem-based vs preventive, established vs new patient) and complexity levels (defined by billing code).

RESULTS: Compared to male PCPs in the same practices, female PCPs were younger and worked the same number of sessions per week. Patients seen by female PCPs were more likely to be below age 65, female, non-white, and covered by Medicaid or commercial insurance. In 2017, female PCPs earned 10.7% ($38,577) less visit revenue than male PCPs in the same practices and conducted 10.6% (323.9) fewer visits over 2.6% (5.4) fewer clinic days, yet spent 3.6% (1,470.2 minutes) more observed visit time in the year. Per visit, female PCPs earned equal revenue but documented 5.5% (0.2) more diagnoses, placed 11.6% (0.5) more orders, and spent 15.2% (2.8 minutes) longer with each patient. These results were consistent in subgroup analyses by patient gender and health status and by visit type and complexity. Over the year, the gender revenue gap was largest among older physicians (aged 65+ years vs 25-44 or 45-64) while the difference in observed time was largest among the youngest physicians (25-44). All differences were statistically significant at $p<0.001$.

CONCLUSIONS: Female PCPs earned 11% less visit revenue than male PCPs in the same practice due to conducting fewer visits yet spent 4% more time in direct patient care per year. To the extent that more time per visit is associated with better outcomes, as prior work suggests, policymakers and practice leaders should find ways to value physician work beyond productivity.

"I'M THE DISEASE": EXPLANATORY MODEL OF OPIOID ADDICTION AMONG PATIENTS WITH OPIOID USE DISORDER IN SUSTAINED REMISSION.

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BACKGROUND: The chronic disease model of opioid use disorder (OUD) is increasingly accepted among clinicians who care for patients with OUD. However, how patients with OUD in sustained remission perceive their OUD is not known. The purpose of this study was to describe patients' explanatory model of OUD among those with OUD in sustained remission.

METHODS: We recruited patients with OUD receiving opioid agonist therapy who remain illicit opioid free for at least 5 years to participate in a qualitative study involving individual semi-structured interviews. Clinicians identified potential participants who could provide an informed perspective. We used maximized variation sampling to recruit a demographically diverse sample and to ensure variability in medications (buprenorphine vs methadone) and clinical setting (opioid treatment program vs office-based treatment). Using an existing framework, the interview guide was developed to elicit various dimensions of participants' explanatory model of OUD including etiology, symptoms, pathophysiology, course, and treatment (Kleinman). Two investigators independently analyzed the transcripts and iteratively reviewed and discussed results to inform subsequent interviews. We used constant comparative analysis with inductive and deductive coding to identify themes.

RESULTS: We interviewed 14 participants. Median time since last illicit opioid use was 13 years (IQR 10 – 15). Two broad categories of participants' explanatory model emerged based on where participants perceived their addiction originated. First, an internal explanatory model where participants felt OUD is inherent to their being and originates in their genes or family traits. This resulted in feelings of being predestined to develop an addiction. Therefore, ongoing treatment and complete abstinence from substances is required to maintain recovery. Second, an external explanatory model where participants felt OUD flowed from trauma or social norms and addiction was potentially preventable. Treatment can be time-limited and focused on the underlying cause of addiction. The occasional use of other substances (including alcohol) is permissible.

CONCLUSIONS: Participants with OUD in sustained remission had two different approaches to understanding their OUD; an internal and external explanatory model of OUD. These perceptions influenced how participants view ongoing treatment and acceptability of substance use. In clinical practice, a patient's explanatory model could differ with clinicians' explanatory model or the chronic disease model of OUD. Therefore, regular inquiry about a patient's explanatory model of OUD may be important to providing optimal patient-centered care.

"SICK AND TIRED OF BEING SICK AND TIRED": EXPLORING FACILITATORS AND DETERRENTS FOR MOUD TREATMENT INITIATION AMONG OPIOID USERS EXPERIENCING HOMELESSNESS

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BACKGROUND: People experiencing homelessness are 30 times more likely to die from opioid overdose than people who are housed. While medications for opioid use disorder (MOUD) reduce fatal overdose risk, uptake of MOUD in this vulnerable population is low, even after a non-fatal overdose.

METHODS: We recruited adults experiencing homelessness and with history of opioid overdose from a drop-in center in Boston, MA. We conducted semi-structured interviews exploring views on MOUD uptake, including after overdose events. We used Borkan's immersion/crystallization method and NVivo12 analysis software to identify themes.

RESULTS: Interviews were completed with 29 individuals. Sixteen had accessed prescribed MOUD and 13 had not. Mean age was 38.4 years, and 48% (14/29) reported female gender. Fifty-nine percent (17/29) reported White race and 24% (7/29) reported Latino ethnicity.

Participants commonly reported that "after someone overdoses, nobody really cares about the resources there are. They care about getting more [opioids] because usually they're sick at that point because of the [overdose reversal drug] Narcan." Less prominently, some participants stated that overdoses immediately increased their MOUD interest because they saw overdosing as "rock bottom" or feared dying. More consistently than citing overdose events, participants described that motivation for seeking MOUD came from feeling "sick and tired of being sick and tired" from the cumulative costs of opioid dependence. Participants in both groups identified several benefits of MOUD, primarily to reduce use and "to take care [of] your priorities." Participants also described Medicaid making MOUD affordable. Positive experiences with health and treatment professionals and advice from peers and family also facilitated treatment.

For treatment deterrents, participants worried MOUD amounts to "just substituting one drug for another" but with more red tape and delay than using street opioids. Participants identified deterrents in methadone's regulatory requirements ("it's liquid handcuffs.") and in the temptation to sell prescribed buprenorphine. Homelessness intensified access challenges. For example, participants faced stigma from health professionals in "the way that they talk to people, how long you're going to wait." Staying in a high-use "environment" in or near shelters was a barrier: "I would walk out of the shelter and there would be a line of about 30 people going down the street in various stages of loading up." Some reported incarceration forcing discontinuation of MOUDs ("it was cold turkey, and it was the worst"). In the non-treatment group, several participants had not sought MOUD because they did not think they used heroin often enough.

CONCLUSIONS: While overdose events present an opportunity to link some patients into treatment, a broad array of tailored interventions at other times are necessary to facilitate treatment initiation and continuation for this vulnerable population.

"THAT'S THE WHOLE ART OF DOING PRIMARY CARE:" PHYSICIAN PERSPECTIVES ON PRESCRIBING PRACTICES FOR OLDER PATIENTS WITH POLYPHARMACY

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BACKGROUND: Over the last decade, the prevalence of polypharmacy in older adults (i.e. taking too many medications) has nearly doubled, increasing the risk of adverse events in this population. To better design care for older patients, it's important to understand how physicians make decisions about prescribing and deprescribing medications for patients who take a lot of them. This qualitative study describes physician perspectives on polypharmacy, prescribing and deprescribing for older patients.

METHODS: We recruited primary care physicians practicing in the Cleveland Clinic Heath System to participate in semi-structured interviews about polypharmacy. The interview guide was developed based on literature review and expert opinion. Questions focused on two goals: (1) understanding the physician's approach to prescribing and de-prescribing medications for older adults, including use of guidelines such as Beer's Criteria, and (2) describing their definition of polypharmacy, its contributors, and how it can be mitigated or reduced. Interviews began in September 2019 and continued until January 2020, when thematic

saturation was reached. Interviews were 30 minutes long, audio recorded and transcribed verbatim. Transcripts were coded and analyzed using a grounded theory approach to identify themes.

RESULTS: Ten physicians participated in interviews and we identified four major themes: (1) Physicians had difficulty defining polypharmacy in terms of a specific total number of medications because it varied by patient. Rather than a numeric definition, some physicians saw polypharmacy as a process: "Polypharmacy, from my perspective, is the inevitable creep of adding medications to someone's regimen as they present with new or evolving health issues." (2) Physicians found it difficult to deprescribe medications for medically complex patients who were seen by multiple physicians, including specialists. One said "Do I feel comfortable overriding this physician who is supposedly an expert in the field?" (3) Physicians identified the electronic health record (EHR) both as a driver of new prescribing and as a potential tool to facilitate deprescribing. Physicians felt informed by EHR best practice alerts about which patients would benefit from new drugs (e.g. statins). The EHR also helped physicians identify patients with polypharmacy, assuming the medication list was accurate. (4) Physicians noted that time constraints during clinical visits hamper their ability to deprescribe medications: "Polypharmacy is just something we don't pay enough attention to because we have many things on our plate. It is like the plate spinners in the circus, you've already got plates in both hands and on both feet and then someone throws you another plate."

CONCLUSIONS: Efforts to support the autonomy of primary care physicians in managing polypharmacy for medically complex patients are needed. Focusing on the role of the EHR in both driving and preventing polypharmacy may be an effective starting point.

"WHAT'S THE DIFFERENCE OF ONE MORE PILL?" PATIENT PERSPECTIVES ON RISKS AND BENEFITS OF CONTINUING AND TAPERING CHRONIC OPIOID THERAPY

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BACKGROUND: Tapering can be considered in patients for whom benefits of continuing chronic opioid therapy (COT) are low compared to risks. However, engaging patients in a taper can be difficult and requires patient buy-in. Understanding how a variety of COT patients perceive risks and benefits may be critical to understanding how to promote patient buy-in for a taper. Therefore, we sought to evaluate perspectives on risks and benefits of COT in two samples of patients who did and did not experience an opioid taper, respectively.

METHODS: We conducted telephone interviews with patients who did and did not experience opioid tapers in a large urban health system in the Bronx, NY. Patients were eligible if they were 18 years of age or older and on a stable dose of COT before experiencing an intentional reduction between 2016-17 of at least 30%. Opioid tapers were confirmed using manual chart review. Exclusion criteria included history of malignancy. Participants were presented with a sample patient on COT with low benefit of continuing COT compared to risks; she was on high dose opioid therapy, experienced persistent pain after several opioid dose increases, and had a recent family history of opioid overdose. Participants were asked what they would tell the patient to do, as if giving advice to a friend. Sociodemographics were collected from the electronic medical record. Interview transcripts were coded and analyzed using a thematic analysis approach focusing on risks and benefits of COT use.

RESULTS: Of 101 patients contacted, 20 participated. The average age was 57.6 and 12 were males. Of interviewees, 10 participants had undergone a taper and 10 participants had not. We found participants who had undergone a taper tended to recommend a taper for the sample patient (n=4) because of risk from continuing COT ("try to lower it…it's like taking drugs"). Conversely, participants who had not undergone a taper tended to recommend maintaining the current dose of COT (n=5), also because of risk ("she should stay at three and be happy…because it could be dangerous"). Risks discussed included overdose, tolerance, and dependence and did not differ between the groups. Among the participants in both groups who recommended a dose increase (n=4 in tapered group, n=3 in non-tapered group), most stated that increasing the dose would provide far better benefits—such as pain control—compared to risks, which they felt were minimal ("If she's getting pain and she's not getting relief…the doctor should raise up").

CONCLUSIONS: Patients tended to differ in their recommendations for the sample patient based upon their experiences with tapering. Everyone in the sample was able to identify risks of COT, but a small group incorrectly felt confident that benefits would be better with continued increases in dose. Evaluating and discussing a patient's assessment of benefits, in addition to risks, are critical strategies to promote buy-in among patients resistant to tapering.

"FLESH"-ING OUT THE DIAGNOSIS: APPROACH TO GIANT NECK MASS

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LEARNING OBJECTIVE #1: Evaluate the diagnostic utility of fine needle aspiration versus surgical biopsy in giant neck masses.

LEARNING OBJECTIVE #2: Recognize the capacity for neck masses to regrow after excision and importance of surveillance monitoring.

CASE: A 55 year-old gentleman presents for evaluation of recurrent posterior neck mass. Present since 2001, he had 3 excisional surgeries, most recently 2017, and the mass grows back each time. In the past two weeks he developed new ulcerations with clear drainage prompting him to seek help. Physical exam revealed a large posterior neck mass measuring 15 x 15 x 12 cms with significant ulceration. Labs were notable for a leukocytosis of 21.7 K/UL and hemoglobin of 6.0 g/dL. Infectious etiology was ruled out with negative blood cultures, HIV and HTLV tests. CT neck showed large ulcerating soft tissue mass measuring up to 15cm with associated extensive cervical lymphadenopathy. MRI cervical spine showed no bone or spinal cord involvement. Ultrasound-guided biopsy showed atypical squamous cells with keratinization and nesting pattern, however this sample was inadequate for diagnosis. For definitive management he underwent excision of the tumor with radical posterior neck dissection and a latissimus pedicled flap reconstruction. The pathology revealed squamous cell carcinoma.

IMPACT/DISCUSSION: This case illustrates the challenges in diagnosing the etiology of a neck mass. A fine needle aspiration is not always definitive, particularly if the mass is solid. As highlighted in this case, core biopsy or surgical biopsy provide superior tissue diagnosis although it is more invasive and involves a higher level of expertise. We aim to contribute to the literature by highlighting the diagnostic value of surgical biopsy in head and neck masses.

The patient described above had 3 excisional surgeries in another country and lost contact with healthcare providers after immigrating to USA. This dramatic example showcase how a usually manageable disease like squamous cell carcinoma can become uncontrolled in the absence of healthcare access and demonstrates the need for routine follow-up of a condition likely to recur.

CONCLUSION: Clinicians should not shy away from invasive biopsies for diagnostics in neck mass. The invasiveness of the biopsy is correlated to the diagnostic yield, with FNA being of the least diagnostic utility and surgical biopsy being the most definitive. In this case, surgical biopsy established the ultimate diagnosis of squamous cell carcinoma.

Even after appropriate diagnostics and treatment, neck masses can recur. There is an obvious need for routine follow-up and this dramatic case demonstrates how uncontrolled a usually manageable disease like squamous cell carcinoma can become uncontrolled in the absence of healthcare access.

"I WASN'T SURE WE'D MAKE IT": OPIOID WITHDRAWAL IN PREGNANT INCARCERATED

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LEARNING OBJECTIVE #1: Identifying the stigma which lead to barriers in treatment of pregnant opioid dependent women

LEARNING OBJECTIVE #2: Understand the role of the internist in providing opioid agonist treatment in this vulnerable population.

CASE: CY is a young woman whom was prescribed opioids after a shoulder injury with rapid transition to IV heroin at the age 13. At 23 she was arrested and during jail intake was found to be pregnant, about 6 weeks along. Per the protocol of the jail she was admitted to the hospital for management of opioid withdrawal. She was started methadone and discharged back to jail when she was on a stable dose. She was subsequently transferred to multiple different jurisdictions with limited abilities to continue methadone and ultimately bonded out prior to continuation of the medication. 10 days after release from jail she presents to a hospital and was diagnosed with sepsis from endocarditis complicated by acute renal failure and threatened preterm labor. She was hospitalized for one and a half months receiving intravenous antibiotics and was restarted on methadone. A month and a half after discharge from the hospital she delivered a term baby girl. For one year post-partum CY continued to receive methadone, individual and group therapy. She was working part time and living at home with her mother and her daughter.

IMPACT/DISCUSSION: The rate of women using opioids during peripartum is on the rise nationally. National opioid use disorder rates at delivery more than quadrupled during 1999-2014. During pregnancy, chronic untreated opioid addiction is associated with lack of prenatal care and multiple complications for the mother and fetus. The American Society of Addiction Medicine published guidelines in 2015 for treatment of women with opioid use disorder (OUD) during pregnancy with the recommendation that pregnant women with OUD should be treated with opioid agonist treatment (OAT) which includes buprenorphine or methadone. Treatment should also be initiated as soon as possible. However, incarcerated pregnant women are a vulnerable population and have limited access to these services. Recognition of opioid dependence and diagnosis of pregnancy frequently fall upon primary care providers in both the community as well as incarceration. Identification and treatment with OAT is essential to good outcomes for both women and pregnancy.

CONCLUSION: Understanding of the expanding opioid epidemic with increased access to OAT has improved treatment to many individuals. However, it is important to recognize the vulnerability of populations at high risk including pregnant women, incarcerated women, and those experiencing both. Early recognition of OUD and connection to OAT with advocacy for consistent treatment across all areas of medical care is essential for improved health outcomes and communities

"RHEUM" TO IMPROVE: GPA IN DISGUISE

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LEARNING OBJECTIVE #1:

Identify migratory arthritis as an unusual presentation of GPA.

LEARNING OBJECTIVE #2: Recognize the importance of continuity of care in diagnosing a rheumatologic condition presenting with multiple nonspecific symptoms.

CASE: A 78 year old woman with a history of HTN and breast cancer in remission presents to the outpatient clinic for sudden right hand swelling, fatigue, dry mouth and cough. Five weeks prior, the patient had transient swelling, redness, and pain of the right ankle for three days, treated by an outside physician with antibiotics for presumed cellulitis, followed by left calf swelling and redness one week later, for which she was treated by a different physician with antibiotics again for cellulitis. One week later, she developed right ear pain and fevers, treated at urgent care with antibiotic drops for otitis externa, and one week prior to presentation developed intermittent severe shoulder pain with intermittent swelling and pain of other joints, for which an orthopedist ordered an MRI to rule out a rotator cuff tear. Uric acid and lyme titers were negative. Other labs were significant for mild anemia, elevated transaminases, microscopic hematuria, and an elevated urine protein to creatinine ratio. Due to the patient's constellation of symptoms, inflammatory markers were drawn, revealing a CRP of 4.86, with a positive C-ANCA of >1:1280 and a positive proteinase 3 ab of >200. The day after presentation, she was hospitalized for profound lethargy, recurrent fevers to 101F, and lower extremity petechiae. After infectious sources were ruled out, the patient was diagnosed with Granulomatosis with polyangiitis (GPA) based on all above lab findings. Prednisone and PCP prophylaxis were started, and the patient was discharged home with an outpatient kidney biopsy to confirm diagnosis.

IMPACT/DISCUSSION: GPA is a small-vessel vasculitis that typically presents as rhinosinusitis, ear pain, cough, shortness of breath, urinary abnormalities, and neuropathy, as well as constitutional symptoms including fever, fatigue, and anorexia. In GPA, arthritis is often an associated symptom, but there are few cases in the literature of polyarthritis as the initial symptom as it was in this case. Migratory transient arthritis with constitutional symptoms should prompt consideration of a rheumatologic disease.

This patient saw multiple physicians who treated her with antibiotics for presumed infections, which in retrospect were likely due to the rapid development of GPA. The key to diagnosis in this case was in evaluating the various presentations chronologically, and when seen in a continuum, allowed for nonspecific symptoms to become disease-specific manifestations prompting exploration for inflammatory and vasculitis markers, leading to a diagnosis of GPA.

CONCLUSION: GPA should be considered in the differential diagnosis of migratory arthritis with constitutional symptoms. Continuity of care allows for summative evaluation of often nonspecific transient symptoms for possible elusive diagnoses.

A BALANCING ACT: SUPRATHERAPEUTIC INR IN THE SETTING OF MECHANICAL MITRAL VALVE

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LEARNING OBJECTIVE #1: Manage patients with supratherapeutic INR with atrial fibrillation and mechanical heart valve

CASE: A 76 year-old male with a history of atrial fibrillation and mitral valve replacement on warfarin presented to the ER with "achy" non-radiating lower abdominal pain associated with nausea for the past several days. The patient did not report fever, diarrhea, constipation or any exacerbating or relieving factors. He had a history of a prior appendectomy but denied any prior GI bleeding. On admission, the patient had rate controlled atrial fibrillation with a heart rate of 106 and blood pressure of 119/100. The patient was in no acute stress, but was found to have mild bleeding of the gums in addition to soft abdominal distention and moderate, generalized tenderness on palpation. Laboratory findings were positive for INR 4.99. Given the diffuse abdominal tenderness, an abdominal CT was ordered which showed severe wall thickening of jejunal bowel loops. The patient was given one 5mg dose of Vitamin K and admitted as inpatient. DVT prophylaxis was not administered during the hospital stay, and the patient underwent laparoscopic surgical resection of a portion of the proximal jejunum which had suffered hemorrhagic ischemia. After the resection, cardiology and oncology recommendations involved reinstituting therapeutic anticoagulation.

IMPACT/DISCUSSION: Supratherapeutic INR in the setting of a mechanical mitral valve can present a challenge in the clinical management of patients with acute gastrointestinal bleeding. Caution must be taken in order to decrease bleeding through Vitamin K reversal, all while maintaining the patient on a therapeutic INR level so as to ensure the adequate anticoagulation indicated in the setting of a mechanical valve. One must carefully weigh the benefits of anticoagulation and the risk of bleeding in these individuals. Given the high risk of thromboembolic events in a patient with a mechanical mitral valve and atrial fibrillation, anticoagulation is a crucial component of the patient's medication regimen. In the event that supratherapeutic INR levels are reached, it's important to establish hemodynamic stability by reversing anticoagulation effect, supplementing the missing coagulation factors, like Vitamin K. However, caution must be taken so as to not cause rapid complete reversal of anticoagulation to subtherapeutic INR levels that could lead to a thromboembolism.

CONCLUSION: The 2014 AHA/ACC guideline for the *Management of Patients With Valvular Heart Disease* recommends a therapeutic INR of 2.5-3.5 in patients with mechanical heart valves who are at an increased risk of thromboembolism from atrial fibrillation. Early detection and addressing the source of the bleed through imaging studies and frequent monitoring of INR is essential in the management of these patients. In the case of this patient, immediate reversal of the anticoagulation potentially saved the patient's life prior to the resection as the hemorrhage was limited to the jejunum.

A CLASSIC CASE OF PERNICIOUS ANEMIA HIDING IN PLAIN SIGHT

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LEARNING OBJECTIVE #1:

Identify the presenting signs and symptoms of untreated pernicious anemia (PA)

LEARNING OBJECTIVE #2: Define the diagnosis of pernicious anemia

CASE: This is a 72-year-old female with no known medical history in the setting of no prior medical care who presented to an outside hospital in the setting of syncope. She was found to have a hemoglobin of 5.5 g/dL requiring blood transfusion and increased left intraocular pressure concerning for angle closure glaucoma. Upper endoscopy was performed due to concern for GI bleed which demonstrated mildly erythematous mucosa in the gastric body. She was transferred to our hospital for further ophthalmologic management. In addition to intermittent syncopal episodes, the patient and family also reported altered mental status, bright red blood per rectum for 20+ years, gastric reflux, and tingling/numbness of her hands and feet.

Patient was incidentally noted to have pancytopenia with significant neutropenia (800 cells/mm^3) and elevated MCV (130 fL). She was also noted to have evidence of hemolytic anemia including elevated bilirubin, low haptoglobin, and elevated LDH. Vitamin B12 levels were undetectable. Peripheral blood smear demonstrated megaloblastic anemia. Her exam was significant for atrophic glossitis. She demonstrated dramatic improvement with the repletion of B12 even after three days. Eventually, IFA returned positive. She was discharged home on B12 repletion.

IMPACT/DISCUSSION: This case demonstrates a vast array of both typical and atypical changes seen in untreated pernicious anemia. This autoimmune condition primarily has effects on the hematologic, immunologic, gastric, and neurologic systems of the body which create the underlying pathology that was found in this patient. She had multiple common findings of PA including anemia, glossitis, peripheral tingling/numbness, and changes in mental status. She also presented with two less common findings of PA including pancytopenia and hemolytic anemia. Pancytopenia occurs in the setting of diminished erythropoiesis and myelopoiesis. Both of these hematologic changes improved solely with the administration of parenteral B12. This patient has all four primary diagnostic criteria including low serum B12, megaloblastic anemia, upper endoscopy with erythematous mucosa of gastric body concerning for atrophy, and IFA positivity.

CONCLUSION:

- PA can have a multitude of presenting signs and symptoms including pancytopenia and hemolytic anemia. All of these improved with parenteral administration of B12.
- The diagnosis of PA includes: 1) low serum B12 levels, 2) megaloblastic anemia, 3) PCA or IFA, and 4) gastric atrophy.
- In later stages of PA, IFA is more accurate given that the majority of parietal cells have been destroyed resulting in lower levels of PCA.
- Patients with PA require assessment of thyroid disease and monitoring for iron-deficiency anemia and gastric malignancy.

AMOXICILLIN-CLAVULANATE AS THE CAUSE FOR ACUTE LIVER INJURY IN OLDER ADULTS

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LEARNING OBJECTIVE #1: Identify the most common antibiotics to induce acute liver injury.

LEARNING OBJECTIVE #2: Identify the patient populations at greatest risk for Amoxicillin-Clavulanate (AC) drug-induced liver injury (DILI) and their respective outcomes.

CASE: A 79-year-old female with hypertension presented to the ED for generalized pruritus. Ten days prior to presentation she developed generalized pruritus, in addition to nausea and vomiting. She denied recent fevers, chills or weight loss. She drinks one cocktail and one beer nightly. On exam, she appeared jaundiced with no stigmata of end stage liver disease. Her abdomen was non-distended with mild tenderness to palpation of the right upper quadrant. Liver edge was not palpable. Labs were notable for a Total Bilirubin: 26, ALP: 1700, AST: 859, ALT: 582, INR: 0.9. CT scan was negative for pancreatic mass or biliary obstruction. On further history, she reported treatment for a gout flare with prednisone and Amoxicillin- Clavulanate (AC) two weeks ago. She ultimately underwent a liver biopsy that showed mixed cholestatic hepatitis suggestive of a drug reaction. She was started on ursodiol and prednisone. Her lab values normalized two months post hospitalization.

IMPACT/DISCUSSION: In the US, AC is the third most commonly prescribed antibiotic in the outpatient setting and the most likely to cause drug-induced liver injury (DILI). Other antibiotics associated with DILI include erythromycin, nitrofurantoin and sulfamethoxazole/trimethoprim. Interestingly, DILI secondary to amoxicillin is much less common suggesting that clavulanic acid is the primary agent for injury. The incidence of AC DILI has been estimated to be 17 cases per 100,000 compared to erythromycin estimated at <4 cases per 100,000. Risk factors for AC DILI include male sex and older age. With regard to age, one study cited an average age of 60 years versus 48 for other DILI. For the majority of patients with AC DILI, supportive care alone is sufficient for recovery. A prospective study conducted in Spain found that patients with drug-induced hepatocellular jaundice had an 11.7% chance of progressing to death or transplantation. When looking at outcomes for AC DILI specifically, several studies report that women are more likely to develop fulminant liver failure requiring transplant. One study reported that 6.6% of female participants required a liver transplant compared to 0% of male participants. This suggests that although older men are at greater risk for AC DILI, women with AC DILI may be more likely to suffer the most severe adverse outcomes. This case heightened my awareness to the risk of this commonly prescribed antibiotic. Given the possible poor outcomes, AC use in these higher risk populations should be used with caution.

CONCLUSION: AC is a commonly prescribed antibiotic that can cause DILI. AC DILI can lead to severe outcomes including liver failure.

Older men are at highest risk for AC DILI, but women are more likely to experience the most severe adverse outcomes.

CATCH 22: MANAGEMENT OF LIFE-THREATENING VENTRICULAR SEPTAL RUPTURE IN ACUTE MYOCARDIAL INFARCTION.

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LEARNING OBJECTIVE #1:

Recognize the clinical presentation of post-myocardial infarction ventricular septal defect.

LEARNING OBJECTIVE #2:

Recognize the dilemma associated with adequate management of post-myocardial infarction ventricular septal defect.

CASE: A 75-year-old man presented to the emergency department with 2 days of flu-like symptoms. Electrocardiogram (ECG) was consistent with inferior ST-elevation myocardial infarction. Transthoracic echocardiogram (TTE) revealed left ventricular ejection fraction of 45%, right ventricle (RV) volume and pressure overload, with a large post-infarction 2 cm muscular ventricular septal defect (VSD) and left to right shunting. He was hypotensive requiring vasopressor support and subsequent venoarterial extracorporeal membrane oxygenation (ECMO). Coronary angiography showed significant multivessel coronary artery disease. He received percutaneous intervention (PCI) to the culprit right coronary artery (RCA), followed by repair of VSD with pericardial patch using infarct exclusion technique. His clinical condition declined 2 weeks postop resulting in multi-organ failure and he was eventually made comfort care.

IMPACT/DISCUSSION: Post-MI VSD can occur within a few days after transmural MI. Conservative treatment is associated with 97% mortality, whereas surgical intervention is associated with 47% mortality in the first 30 days. Studies suggest improved mortality with PCI prior to VSD repair. Early surgical repair can be complicated due to friability of the myocardium. Delaying surgical intervention may facilitate successful repair by allowing friable tissue to organize, strengthen, and become well-differentiated from surrounding healthy tissue.

CONCLUSION: Management of post-myocardial infarction ventricular septal rupture is controversial. Timing and method of repair always bring about great debate. A multidisciplinary cardiac team should be involved in the care for patients with this rare complication of MI.

COMPLICATED LEGIONELLA PNEUMONIA WITH FALSE NEGATIVE URINE ANTIGEN TEST

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LEARNING OBJECTIVE #1: Recognize severe Legionella Pneumonia infection with end organ failure.

LEARNING OBJECTIVE #2: Consider repeating Legionella urine antigen test in highly suspected cases with negative initial results.

CASE: A previously healthy 34-year-old man was brought to the emergency department for fever, chills, diarrhea, nonproductive cough and progressive confusion.

Upon presentation, patient was only oriented to self and vital signs were significant for tachycardia, tachypnea, SaO2 of 93% on room air, and low-grade fever. On physical exam, crackles were heard on the right upper lung field. Lab tests showed mild leukocytosis (WBC 11.7), thrombocytopenia (platelets 101), hyponatremia (Na 126 mEq/L), rhabdomyolysis (CPK of 96,000 U/L), coagulopathy (INR 1.7), transaminitis (ALT 168 U/L, AST 715 U/L), procalcitonin of 4.06 ng/ml and creatinine of 1.2 mg/dl. Chest radiograph and confirmatory CT chest showed consolidation in the right upper lobe. CT head was normal. Urine antigen for Legionella was negative. Patient was admitted to the hospital and started on broad spectrum antibiotics and aggressive IV hydration.

Due to high suspicion for Legionella infection, urine antigen test was repeated and came back positive confirming Legionella pneumonia. Antibiotics were de-escalated to levofloxacin. However, rifampicin was then added for severe sepsis and worsening respiratory status. Repeat chest X-Ray revealed bilateral pulmonary congestion. Follow-up labs were significant for positive troponin of 0.123 ng/ml and CPK of 130,000 U/L. Echocardiogram showed severely reduced LV function (EF ~ 20%) and diffuse hypokinesia. Hospital course was complicated by ventricular tachycardia, subsequent fibrillation and cardiac arrest. Patient was resuscitated, intubated and then transferred to the ICU.

An automatic implantable cardioverter defibrillator was placed; and the patient remained stable afterwards and eventually was discharged to subacute rehabilitation.

IMPACT/DISCUSSION: Legionella grows in water systems and spreads in small droplets. Pneumonia caused by Legionella is clinically and radiographically similar to other forms of pneumonia. Testing options include nucleic acid detection, urine antigen, and culture. False negative urine antigen for Legionella can be suspected in case of diluted sample, testing occurring after 7 days of infection, and infection by Legionella pneumophila non serogroup 1. Therefore, when strongly suspecting Legionella infection, repeat testing should be considered. Severe infection can lead to end-organ failure including rhabdomyolysis, kidney damage, hepatitis and even myocarditis which could be the cause of the acute onset of heart failure in this case.

CONCLUSION: It is important to always have a high index of suspicion for Legionella pneumonia when the clinical tableau is in favor, even if the initial urine antigen is falsely negative.

MYASTHENIA GRAVIS INDUCED BY PEMBROLIZUMAB

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LEARNING OBJECTIVE #1: Review the pathophysiology and clinical manifestations of Myasthenia gravis

LEARNING OBJECTIVE #2: Recognize the association of Pembrolizumab with Myasthenia gravis

CASE: 81 yo male with a history of urothelial carcinoma who received the first treatment with pembrolizumab 3 weeks ago, presents with a 1 week history of diffuse myalgias, fatigue, diplopia and shortness of breath.

On admission he was tachycardic and hypoxic. Had mildly elevated lactate and troponin without chest pain or ECG changes, transaminitis and a creatine kinase level of 7860. Infectious workup negative. Computed tomography-pulmonary angiogram (CT PA) showed no embolism and stable pulmonary metastatic disease. Transthoracic echo showed no wall motion abnormalities, EF >55%. On physical exam generalized muscular weakness and a negative inspiratory force (NIF) of 28 cm H2O. The patient developed progressive acute hypoxic and hypercarbic respiratory failure requiring BIPAP therapy. Hematology recommended Methylprednisolone 50mg BID due to concern for checkpoint inhibitor associated myositis. Acetylcholinesterase antibody resulted positive, therefore a course of IVIG 2g/kg for 5 days and Pyridostigmine was recommended, and Methylprednisolone increased to 100mg BID. In spite of this therapy, the his NIF worsened to -15 cm H2O and the decision was to proceed with endotracheal intubation. Given lack of improvement with IVIG, plasmapheresis was initiated and he received a total of 5 sessions. The patient ultimately required a tracheostomy and attempts to liberate him from mechanical ventilation continue

IMPACT/DISCUSSION: MG is an autoimmune disease, with pathogenic antibodies against the AChR on the neuromuscular junction or against muscle-specific tyrosine kinase. Immunosuppressive therapies such as corticosteroids, IVIG, and steroid-sparing agents are requiered for long-term management. Pembrolizumab is an anti-programmed cell death protein-1 (anti-PD-1) monoclonal antibody. PD-1 is a cell surface receptor that prevents T- cell activation, reduces autoimmunity, and promotes self tolerance. Pembrolizumab treatment results in enhanced immune responses to tumor cells and normal host tissues. Several adverse events have been described including myositis and rhabdomyolysis, but few of cases of drug-induced MG have been reported.

Our patient presented with MG after the first cycle of treatment with pembrolizumab and his MG crisis led to respiratory failure requiring endotracheal intubation. The treatment of MG includes high dose steroids, IVIG and plasmapheresis in circumstance of failed first line therapies. Pembrolizumab should be immediately discontinued, and only resumed following careful consideration by a multidisciplinary team

CONCLUSION: MG exacerbation is a life-threatening complication that requires collaborative decision- making with the patient, neurologist, and oncologist to consider permanent discontinuation of the checkpoint inhibitor. A high index of suspicion is crucial for early diagnosis of MG associated with checkpoint inhibitors

NECK MASSAGE FOLLOWED BY PAGET-SCHROETTER SYNDROME TREATED WITH ULTRASOUND-ASSISTED, CATHETER-DIRECTED THROMBOLYSIS IN A MIDDLE-AGED FEMALE

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LEARNING OBJECTIVE #1: Vigorous neck massage can aggravate scalenus anterior chronic compression of subclavian vein producing thrombosis.

CASE: A previously healthy 39-year-old female presented a few hours after neck massage with discomfort and swelling in the left arm and shoulder. Venous duplex scan showed thrombosis of the left subclavian, axillary and brachial vein. Numbness and bluish discoloration in the left upper extremity prompted a venogram that showed thrombosis of the left subclavian vein. An ultrasound-assisted catheter-directed thrombolysis was performed with prompt resolution of symptoms. Repeat venogram showed resolution of the thrombus with a significant stenosis in the mid and distal third of the left subclavian vein. Interestingly, the venogram showed complete occlusion of the subclavian vein with arm abduction and elevation, while the vein appeared patent with residual stenosis in the anatomical position. She was diagnosed with Venous Thoracic Outlet Syndrome. MRI showed subclavian vein compression by the scalenus anterior muscle.

IMPACT/DISCUSSION: The Venous Thoracic Outlet Syndrome leading to axillo-subclavian thrombosis, also known as Paget– Schroetter syndrome results from the subclavian vein compression in the anterior-most part of the thoracic outlet region. It comprises 3-5% of all thoracic outlet syndromes, with an incidence of 1:100,000 per year. The subclavian vein is highly vulnerable to injury as it passes by the junction of the first rib and clavicle. Hypertrophied scalenus anterior, subclavius, or abnormal bone morphology (clavicle or first rib) may encroach on the costoclavicular space causing compression. In addition, repetitive forces in this area frequently lead to fixed intrinsic damage from repetitive microtrauma to the intimal layer and inflammation with extrinsic scar tissue formation. As the vein becomes less mobile, it becomes susceptible to stretch, rupture or thrombosis. Once primary thrombosis is recognized, catheter-directed thrombolytic therapy is usually successful if initiated within 10 to 14 days of clot formation. Our patient had fixed venous stenosis, evident on venogram after thrombolysis. Massage may have been sought to relieve scalene area discomfort and likely aggravated pre-existing stenosis thereby inciting the coagulation cascade leading to thrombosis.

Definitive management includes decompression surgery of the thoracic outlet followed by anticoagulation for 3 to 6 months. Severe persistent symptoms may warrant venous reconstruction.

CONCLUSION: Thoracic outlet syndrome can present as subclavian vein thrombosis, especially after neck massage. Catheter- directed thrombolysis is recommended in these patients. Persistent symptoms warrant surgical intervention.

WHEN BLOOD IS NOT AN OPTION

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LEARNING OBJECTIVE #1:

To recognize hemoglobin-based oxygen carriers (HBOC) as important supplemental bridges for hemorrhagic shock in patients who refuse blood products.

LEARNING OBJECTIVE #2:

To describe the logistics of obtaining bovine-HBOC and care of the patient during infusion.

CASE:A 48-year-old Jehovah's Witness was transferred for management of massive pulmonary embolism (PE) following surgery. She received ultrasound-guided catheter-directed thrombolysis and anticoagulation. The next day, she became hypotensive with worsening dyspnea and hemoglobin (Hb) dropped from 10g/dL to 6.6g/dL. CT abdomen and pelvis showed rectus sheath hematoma with hemoperitoneum. Thrombolytic therapy and anticoagulation were stopped and an IVC filter was placed. As she refused blood transfusions, she was started on erythropoietin and iron. Subsequent to a drop in hemoglobin to 3.3g/dL, we procured bovine-HBOC, obtained FDA and local IRB approval, then initiated infusion. After receiving 6 units of HBOC, her Hb rose to 6.8g/dL and BP normalized. We closely monitored for methemoglobinemia. However, without anticoagulation, the PE extended and she developed severe hypotension requiring dobutamine. Despite optimal medical management, she deteriorated and arrested.

IMPACT/DISCUSSION: Treating hemorrhagic shock in patients who refuse blood products is challenging. To prevent ischemic complications, different types of HBOC's are used as a bridge to supplement oxygen delivery until exogenous erythropoietin and iron administration can restore adequate RBC mass. Bovine- HBOC (HBOC-201) is manufactured in the U.S. and approved for use in S. Africa and Russia, but is not FDA approved for clinical use in the U.S. Permissions from the local IRB and FDA (for compassionate use) must be obtained. HBOC could be considered at a Hb of 5-6 g/dL depending on patients' hemodynamics. HBOC doesn't require ABO compatibility and has no storage restrictions. It has a half-life of 20 hrs and 1 unit can increase Hb by approximately 0.63 g/dl. HBOC dosage is determined by measuring both free plasma Hb plus measured intracellular Hb (standard Hb from a CBC). The infusion should be stopped if methemoglobin levels exceed 10%, or cyanosis or dyspnea occur. Important side effects include nausea, vomiting, diarrhea, dysphagia, achalasia, and methemoglobinemia. These may be related to hypertension and vasoconstriction from nitric oxide scavenging properties of free Hb. Although a meta-analysis of HBOCs from various sources showed higher rates of myocardial infarction and death, those results cannot be extrapolated to bovine-HBOC. Several successful treatments with bovine-HBOC have been reported. An expanded access study on bovine-HBOC for treatment of life-threatening anemia was initiated in the U.S. and is expected to be completed by July 2020.

CONCLUSION: Bovine-HBOC in hemorrhagic shock for patients who refuse blood products should be considered on an individual basis when benefits outweigh risks.

WHEN TO RESTART A STATIN IN A PATIENT WITH ASYMPTOMATIC CK ELEVATION AND MYOCARDIAL INFARCTION

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LEARNING OBJECTIVE #1:

There is firm evidence to support the use of statins to reduce cardiovascular morbidity and mortality. The major reason for discontinuation of statin therapy is statin-associated muscle symptoms (SAMSs). However, no universally accepted definition of statin toxicity/intolerance exists. The American Heart Association and American College of Cardiology (AHA/ACC) 2018 Guidelines for the Management of Blood Cholesterol recommend a comprehensive approach to patients who experience SAMSs. To truly diagnosis statin toxicity it requires a systematic approach of dechallenge and rechallenge to assess causation, multiple statin challenges to support diagnosis, and elimination of other underlying causes of the described side effects.

CASE: A 49 year old male patient presented with a NSTEMI and a DES was placed. He was started on ticagretol, aspirin, and atorvastatin. One year later, he complained of ongoing myalgia. His CK was elevated (2355 units/L) and his AST was 105 units/L and his ALT 66 units/L. Atorvastatin was discontinued. When the patient returned one year later, liver enzymes had normalized, but CK was still high (1642 units/L) without myalgia present. His total cholesterol at this time was 276 mg/dl with LDL of 181 mg/dl. The patient now described constipation, lethargy, and weight gain. A test of his thyroid function test abnormal: TSH 109 milli-international units/L, Free T4 0.16 milli-international units/L, and positive TPO antibodies. After being put on levothyroxine, his symptoms improved, his CK normalized and the patient tolerated statin challenge well.

IMPACT/DISCUSSION: Up to 72% of all statin adverse events are muscle related. Up to 30% of patients who would benefit from statins discontinue statins due to those side effects. Statin related muscle symptoms can present as myalgia, myopathy, myositis with elevated CK or at its most severe, rhabdomyolysis. There are 7 progressively worse statin-related myotoxicity phenotypes: asymptomatic CK elevation, tolerable and intolerable myalgia, myopathy, severe myopathy, rhabdomyolysis, and autoimmune-mediated necrotizing myositis. From a clinical viewpoint, SAMSs can be divided into 4 groups: (1) rhabdomyolysis characterized by high CK concentrations (>100-fold the upper limit of normal [ULN]), myoglobinuria, and renal impairment; (2) myalgia or mild hyperCKemia (<5× ULN); (3) self-limited toxic statin myopathy (CK levels 10 to 100x ULN); and (4) myositis or immune-mediated necrotizing myopathy with HMG-CoA reductase antibodies and CK levels 10 to100× ULN.

CONCLUSION: Our patient most likely had CK elevation due to hypothyroidism and either mild hyperCKemia or self-limited toxic statin myopathy.

The AHA/ ACC 2018 Guidelines explicitly suggest reassessing after 6-8 weeks when CK elevation occurs after statin use. Premature closure can easily misdiagnose CK elevation due to other causes as statin toxicity. It is important to recognize that statin toxicity and secondary causes of CK elevation like hypothyroidism can appear simultaneously.

A 47-YEAR-OLD MALE DEMONSTRATING DENGUE AND ZIKA IMMUNOLOGIC CROSS- REACTIVITY.

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LEARNING OBJECTIVE #1: Recognize cross reactivity among Flavivirus family complicating the serologic diagnosis.

LEARNING OBJECTIVE #2: Utilize nucleic acid amplification tests (NAATs) as a preferred method of diagnosis within 7-day of onset of symptoms.

CASE: A 47-year-old male with unremarkable PMH presented with fever, nausea, headaches and back pain that started 1 week ago. Patient returned from Cuba 10 days ago. Reported Mosquito bites while in Cuba. ROS positive for fever, poor appetite, abdominal pain, back pain, headache, nausea. On physical exam afebrile, BP 107/87,HR 71,RR 20,SpO2 97%, well-developed, well-nourished male with conjunctival injection, petechial rash in bilateral ankles and soft palate. Labs significant for thrombocytopenia, leukopenia, and mildly elevated liver enzymes. Work-up negative for HIV, EBV, HBV, HAV, HCV, RPR. US abdomen unremarkable. Patient was clinically improving after a few days of supportive treatment. Liver enzymes normalized; thrombocytopenia resolved. Serology came back positive for Dengue, Zika and West Nile. From clinical standpoint patient's presentation was more consistent with dengue fever. Patient was discharged home in stable condition.

IMPACT/DISCUSSION: Dengue fever is an infection caused by 4 distinct types of flavivirus, can be asymptomatic or with variety of

symptoms including headaches, myalgia, ocular/retro orbital pain, arthralgia, rash, hemorrhagic manifestations, leukopenia. ZIKAV is a flavivirus closely related to dengue, West Nile, and yellow fever. Zika usually presents with low-grade fever, pruritic maculopapular rash, arthralgia and/or nonpurulent conjunctivitis. ZIKAV and DENV exhibit similar clinical presentation, as well as geographic distribution. Diagnosis is usually made by molecular testing or serologic method. For patients presenting within 7 days from onset of symptoms, RT-PCR of serum and urine for detection of viral nucleic acid should be performed. IgM antibodies develop within the first week of infection. IgM can be used when the viral nucleic acid is no longer detectable, IgM antibodies are detectable for months and even longer after infection. Identifying the specific timing of viral infection can be a challenge. False-positive results due to cross- reactivity of envelope proteins, especially between ZIKAV and DENV have been described. Shared epitopes in the envelope proteins are the cause of the structural similarity and cross-reactivity. Previous bioinformatic analyses have found that the envelope (E) protein of DENV2 and ZIKV share close to 53.9% amino acid sequence.

Hence the decision about the diagnosis has to be made based on clinical presentation.

CONCLUSION: The preferred method for Dengue and Zika diagnosis is NAAT. However, viral nucleic acid may not be detectable after 7 days following infection, and serology is the alternative method for establishing the diagnosis. Structural similarity of proteins in Zika and Dengue predisposes to immunologic cross reactivity, hence, the clinical presentation should assist in diagnosis.

A CASE OF ABDOMINAL COCOON POST RENAL TRANSPLANT

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LEARNING OBJECTIVE #1: Develop differential diagnosis for small bowel obstruction and ascites in a post-transplant patient

LEARNING OBJECTIVE #2: Identify complications from peritoneal dialysis

CASE: A 38-year-old woman with ESRD from lupus nephritis and deceased-donor kidney transplant 6 months ago, chronic Hepatitis B, and prior tuberculosis, presented with 2 months of abdominal pain. She endorsed progressive epigastric pain, bilious emesis after meals, abdominal bloating, intermittent diarrhea, and weight loss of 30 lbs in 6 months, only tolerating a liquid diet. She had been on PD for 11 years prior to transplant. She was treated for pulmonary TB 14 years ago in South Africa for 8 months. Physical exam revealed a distended, tympanic, mildly tender abdomen; no tenderness over the transplant site; normal bowel sounds; and a small, firm peri-umbilical nodule. Abdominal CT showed a large amount of ascites and severe luminal narrowing of the small bowel, consistent with high-grade small bowel obstruction. Differential diagnosis included TB peritonitis, post-transplant lymphoproliferative disorders (PTLD), and EPS. Ascitic fluid showed 1120 WBC with 71% lymphocytes and 29% monocytes, and a SAAG of 0.8, not consistent with PTLD. Sputum and ascites MTB PCR were negative, making TB peritonitis unlikely. Peritoneal biopsy to definitively diagnose EPS and rule out TB peritonitis was deferred given high risk of adhesion and worsening obstruction, as well as concern for inadequate healing. She was started on empiric treatment for EPS with tamoxifen and mycophenolic acid; nutritional optimization with TPN, and a diet of clear liquids.

IMPACT/DISCUSSION: Encapsulating peritoneal sclerosis (EPS) is a rare complication of peritoneal dialysis, with incidence of 0.7 to 13.6 per 1000 patient-years in PD. Although its pathogenesis is uncertain, the "two-hit hypothesis" theorizes that a peritoneal membrane injury from longstanding PD followed by a "second hit" leads to its development. This patient had multiple "second hit" risk factors for EPS, including long duration on PD, renal transplantation, and the use of beta-blockers and calcineurin inhibitors. Other risk factors include severe recurrent peritonitis, PD with high dialysate glucose, ultrafiltration failure, and increased solute transport. Early EPS is nonspecific, presenting with anorexia, nausea, diarrhea, and intermittent abdominal pain. Late EPS has features of ileus, peritoneal adhesions, and intermittent obstruction. EPS is diagnosed by laparotomy demonstrating a thickened, brown peritoneum enclosing the intestinal contents, although rarely done due to risks. EPS is associated with significant morbidity and high mortality of 50% at 2 years.

CONCLUSION: EPS, also known as abdominal cocoon, is a rare complication of PD. EPS is characterized by intraperitoneal inflammation and fibrosis, causing encasement of bowel loops and a clinical syndrome of bowel obstruction. EPS should be considered in patients with a history of PD presenting with symptoms of ileus and bowel obstruction.

A CASE OF ACQUIRED APLASTIC ANEMIA CAUSED BY EOSINOPHILIC FASCIITIS.

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LEARNING OBJECTIVE #1: Recognize the importance of identifying and treating secondary causes of aplastic anemia.

CASE: A 48-year-old Caucasian man was evaluated for pancytopenia, myalgias and rash. His symptoms began several months prior to his presentation with onset of an erythematous rash localized to his neck. Over time, his rash spread with patchy involvement of his trunk and extremities and took on a more fibrotic, hypopigmented appearance. He also developed symptoms of fatigue, mucosal bleeding, intermittent fevers, and myalgias. Past medical history included a childhood diagnosis of linear scleroderma that did not require treatment. He denied taking new medications and had no history of radiation or toxic exposures. Results of initial testing uncovered new-onset pancytopenia and inflammatory marker elevation. Noteworthy results of workup of his pancytopenia included peripheral smear without blasts or atypical cells and negative testing for nutritional deficiencies and viral infections–including HIV, viral hepatitis, and parvovirus. Serologic testing detected homogenous ANA titer elevation, elevated anti-histone Ab levels, and absence of antibodies to extractable nuclear antigens–including anticentromere and Scl70 antibodies. Skin biopsy results were characteristic of pathology seen in eosinophilic fasciitis (EF), showing dermal sclerosis, subcutaneous septal fibrosis, and fascial degeneration with chronic inflammatory changes.

He was subsequently transferred to our facility for further management. On physical examination, he had multiple areas of hypopigmented, indurated skin with peau d'orange appearance on in his abdomen, neck, and extremities with sparing of his hands and feet. Taken altogether, his exam findings, characteristic rash, and skin biopsy results represented a near textbook presentation of EF and established our diagnosis. Meanwhile, a diagnosis of acquired aplastic anemia (AA) was made after results of a bone marrow biopsy revealed severely hypocellular marrow and negligible hematopoiesis without fibrosis. Treatment included therapy with anti-lymphocyte globulin (ATG) and cyclosporine for his AA and prednisone for his EF.

IMPACT/DISCUSSION: Aplastic anemia (AA) is a rare disease process thought to arise from lymphocytic destruction of hematopoietic cells within the bone marrow. Diagnosis requires both peripheral pancytopenia

and bone marrow biopsy revealing hypocellular marrow without evidence of fibrosis. Though the majority of cases of AA are idiopathic, prompt identification of secondary causes is essential to provide comprehensive treatment. Eosinophilic fasciitis (EF)—a rare connective tissue disease—has been recognized as a cause of acquired AA. Within this case, a thorough investigation of our patient's rash helped establish this rare diagnosis, allowing us to treat not only his AA but also the precipitating underlying condition as well.

CONCLUSION: A thorough evaluation of secondary causes of acquired AA is essential. Eosinophilic fasciitis is a rare cause of acquired AA.

A CASE OF ACQUIRED HEMOLYTIC UREMIC SYNDROME IN A RENAL TRANSPLANT PATIENT

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LEARNING OBJECTIVE #1: Recognize the acquired causes of hemolytic uremic syndrome (HUS)

LEARNING OBJECTIVE #2: Distinguish between different HUS variants in renal transplant recipients

CASE: A 59-year-old woman with history of focal segmental glomerulonephritis (FSGS) and renal transplantation on sirolimus presented with three days of cramping abdominal pain, vomiting and watery diarrhea. She was hemodynamically stable on admission and physical exam was notable only for diffuse left- sided tenderness. Initial workup revealed a Hgb of 16, WBC of 13, Plt of 250 and Cr of 0.8. CT abdomen showed edema of the distal colon and rectum. She was started on antibiotics for presumed infectious colitis, however her diarrhea progressed and she developed hematochezia. A repeat CT demonstrated significant progression of her colitis. Labs on day eight of her admission showed a WBC of 21.2, Hgb 9.4, Plt 50, Cr 3.2. Hemolysis labs revealed LDH > 2000 and haptoglobin < 30. Stool PCR was positive for Shiga-toxin producing E. coli and there were schistocytes on peripheral smear. She was diagnosed with HUS and antibiotics were discontinued. She underwent a renal biopsy, which demonstrated active thrombotic microangiopathy. She was treated supportively with the remainder of her hospital course complicated by anemia requiring multiple blood transfusions, as well as renal failure requiring hemodialysis. She was discharged to acute inpatient rehab and two weeks later no longer required dialysis.

IMPACT/DISCUSSION: Our case illustrates a renal transplant patient who developed HUS, defined by a triad of hemolytic anemia, thrombocytopenia and acute renal damage. Previously characterized by typical vs. atypical, more current literature now classifies HUS into hereditary vs. acquired causes. Acquired causes commonly refer to Shiga toxin-producing Escherichia coli (STEC) but can also include autoantibodies to complement factors, which is evaluated through testing a CH50 level. Low CH50 levels (<60) indicate a deficiency in the complement pathway and can be treated with eculizumab, a monoclonal c5 antibody that has been shown to be effective in improving renal outcomes. In renal transplant recipients 0.8% to 14% of patients have been found to develop acquired HUS from calcineurin or MTOR inhibitors. Our patient was taking sirolimus, an MTOR inhibitor, which can lead to a drug-induced thrombotic microangiopathy. She was found to have an elevated CH50 level and was therefore treated supportively for presumed STEC HUS. Given that STEC HUS is widely considered a childhood disease, this case adds to the growing evidence that adults can also be affected.

CONCLUSION: Hemolytic anemia, thrombocytopenia, and acute renal damage should prompt clinicians to consider the diagnosis of HUS, which can be acquired either via infection or complement antibodies. Complement-mediated HUS should be considered in patients taking calcineurin or MTOR inhibitors, with eculizumab being effective therapy in this population.

A CASE OF ACUTE GOUTY ARTHRITIS MIMICKING PROSTHETIC JOINT INFECTION IN A 50-YEAR-OLD WOMAN

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LEARNING OBJECTIVE #1: Recognize that acute gout may present in prosthetic joints

LEARNING OBJECTIVE #2: Acute gouty arthropathy may mimic prosthetic joint infection and surgical intervention is not typically indicated

CASE: A 50 year-old, African-American woman with history of bilateral total knee replacements, heart failure with reduced ejection failure, stage 3 chronic kidney disease, alcohol dependence, and acute myeloid leukemia status post remote bone marrow transplant presented to the emergency department with a 24-hour history of pain and swelling in her left knee as well as subjective fevers. She denied intravenous drug use or recent dental procedures. She denied any history of gout.

Vital signs were remarkable for a temperature of 38.4 C and a heart rate of 123 bpm. Her left knee was warm and tender to palpation, with pain on passive range of motion and an effusion was present. There was no evidence of overlying cellulitis.

Synovial fluid was pink and cloudy with 35,000 WBC/microL, 25,000 RBC/microL, 94% neutrophils, and monosodium urate crystals were present. Gram stain was negative. The fluid was sent for culture. She was given one dose of colchicine. She defervesced and antibiotics were not administered.

Orthopedic surgery was consulted and recommended joint washout with possible liner exchange given the concern for concomitant septic prosthetic joint infection. On hospital day 3, the patient was taken to the operating room. Repeat synovial fluid samples were obtained intraoperatively which showed 3900 WBC/microL, 82,000 RBC/microL, 83% neutrophils and no crystals. Surgical impression was consistent with gouty arthritis. The patient improved and was discharged home on hospital day 5 after receiving a 5-day course of prednisone and having received no antibiotics. Her cultures remained negative.

IMPACT/DISCUSSION: The diagnosis of gouty arthritis in a prosthetic joint is difficult to establish due to the rarity of this condition. To date, there have been only 17 confirmed cases of gout and 13 cases of pseudogout in prosthetic joints. Our patient had no previous history of gout; however, she had several predisposing risk factors including high dose diuretics and a history of alcohol abuse.

Despite a synovial fluid analysis consistent with gout, providers were reluctant to defer surgery due to the suspicion for septic arthritis. Of the 30 reported cases of this condition, unsurprisingly, 59% underwent invasive surgical washout. Of these cases, only 4 patients had concomitant infection. As with our patient, the presenting symptoms of fever, tachycardia, and pain make it challenging to distinguish between gout and active infection. Reliance on aspirated joint fluid analyses are imperative in preventing surgical exploration. As awareness of the diagnosis of crystal arthropathy in those with prosthetic joints grow, subsequent rates of unnecessary invasive intervention may potentially be reduced.

CONCLUSION: By recognizing that acute gout may present in prosthetic joints, providers may help their patients avoid unnecessary surgery

A CASE OF ACUTE VISION LOSS: ORBITAL CELLULITIS VERSUS CAVERNOUS SINUS THROMBOSIS

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LEARNING OBJECTIVE #1: Recognize clinical presentation of cavernous sinus thrombosis.

LEARNING OBJECTIVE #2: Outline treatment of cavernous sinus thrombosis.

CASE: 70 year-old male with past medical history of primary myelofibrosis on Jakafi chemotherapy who presented with acute vision loss of his left eye over two days. The patient recently started chemotherapy with last dose received three weeks prior to presentation. Vital signs were normal with exam findings significant for periorbital edema, tenderness and erythema, limited extraocular movement, proptosis, and complete loss of vision of the left eye. Initial labs were pertinent for elevated white blood cells secondary to primary myelofibrosis, hemoglobin of 6.4 g/dl near baseline, elevated CRP and ESR, and negative blood cultures.

Imaging included non-contrast CT head that revealed preseptal/retrobulbar swelling followed by MRI that revealed findings consistent with orbital cellulitis versus cavernous sinus thrombosis. At this time, broad spectrum antibiotics and heparin were started to treat possible infection and/or thrombosis. Opthalmology did not recommend surgical intervention, but patient was started on IV steroids, per their recommendations. Hematology felt patient's presentation was related to inflammation due to thrombosis, rather than an infectious etiology given patient remained afebrile with negative blood cultures and without obvious abscess on imaging. Antibiotics were discontinued. The patient was transitioned to Lovenox and oral Prednisone taper. Patient's proptosis and extraocular movement improved tremendously throughout his hospital course, but he did not regain vision.

IMPACT/DISCUSSION: Cavernous Sinus Thrombosis (CST) is a potentially life-threatening rare disorder with about five cases per million people reported annually[1]. The cavernous sinus contains vital structures including: internal carotid artery and cranial nerves III, IV, V, and VI, and consequently typically presents with ptosis, ophthalmoplegia, diplopia, and paresthesia around the ocular cavity[2], as well as, fever, headache, and periorbital swelling[3]. Etiology is typically multifactorial with risk factors including prothrombotic conditions such as: malignancy, pregnancy, infection, and head trauma. Prompt diagnosis and treatment is paramount to prevent permanent vision loss. The development of CST in our patient was likely a result of his prothrombotic and immunosuppressive state in the setting of his malignancy and ongoing chemotherapy. Due to the rarity of this condition there were no clinical trials available to guide treatment course. In general, it is recommended to start antimicrobial and antithrombotic therapy. Often, a course of corticosteroids can be given, however their efficacy has not been demonstrated[3].

CONCLUSION: This case reflects the importance of collaboration between multiple specialties to enhance patient care and commit to an accurate diagnosis.

CST should be on the differential for patients with prothrombotic conditions and cranial nerve findings on physical exam.

A CASE OF ADULT-ONSET HENOCH–SCHöNLEIN PURPURA

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LEARNING OBJECTIVE #1: Recognizing the clinical features of Henoch–Schönlein Purpura.

LEARNING OBJECTIVE #2: Outline the treatment of Henoch–Schönlein Purpura.

CASE: 70 year-old male with severe tophaceous gout recently restarted on allopurinol presented with ecchymotic lesions of his extremities with associated arthralgias that developed over 2 weeks. On presentation, the vital signs were normal and significant exam findings were diffuse ecchymotic lesions of all extremities with hemorrhagic plaques of fingers and tense vesicles of feet. Lab work included unremarkable CBC, normal ESR, elevated CRP, elevated CPK, significant acute kidney injury, and urine analysis remarkable for proteinuria and red blood cells. Hospital course was complicated by coffee-ground emesis and hypotension necessitating ICU transfer. Underwent endoscopy revealing esophagitis and portal hypertensive gastropathy. Initial rheumatologic differential included various vasculitis like cocaine or drug induced, and Sweet's Syndrome. Further workup included low C3, elevated IgA, undetectable rheumatoid factor, cryoglobulinemia not present, negative HIV/Hepatitis and vasculitis panel, and negative urine drug screen. Skin biopsy revealed IgA deposits in venules of superficial dermis leading to the diagnosis of HSP. Given the deposition was IgA rather than IgG or IgM without eosinophils, negative vasculitis panel, and evidence of systemic involvement, it was surmised this was less likely drug induced vasculitis. Patient was stabilized and discharged on Prednisone with rheumatology follow-up.

IMPACT/DISCUSSION: IgA vasculitis, formerly called Henoch-Schonlein purpura (HSP), is an immune- mediated vasculitis associated with IgA deposition. Etiology is unknown but a variety of triggers are recognized, including an abnormal inflammatory process deriving from immune reactions to various antigenic stimuli in a genetically prone individual[1]. HSP is more common in the pediatric and Asian population with male predominance. It is characterized by a clinical tetrad: palpable purpura without thrombocytopenia and coagulopathy, arthralgia, abdominal pain, and renal disease. Adults have increased risk for renal involvement and prompt diagnosis can help prevent advanced renal disease. HSP is generally self- limited and managed in the ambulatory setting, unless there's inability to maintain oral intake, GI bleeding, mental status changes, severe pain, or renal insufficiency. Treatment is generally supportive. Evidence suggests steroids hasten resolution of arthritis and abdominal pain but do not prevent recurrence[2].

Treatment of nephritis with immunomodulators is considered with >1g/day proteinuria and/or impaired renal function during an acute episode. ACE inhibitors may be used to treat proteinuria. Renal biopsy is obtained to determine the degree of crescent formation and is the best prognosticator[3].

CONCLUSION: Prompt diagnosis of HSP in adults is paramount to prevent renal impairment. Consider getting renal biopsy to determine severity of renal disease and prognostication.

A CASE OF AL (LIGHT CHAIN) AMYLOIDOSIS WITH MULTISYSTEM INVOLVEMENT

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LEARNING OBJECTIVE #1: Recognize that amyloidosis can be a cause of heart failure and that early diagnosis is key for initiation of effective therapy and reduction of mortality

LEARNING OBJECTIVE #2: Understand that there are therapies for the treatment of AL amyloidosis.

CASE: 61-year-old male with history of diabetes mellitus, hypertension, presented to the hospital with fatigue and dyspnea on exertion,

progressively worsening for a year. He was diagnosed with heart failure and started on diuretic therapy. Echocardiogram showed decreased left ventricular (LV) cavity size, with an ejection fraction of 65%. He continued to have dyspnea and gained 15 pounds since discharge six weeks earlier. On readmission, electrocardiogram (EKG) showed first-degree AV block and new bi-fascicular block. Cardiac catheterization was done showing elevated filling pressures, with no evidence of obstructive coronary disease. He was also noted to have persistent transaminitis, unchanged with heart failure directed therapy. A liver biopsy was then done, with findings consistent with congestive hepatopathy. Due to continued lack of clinical improvement, extensive workup including a cardiac MRI was performed. This was consistent with global cardiac amyloidosis. A follow up cardiac technetium pyrophosphate (PYP) scan was equivocal for TTR amyloidosis. The liver biopsy was then stained with Congo red stain, positive for amyloid deposits. Serum electrophoresis identified the presence of a monoclonal protein as well as an abnormal free light ratio (free kappa 9.2 mg/dl, free lambda 403.7 mg/dl and kappa lambda ratio of 0.02). Bone marrow biopsy also confirmed amyloid involvement and typing was confirmatory for AL type amyloid. He was started on treatment with cyclophosphamide, bortezomib, and dexamethasone (CyBorD).

IMPACT/DISCUSSION: AL amyloidosis is the most common type of systemic amyloidosis and commonly affects the heart, kidneys, liver, or nervous system due to deposition of abnormally folded immunoglobulin light chains in the tissues. Cardiac involvement (70-80%) is the leading cause of mortality. Diagnosis is usually delayed in a large proportion of patients (25%) and can lead to irreversible cardiac damage with survival less than 12 months since diagnosis. The goals of therapy are to support the patient by treatment of end-organ dysfunction as well as eradication of the clone of B cells producing these misfolded immunoglobulin light chains. Multiple myeloma directed treatment such as the CyBorD regimen is effective when initiated early and is eventually followed by autologous hematopoietic stem cell therapy. Novel therapies such as carfilzomib, daratumumab, elotuzumab have also proven to be effective.

CONCLUSION: It is important for clinicians to have a high index of suspicion for amyloidosis in patients presenting with heart failure, especially if there is evidence of involvement of multiple organ systems. Early diagnosis and treatment are crucial to reduce mortality.

A CASE OF ANTI NXP-2 ANTIBODY-ASSOCIATED DERMATOMYOSITIS WITH AN UNPREDICTABLE COURSE

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LEARNING OBJECTIVE #1: Steroid resistant Dermatomyositis

CASE: A 36-year-old Laotian female with a history of hypothyroidism presented with 3 days of worsening symmetrical proximal muscle weakness and anasarca. She was recently seen at another hospital and presented with one day of worsening throat swelling and diffuse anasarca. Over the next 2 months, she developed dysphagia requiring a PEG tube and was discharged with an unclear diagnosis. Physical exam revealed significantly weak muscle strength associated with erythema of the lower back. Laboratory studies were significant for elevated CK, aldolase, and positive anti-NXP-2 antibody(Ab). ANA, Anti-Smith/Anti- DNA, Anti-Jo, AChR antibodies were negative. A muscle biopsy demonstrated non-specific inflammatory changes with lymphocytic infiltrates. MRI findings were consistent with myositis. Diagnosis of Anti-NXP2 Ab Dermatomyositis (DM) was made. Malignancy screening was negative except for abdominal CT with a dermoid cyst. High-dose corticosteroids were started followed by pulse-dose steroids, IV immunoglobulin, and plasma exchange followed by dermoid cyst removal. However, her symptoms persisted with worsening soft tissue swelling, myalgias, and weakness with the development of heliotrope rash and shawl's sign. She was given Rituximab with no response and started on Tofacitinib

IMPACT/DISCUSSION: DM has a prevalence ranging from 0.005 to 0.02% with a 2 to 1 female predominance. The prevalence of anti-NXP-2 Ab among patients with DM varies from 11% to 30%.

Dysphagia, calcinosis, diffuse soft tissue swelling, myalgia, and mild skin involvement are common presenting symptoms, which are consistent with our case aside from the calcinosis. Cancer prevalence in DM varies and many patients develop cancer within 3 years following diagnosis. In a study of colorectal cancer and DM, removal of the tumor lead to a complete resolution of DM in about 54% (14/26). An extensive workup, including a whole-body PET/CT scan, was negative for cancer in our patient and she failed to improve after removal of the dermoid cyst, which was thought to be causing a paraneoplastic syndrome. Although DM has been historically associated with cancer, this association has no proof in a recent meta- analysis. Corticosteroids are the cornerstone of myositis treatment, with up to 60% of patients showing some response, though there is no evidence to support the choice of corticosteroid-sparing agents in the treatment of steroid-resistant DM. In our patient, there was no response despite several modalities of immunosuppressants.

CONCLUSION: Proximal muscle weakness is a very common chief complaint with multiple differentials. Anti-NXP2- Ab DM remains a very rare condition and recognition is important for appropriate workup, diagnosis, and management. More studies are needed to further characterize this subset of DM. Appropriate cancer screening up to 3 years following the diagnosis of DM is paramount.

A CASE OF COPPER DEFICIENCY MYELONEUROPATHY AFTER BARIATRIC SURGERY

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LEARNING OBJECTIVE #1: Recognize micronutrient deficiencies associated with bariatric surgery, which are commonly managed by internists

LEARNING OBJECTIVE #2: Diagnose and manage copper deficiency myeloneuropathy

CASE: 44 year old female with medical history of morbid obesity (pre-op BMI=72 kg/m^2) underwent Roux-en-Y gastric bypass (RYGB). She was started on multivitamin BID, calcium BID, Vitamin D, Iron, and B12 supplementation. Her course was complicated by dumping syndrome, severe dehydration, and poor oral intake requiring hospitalization. Eight months after surgery, she began to develop numbness and weakness on bilateral lower extremities and unsteady gait. On exam, she had intact proprioception, reduced lower extremity strength, decreased sensation from T4 level to ankles to light touch, pinprick and temperature vibration along with diminished lower extremity reflexes. MRI brain and spine, EMG, and lumbar puncture studies were unremarkable. Labs notable for normal B12, normal Vitamin E, Copper level 0.73 (0.75-1.45 mcg/ml), thiamine level 30.0 (70-180 nmol/L), Vitamin B6 level 2.0 (5-50 mcg/L), and Vitamin A level 19.7 (32.5-78.0 mcg/dL). It was ultimately concluded that multiple vitamin deficiencies, notably copper deficiency, were the source of her myeloneuropathic presentation.

IMPACT/DISCUSSION: Bariatric surgery is often complicated by multiple micronutrient deficiencies. Vitamin B12, folic acid, copper and Vitamin E deficiency are particularly associated with myeloneuropathy. Gastric

surgery is the most common cause of copper deficiency, which is otherwise a rare phenomenon. This case highlights how myeloneuropathy is often associated with non-localizing symptoms, which may delay diagnosis and treatment. Typical presentation of copper deficiency myeloneuropathy includes gait disorder, bilateral paresthesias, and sensory ataxia. Treatment is tapered oral copper repletion with periodic assessment of copper levels. Our patient did well after copper repletion, with resolution of her myeloneuropathy symptoms. 10 months post-op BMI is 45 kg/m^2.

Thus, nutritional deficiencies after bariatric surgery represent a long-term clinical problem encountered by internists. Nutritional assessments are recommended every 3-6 months during the first year after bariatric surgery and then annually. For RYGB, CBC, CMP, ferritin, vitamin A, 25-OH vitamin D, thiamine, B12, folate, PTH and prealbumin should be considered. It is important to recognize the subtle signs and symptoms of these nutritional deficiencies and exercise post-surgical monitoring accordingly.

CONCLUSION: 1) When neurologic symptoms develop after bariatric surgery, internists should have a high suspicion for micronutrient deficiencies

2) Copper deficiency myeloneuropathy is a rare disorder that often presents with gait disorder, bilateral paresthesias and sensory ataxia. Symptoms are reversible with appropriate copper supplementation.

A CASE OF CYTOMEGALOVIRUS HEPATITIS IN AN IMMUNOCOMPETENT PATIENT

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LEARNING OBJECTIVE #1: Recognize Cytomegalovirus infection as a possible cause of non-specific prodromal symptoms and unexplained hepatitis in an immunocompetent individual.

LEARNING OBJECTIVE #2: Recognize the diagnostic tools available to facilitate the diagnosis of Cytomegalovirus infection.

CASE: A 64-year-old female with a past medical history of hypertension presented to the hospital with 3 weeks of recurrent fevers, headaches, generalized abdominal pain, and fatigue. Physical exam was only remarkable for a temperature of 101.2 °F. Laboratory tests were remarkable for a white count of 10,200 cells/mm3 cells. WBC differential was significant for increased atypical lymphocytosis of 7.6%. The alkaline phosphatase was 352 U/L, alanine aminotransferase of 572 U/L, and aspartate aminotransferase of 483 U/L, with a total bilirubin of 0.3 mg/dL. Ferritin was elevated at 1100 ng/mL. Hepatitis A, B and C tests, serum ANA, ANCA, anti-smooth, ceruloplasmin and antimitochondrial antibodies were all negative. Blood and urine cultures were also negative. CT of the abdomen and pelvis was remarkable only for sigmoid colonic diverticulosis. Echocardiogram showed normal ejection fraction with no evidence of vegetations or lesions. The patient underwent CT-guided liver biopsy, as well as EGD with biopsies of the antrum and duodenum.

CMV IgM was elevated at >240 with a negative IgG titre. A follow up CMV DNA quantification via polymerase chain reaction (PCR) was elevated at 2188 Units/mL (normal <200). Subsequently, biopsies of the liver, stomach antrum and duodenum were obtained and were positive for CMV staining in both the liver and stomach antrum. The patient eventually made progressive recovery with supportive therapy only.

IMPACT/DISCUSSION: CMV is a highly prevalent double stranded DNA virus that is well documented in the immunocompromised and neonate population with a wide range of clinical manifestations. However, CMV infection in immunocompetent adults is far less understood. Unexplained fever for prolonged periods is often the primary presentation. In addition to mononucleosis-like symptoms, subclinical transaminitis is also a common finding in immunocompetent patients.

The incidence of CMV infections and complications in immunocompetent individuals appear to be higher than previously thought. When CMV is suspected, widely available non-invasive options for diagnosis can be used. Serologic studies using CMV-specific Ig-M is a common non-invasive option for an acute CMV infection. Qualitative and quantitative PCR further aid in enhancing the diagnostic modality. However, tissue biopsy identification of CMV "Owl's Eye" inclusions or positive immunohistochemistry staining on histopathology remains the gold standard. In our patient, CMV inclusion bodies were seen in both the stomach antrum and liver biopsies.

CONCLUSION: This case illustrates the importance of considering CMV in every patient with unexplained hepatitis. Delayed diagnosis may lead to potential adverse outcomes and increased hospitalization costs.

A CASE OF DIAGNOSTIC BIAS IN TREATMENT OF SYMPTOMATIC ANEMIA IN A PATIENT WITH A LONG HISTORY OF SIGNIFICANT ALCOHOL INTAKE.

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LEARNING OBJECTIVE #1: To recognize the importance of the initial history and initial diagnostic studies in the evauation of symptomatic anemia in a patient with a history of significant alcohol consumption.

CASE: A 55 year old female presented to hospital with 1 week history of weakness and dyspnea on exertion. She also noted pallor.

The patient admitted to six to nine glasses of wine per week, predominantly on weekends, since the age of 25. The patient denied hematemesis, dark stools, bright red blood per rectum, or vaginal bleeding.

She was noted to have pallor and sinus tachycardia. The patient was not notably jaundice.

The abdomen was non-distended; there was no hepatosplenomegaly; there was no shifting dullness; there was no caput medusae.

No spider angiomas were seen. The stool guaiac test was negative.

The patient's initial Hemoglobin was 8 with a Hematocrit of 24; White Blood Cell Count was 7 with Normal Differential;

Platelet count was 108. The patient's AST was mildly elevated; ALT was normal; PT/PTT were normal; Total Bilirubin was mildly elevated but Bilirubin was not fractionated. Iron studies were normal.

The patient was transfused with 2 units of packed red blood cells. The patient's tachycardia, weakness, and dyspnea on exertion resolved after transfusion. The patient was discharged with the understanding that she and her primary care physician would arrange prompt consultation with a gastroenterologist for endoscopy and colonoscopy to find source of anemia as an outpatient.

The patient was seen by a gastroenterologist, an endoscopy and colonoscopy were scheduled.

The patient returned to hospital 3 months later before endoscopy and colonoscopy could be arranged, due to symptomatic anemia again with Heart Rate of 120 on presentation. The patient admitted that she continued to drink alcohol, but subsequent laboratory testing revealed an elevated Indirect Bilirubin. Additional history was obtained and the patient reported Alopecia Areata at approximately 20 years of age which resolved with treatment with steroids.

The patient was also noted to have an LDH of 1,700 and a Haptoglobin of less than 8.

IMPACT/DISCUSSION: The initial history in this case was deficient in asking the patient about hematologic causes of anemia and was biased in

focusing on gastrointestinal caused due to the Alcohol history. Taking a more thorough history would have revealed the Alopecia Areata, Also, fractionating the Bilirubin on the initial diagnostic tests would have given us the clue for hemolysis. Prompt, initial Hematologic consultation may have prevented re-admission.

CONCLUSION: It was agreed that the patient had some degree of Hemolysis contributing to her anemia. It is well known that Alcohol consumption can cause hemolysis and that Hemolytic anemia is more common in Alcoholism than the general public. The patient's history of Alopecia Areata further raised a question of Autoimmune Hemolytic anemia. Hematology, subsequently placed the patient on a course of steroids which resulted in resolution of syptoms and lab abnormalities.

A CASE OF DRUG-INDUCED FEVER: BLAME IT ON CARBAMAZEPINE!

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LEARNING OBJECTIVE #1: To identify clinical features of drug-induced fevers.

LEARNING OBJECTIVE #2: To demonstrate the importance of including medications as part of the differential diagnosis for fevers of unknown etiology.

CASE: A 49 year old male with a recent diagnosis of terminal neuralgia presents to the ED for subjective fevers. Patient also complained of a dull posterior headache, dizziness, and blurry vision. He denied neck pain, stiffness, or photophobia. Patient recently had a dosage increase of carbamazepine from 200mg TID to 400mg TID. Patient travels to North Carolina once a month and his last trip was a month ago. Patient did not have any history of allergies or drug hypersensitivity reaction. On exam patient had a fever of 101.6 F and was tachycardic to 110. Neurological exam was normal. Laboratory values were significant for carbamazepine level 12.2 (normal < 12), CRP 5.28, AST 110, ALT 130 without leukocytosis or eosinophilia. Patient's initial infectious work up included CXR, urinalysis, respiratory viral panel, HIV were negative. Blood cultures remained negative throughout the hospital stay. Patient's home medications were continued including carbamazepine but at a lower dosage of 300 mg TID. Patient continued to have fevers as high as 103.8F for the next few days. Further infectious disease workup was performed which included CT chest, quant gold, EBV, CMV, hepatitis B and C were negative. Because the patient traveled to and from North Carolina, tick born illnesses were tested - Erlichia, Anaplasma, Babesia, Lyme and West Nile virus were negative. With no improvement in fevers and thus far infectious workup was negative, it was thought to be drug induced and carbamazepine was stopped. After 48 hours of stopping carbamazepine, patient remained afebrile, asymptomatic and was discharged with neurology follow up.

IMPACT/DISCUSSION: This case describes a case of drug induced fevers secondary to carbamazepine. A drug fever is defined as "fever coinciding with administration of a drug and disappearing after the discontinuation of the drug, with no other cause evident after careful physical exam and laboratory investigation." The treatment of drug-induced fevers is the immediate discontinuation of the offending drug. This patient had fever and elevated liver enzymes as the sole manifestation of adverse drug reaction without the presence of rash or eosinophilia. It is clinically important to recognize drug induced fevers, as failure to recognize leads to extraneous laboratory testing, futile therapies, and prolonged hospitalization.

CONCLUSION: Drug induced fever is a diagnosis of exclusion but is frequently underdiagnosed. Though rare, carbamazepine is a potential culprit. Once drug induced fever is suspected, one should immediately discontinue the offending agent.

A CASE OF E. RHUSIOPATHIAE BACTEREMIA IN AN IMMUNOCOMPROMISED INDIVIDUAL

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LEARNING OBJECTIVE #1: Understand transmission of E. Rhusiopathiae infection

LEARNING OBJECTIVE #2: Highlight difficulties of diagnosis and treatment of E. Rhusiopathiae

CASE: A 55-year-old homeless man with a history of alcoholic cirrhosis presented after he was found to be febrile with a foul-smelling lower extremity ulcer. Patient denied any history of trauma or recent animal contact. He was febrile to 100.9F and tachycardia. Admission labs were significant for leukocytosis. He was placed on broad spectrum antibiotics for management of sepsis. Blood cultures subsequently grew out erysipelothrix rhusipathiae and treatment was narrowed to IV penicillin. A transesophageal echocardiogram did not reveal any evidence of infective endocarditis.

IMPACT/DISCUSSION: While E. rhusiopathiae is commonly associated with cutaneous infections, only 90 cases of E. rhusiopathiae bacteremia have been reported thus far. E. rhusiopathiae is typically transmitted through contact with animals such as sheep, cattle, chickens, turkeys, dogs, and cats. Most cases occur via scratches or puncture wounds of the skin. As a result of this transmission process, infections in humans are most commonly seen secondary to occupational exposure, notably in farmers. A detailed history was unrevealing for exposures in the patient described here but he may have had contact with common street animals while being homeless.

In addition to having no exposure to known carriers of E.rhusiopathiae, he also had no evidence of infective endocarditis (IE). E. rhusiopathiae rarely causes severe disease but does carry a significant risk for IE. A 2017 retrospective review demonstrated that E.rhusiopathie can cause invasive blood stream infections in the absence of IE however approximately 90% of all reported cases of E.rhusiopathiae bacteremia have been associated with it. As of 2017, only 22 human case reports of bacteremia without IE have been documented.

Given the rarity of the bacteria, diagnosis and treatment can be difficult. E.rhusiopathiae is commonly assumed to be a sample contaminant. Several reports of lab identification error have been documented with this species, including misidentification as streptococcus viridans. For the most accurate diagnosis, it has been recommended that blood cultures be run through Matrix-assisted laser desorption/ionization-time of flight mass spectroscopy (MALDI-TOF MS). E. Rhusiopathiae is notably resistant to vancomycin and there is documentation of both aminoglycoside and sulfonamide resistance. The recommended antibiotic of choice is IV penicillin G at a dose of 12-20 million units per day. A 2017 case report however identified a penicillin resistant strain that was susceptible to ceftriaxone. Thus, susceptibilities are recommended if there is no clinical improvement following penicillin administration.

CONCLUSION: E. rhusiopathiae is often considered a contaminant when identified on bacterial cultures. An general internist should remain aware this pathogen has the ability to cause invasive infections as in this case.

A CASE OF GUILLAIN-BARRé SYNDROME (GBS) FOLLOWING ZOSTER VACCINATION.

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LEARNING OBJECTIVE #1: Prompt recognition of a potentially fatal adverse effect of Varicella Zoster virus vaccination.

CASE: A 66-year old physically active woman with a history of breast cancer in remission presented with a sudden onset of leg weakness, which spread proximally over two days resulting in 3 falls and a mild associated dysphagia. She denied recent travel or sick contacts. She received Shingrix 9 days prior to symptom onset. Her neurological exam revealed decreased strength in lower extremities (4/5 hip flexion, 4/5 knee extensors/flexors), decreased sensation in the calves and diffuse areflexia of the biceps, triceps, brachioradialis, patellar and ankles. HIV, RPR, and a viral hepatitis panel were non-reactive. Hemoglobin A1c, CK, B12, CK, SPEP, ACE, CRP, and ESR were all within normal limits. A contrast MRI of the complete spine and MRI brain were without acute pathology. Analysis of her CSF revealed cytoalbuminologic dissociation concerning for GBS: protein-53.2 mg/dl, WBCs 1. Therapy with IVIG was initiated but on the second day, the patient's weakness progressed to the upper extremities, her dysphagia worsened and hypophonia developed. She was transferred to the intensive care unit. With completion of 5 days of IVIG, the NIF normalized, dysphagia resolved, mild improvement was seen in hip flexion strength bilaterally and her upper extremity strength remained stable. She was ultimately discharged to an acute rehabilitation facility.

IMPACT/DISCUSSION: GBS is a rare condition in which the immune system attacks the peripheral nerves. The mortality rate approximates 3-5% and is attributable to complications resulting from respiratory muscle paralysis, pulmonary embolism, infections and cardiac arrest. While the etiology of GBS is still unknown, viral infections such as Influenza, Cytomegalovirus and Zika, and bacterial infections such as *C. jejuni* can act as triggers. In 2004, causality was confirmed between the 1976 influenza vaccine and GBS. The association between GBS and other vaccines remains anecdotal due to a paucity of available data.

The adjuvant recombinant zoster vaccine (RZV) was first marketed in October 2017 for the prevention of herpes zoster in individuals aged ≥50 years. A pooled analysis of two large randomized trials in 2019 did not show an increased risk of developing a new potential immune-mediated disease (pIMD) or exacerbation of an underlying pIMD in RZV recipients aged ≥50. Our patient's GBS onset developed 9 days after vaccine administration. To our knowledge, there is only one other reported case of Zoster vaccination associated GBS in the literature.

CONCLUSION: Although there is no established connection between RZV and GBS, our case should alert clinicians to recognize this serious adverse effect and promptly advise their patients for hospitalization. As more post vaccination GBS cases are recognized and reported worldwide, providers will be more primed to discuss this potential side effect with their patients prior to vaccination.

A CASE OF IGG4-RD: AIP + IGG4-SC MISTAKEN FOR MALIGNANCY

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LEARNING OBJECTIVE #1: Recognize the clinical and histopathologic features of IgG4-related disease

LEARNING OBJECTIVE #2: Describe the clinical presentation and treatment of type 1 autoimmune pancreatitis

CASE: A 73 year old female was hospitalized with two weeks of progressive jaundice, pale stools, and pruritus. Her medical history included treated hepatitis C virus (HCV) infection with sustained virologic response, as well as remote breast cancer in remission. Labs showed total bilirubin 11.7 mg/dL, alkaline phosphatase 575 U/L, alanine aminotransferase (ALT) 370 U/L, and aspartate aminotransferase (AST) 386 U/L. Malignancy was high on the differential. Multiphase computed tomography (CT) of the abdomen revealed an obstructing hilar tumor suggestive of cholangiocarcinoma, multiple vague lesions in the pancreatic body and neck, and suspicious regional lymph nodes. An endoscopic retrograde cholangiopancreatography (ERCP) with endoscopic ultrasound (EUS) and fine needle aspiration (FNA) of a pancreatic lesion was performed, along with percutaneous biopsy of the liver mass. Pathology from both demonstrated marked increase in immunoglobulin G subclass 4 (IgG4) plasma cells on immunostaining. The ratio of IgG4+ to IgG+ cells was >40% in the pancreas and nearly 1:1 in the liver. Serum IgG4 levels were 330 mg/dL (upper limit of normal: 123 mg/dL). The patient was diagnosed with type 1 autoimmune pancreatitis (AIP) and IgG4-related sclerosing cholangitis (IgG4-SC). She was started on oral prednisone at 40 milligrams per day with a plan for slow taper. Azathioprine was later added. At one year follow up she was off corticosteroids and her liver function tests had completely normalized, though serum IgG4 level remained elevated.

IMPACT/DISCUSSION: IgG4-related disease (IgG4-RD) is an increasingly recognized but still poorly understood autoimmune condition that can involve multiple organs. It typically affects middle-aged men. The prototypical form is type 1 AIP, which often co-occurs with IgG4-related sclerosing cholangitis. Clinical presentation of type 1 AIP frequently involves a pancreatic mass with painless obstructive jaundice, making it easy to mistake for malignancy. Pathologic features of IgG4-RD include a tumor-like appearance of the involved organs and tissue infiltration with IgG4-positive plasma cells. Elevated serum IgG4 level is common. While IgG4+ plasma cell infiltrates can also be seen in hepatobiliary malignancies, the ratio of IgG4+ to IgG+ cells rarely exceeds 40% in those cases. Corticosteroids are the mainstay of treatment. Natural history and prognosis are poorly described, but relapse is common.

CONCLUSION: - IgG4-RD is an autoimmune fibroinflammatory disease that can affect multiple organs

- Histopathologic features include tumor-like appearance, IgG4+ plasma cell infiltrates, and variable fibrosis

- Initial treatment involves corticosteroids; relapses are common

- Type 1 AIP, the prototypical form of IgG4-RD, often co-occurs with IgG4-related sclerosing cholangitis, its most common extrapancreatic manifestation

A CASE OF INTRACTABLE NECK PAIN DUE TO STYLOID PROCESS ELONGATION

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LEARNING OBJECTIVE #1: Identify Eagle Syndrome as a cause of neck pain.

LEARNING OBJECTIVE #2: Understand the management of Eagle Syndrome.

CASE: A 64 year-old woman presented with a 2-year complaint of progressively worsening neck pain. The pain involved the anterior and posterior right neck that was worsened with swallowing. Intravenous opiates provided temporary relief. Vital signs were normal. Cranial nerves II-XII were intact. Head was normocephalic and atraumatic; neck was without lymphadenopathy and exhibited full range of motion. Results of complete blood count, comprehensive metabolic panel, and C-reactive protein were within normal limits. Computed tomography of the neck revealed elongation of the styloids with posterior displacement of the left hyoid bone, consistent with Eagle Syndrome. The patient was started on amitriptyline and pregabalin with subsequent improvement in her pain.

IMPACT/DISCUSSION: Neck pain is a complaint commonly encountered by general internists. Eagle Syndrome is a rare, but debilitating cause of this complaint. The condition results from elongation of the styloid process, which can result in compression of the glossopharyngeal nerve or carotid artery, and irritation of the pharyngeal mucosa. Symptoms that are specific to Eagle Syndrome include neck pain associated with

neurological manifestations such as odynophagia, ear pain, pain at the base of the tongue, changes in taste, or foreign body sensation in the pharynx. Initial imaging includes plain lateral view radiographs of the skull. CT of the skull base and neck is also a valuable imaging tool as it can better demonstrate the positioning of the styloid process to its neighboring anatomical structures. Medical therapy is first-line treatment for Eagle Syndrome and includes non-opiate analgesics, tricyclic antidepressants, anticonvulsants, and local infiltration with steroids or long-acting local anesthetic agents. In cases that do not respond to medical therapy, resection of the elongated styloid process is indicated.

CONCLUSION: This case strives to increase awareness of an uncommon cause of a common complaint.

Though Eagle Syndrome is a benign condition, its symptoms can be severe. Careful use of non-opiate analgesics, tricyclic antidepressants, and anticonvulsants may effectively abate patient's symptoms. Patients that do not respond to medical treatment may undergo surgical resection of the elongated styloid process.

A CASE OF LISTERIA RHOMBENCEPHALITIS WITH PROGRESSION TO BRAIN ABSCESS

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LEARNING OBJECTIVE #1: Recognize the clinical characteristics of Listeriosis and associated imaging findings to prompt early treatment

CASE: A 67 year old immunocompetent Caucasian female with a past history of mitral valve prolapse presented to an outside hospital with a prodrome of fever and headaches followed by blurry vision with initial MRI revealing rhombencephalitis. Lumbar puncture was performed showing only pleocytosis, with glucose of 49 and total protein of 90. Despite initial concern for Listeria, treatment was discontinued after CSF PCR was negative for Listeria. Blood cultures were also negative at this time. The patient was discharged on empiric treatment of encephalitis, however returned within 24 hours with new findings of left sided facial droop and left upper extremity weakness; repeat MRI revealed thalamic, internal capsule, and hindbrain brain abscesses with repeat blood cultures growing positive for Listeria monocytogenes. This prompted initiation of treatment with ampicillin and gentamicin, and transfer from outside hospital 4 days later after patient had no improvement with dual therapy alone. By this time, the patient had a mild leukocytosis to 12.5. Exam was remarkable for Left sided facial droop, 2/5 Left upper extremity muscle strength, blurry vision, and aphasia. Patient's therapy was then increased to ampicillin, gentamicin, and trimethoprim/sulfamethoxazole due to lack of response with dual therapy alone. Transesophageal echocardiogram was negative for vegetations given bacteremia, and patient's repeat blood cultures were negative. The patient began experiencing gradual improvement with this regimen, with resolution of facial droop, extremity weakness, aphasia, and blurry vision. She was discharged from the hospital with the remainder of her antibiotic course switched to oral antibiotics.

IMPACT/DISCUSSION: Listeriosis is a foodborne infection that primarily is seen in the elderly and immunocompromised usually presenting as bacteremia or meningoencephalitis whereas rhombencephalitis is more commonly seen in affected immunocompetent individuals. This case illustrates the importance of clinical suspicion when dealing with Listeriosis in an immunocompetent patient, as both blood and CSF cultures may be negative in many cases, and often CSF analysis will only result in pleocytosis. However, imaging findings of rhombencephalitis was vital in the diagnosis, as delays in treatment led to further extension in the form of abscess and bacteremia. Listeria PCR is an important diagnostic tool however may not be positive initially, and the diagnosis of Listeria should not hinge on this result alone.

CONCLUSION: Findings of rhombencephalitis are highly suggestive of Listeriosis, and treatment should be initiated at the earliest sign of clinical suspicion as shown in this case, as if left untreated brain abscesses may arise resulting in more clinically severe neurological deficits and worse prognostic outcomes.

A CASE OF MISTAKEN IDENTITY: HSV AND EBV LYMPHADENITIS MASQUERADING AS RICHTER TRANSFORMATION

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LEARNING OBJECTIVE #1: Identify the diagnosis of HSV/EBV lymphadenitis

LEARNING OBJECTIVE #2: Recognize disseminated viral infections due to the immunocompromised state of CLL

CASE: Our patient is a 56-year-old man with CLL without adverse cytogenetic prognostic features successfully treated with six cycles of therapy who presented one year after treatment with neck swelling, odynophagia and fatigue for two weeks. He was initially treated with penicillin for suspected streptococcal pharyngitis. Due to palpable cervical lymphadenopathy (LAD) a fine needle aspirate was performed and showed scant atypical lymphocytes. Symptoms worsened, and he presented to the ED. Vitals were notable for tachycardia, hypotension and fever. The exam was remarkable for thrush and non-tender left cervical LAD. Labs were significant for leukocytosis of 21,700, LDH of 306 and CRP of 9.2. An ultrasound of the neck revealed enlarged morphologically abnormal LAD. CT imaging revealed stable axillary/inguinal LAD; resolved intrathoracic/abdominal and pelvic LAD. Fevers persisted during his hospital course and he developed a muffled voice. Urgent laryngoscopy revealed supraglottic edema, laryngitis, and a tongue base mass that was biopsied. Steroids were initiated for airway edema. New vesicular lesions were noted on the patient's back and thighs. Infectious workup revealed an elevated serum EBV of 525 copies/ml and PCR positive HSV-2 vesicles. PET-CT was significant for cervical lymphadenopathy with SUV of 14.5 reported as 'consistent with Richter Transformation.' Bone marrow biopsy was negative for lymphoma. Histopathology from the cervical LN & tongue mass revealed areas of necrosis, eosinophilic abscesses and multinucleated giant cells consistent with viral infection without evidence of a Richter transformation. Immunostaining was positive for HSV-2/EBV co-infected cells leading to a diagnosis of HSV/EBV lymphadenitis. Steroids were discontinued, and intravenous acyclovir initiated with significant improvement in symptoms

IMPACT/DISCUSSION: This is the second reported case of lymphadenitis due to HSV/EBV co-infection, mimicking Richter transformation. In both cases, the patients had similar presentations; however, our patient was treated with an alkylating agent/monoclonal antibody combination, not a purine analog. CLL causes impaired cellular and humoral immunity, leading to an immunocompromised state. Predisposition to infection rises with increasing disease stage and prior treatment with purine analogs & monoclonal antibodies. HSV-1/2 seropositivity in the general population is estimated at 60%, with immunocompromised individuals at higher risk of reactivation. A literature review revealed a limited number of cases of disseminated HSV reactivation manifesting as lymphadenitis

CONCLUSION: Among patients with CLL with fevers and lymphadenopathy, disseminated viral infection must be considered in addition to Richter transformation. Histopathology from excisional lymph node biopsies is crucial for accurate diagnosis and effective management of lymphadenopathy

A CASE OF MISTAKEN IDENTITY: IS THIS CANCER?

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LEARNING OBJECTIVE #1: Recognize the atypical presentation of sarcoidosis and its involvement with the GI tract

LEARNING OBJECTIVE #2: Recognize the diagnostic reasoning pitfalls when presented with imaging that shows "metastatic" lesions

CASE: A 46-year-old African American female presented to the ED with complaints of diffuse abdominal pain, intermittent episodes of non-bloody diarrhea and acid reflux over the period of 48-72 hours. In the ED, patient underwent a CT abdomen which was interpreted as: "Evidence most consistent with metastatic disease of unknown primary in the liver and spleen." At the time of interview, patient was tearful because of the results communicated to her by the physician in the ED. A complete history and physical exam noted mild voluntary guarding without peritoneal signs or other signs of acute abdomen. She specifically denied weight loss, night sweats, shortness of breath, flushing, and blood in stools. Patient was admitted to the hospital for further diagnostic workup including urine and blood biochemical panels.

On initial results, alkaline phosphatase was elevated to 666 U/L (Reference 38-126 U/L) and reflex GGT was elevated as well at 1,166 U/L (Reference 9-48 U/L). Other hepatobiliary, paraneoplastic and hepatitis viral markers were negative. Corrected calcium was within normal limits as well (8.8 mg/dl). Also, AMA, AFP, CEA, and 5-HIAA were negative. During this period of diagnostic workup, the patient was treated symptomatically for pain and nausea. After evaluating the biochemical workup and initial imaging from the ED, decision was made to consult interventional radiology for a CT guided liver biopsy. Pathology results in brief noted evidence of non-caseating granulomata with bile duct injury. Further histological stains excluded infectious, fungal and other etiologies. Chest x-ray was reviewed by radiology and revealed hilar adenopathy.

IMPACT/DISCUSSION: Sarcoidosis is typically viewed as primarily a pulmonary disorder with respiratory and skin findings. Observational studies from autopsies and liver biopsies note granulomas within the liver can be found in 50% to 80% of patients with sarcoidosis. Asymptomatic elevation in liver-function tests is the most common presentation in a third of patients. Clinically, liver involvement manifests itself with abdominal pain, pruritis, acid reflux and jaundice. In making the diagnosis, granulomatous lesions must be present in 2 or more organs and exclusion of alternative causes must be evaluated including but not limited to fungal infections and tuberculosis.

CONCLUSION: Lack of typical symptomatology makes it difficult to evaluate sarcoidosis in the gastrointestinal tract or other systems unless appropriate clinical and pathological findings are noted. When presented with lesions that appear metastatic in origin, it is easy to anchor on cancer as the most likely diagnosis. This case demonstrates it is imperative that tissue be obtained in order to determine whether these are malignant, infectious or autoimmune in nature.

A CASE OF MYELONEUROPATHY, NORMOCYTIC ANEMIA, AND LEUKOPENIA SECONDARY TO COPPER DEFICIENCY FROM ZINC OVERLOAD

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LEARNING OBJECTIVE #1: Recognize the triad of myeloneuropathy, normocytic anemia, and leukopenia as signs of copper deficiency.

LEARNING OBJECTIVE #2: Distinguish functional and organic neurologic exam findings in the context of the clinical picture to prevent missing a critical diagnosis.

CASE: A 62 year old woman with a history of COPD and anxiety presented to the ED with subacute chest pain and dyspnea in the setting of progressive weakness. Acute coronary syndrome and pulmonary embolism were ruled out. At presentation, she was unable to ambulate secondary to her weakness and gait ataxia, and her initial evaluation in the ED was remarkable only for a normocytic anemia and leukopenia. She had been evaluated at an outside institution 6 months prior with a normal spinal MRI and a bone marrow biopsy concerning for myelodysplasia. Physical exam demonstrated normal vital signs except for tachycardia with an otherwise normal cardiopulmonary exam. Neurologic exam revealed 3+ reflexes throughout with 2-3 beats of clonus in the R foot, impaired proprioception in the lower extremities, impaired stereognosis (delayed identification of a pen and ring), diminished pinprick sensation in the upper extremities distal to the elbows, and a sensory level at T8, upgoing Babinski on the left foot, and a positive Romberg sign. Labs were notable for hemoglobin of 9.7 and a WBC of 2.1 with an ANC of 390. An EMG showed mild, acute, left L5 and S1 radiculopathies with no evidence of polyneuropathy or demyelination. Extensive laboratory testing was negative except for an undetectable copper level and a zinc level elevated to 243. Testing for malabsorption was negative. Her bone marrow biopsy was reviewed at our institution and showed no evidence of malignancy or myelodysplastic syndrome. With 5 days of IV copper, her copper levels normalized, her leukopenia resolved, and her myeloneuropathy improved. With physical therapy, she regained the ability to ambulate.

IMPACT/DISCUSSION: Copper deficiency is known to cause hematologic and neurologic derangements, with myeloneuropathy, anemia, and leukopenia all described in literature. Their simultaneous presentation is relatively rare. The most common neurologic presentation of copper deficiency is a myelopathy, with neuropathy described in a minority of cases. Causes of copper deficiency include malabsorption and chelation secondary to zinc overload. This clinical vignette describes a woman who presented with myeloneuropathy, anemia, and leukopenia, and was found to have copper deficiency secondary to zinc excess.

CONCLUSION: This case illustrates the difficulty of differentiating functional and organic neurologic complaints with clinical history alone. This patient with a history of anxiety and an unusual neurologic exam was worked up on the basis of her normocytic anemia and leukopenia. Copper deficiency is a rare, reversible cause of cytopenia and myeloneuropathy, and without the awareness to seek copper studies as part of her neuropathy workup, this patient's diagnosis would have been delayed or missed.

A CASE OF NEW HIV PRESENTING WITH CARDIOMYOPATHY AND NEPHROPATHY

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LEARNING OBJECTIVE #1: Differential diagnosis for acute onset heart failure and renal failure in a young adult

LEARNING OBJECTIVE #2: Understand the natural course of HIV end-organ damage

CASE: A 31-year-old woman presented with dyspnea on exertion for three months without other symptoms. Past medical history only included mild intermittent asthma. Physical exam was significant for bibasilar crackles and elevated jugular venous pressure.

Initial labs found a creatinine of 2.3, total protein of 9.5 and albumin of 3.0. Troponin was negative and BNP was 1784. Urine protein was 527, urine creatinine 43.6, and urine sodium 81. Ultrasound showed enlarged kidneys. An echocardiogram an ejection fraction of 9% and a dilated left ventricle. Heart failure workup found a normal TSH, ferritin, B12, thiamine, carnitine, selenium and ANA. Hepatitis testing was negative. An HIV test was positive (last negative in spring 2017), with a viral load of 1298 and a CD4 count of 355. Cardiac MRI showed possible infiltrative cardiomyopathy without ischemia. PYP scan showed no evidence of amyloidosis, consistent with HIV-cardiomyopathy. Kidney biopsy found collapsing focal segmental glomerulosclerosis, consistent with HIV-associated nephropathy.

IMPACT/DISCUSSION: Workup for new heart failure in a young adult includes evaluation for ischemic, autoimmune, infiltrative, nutritional, and infectious causes. In this patient with renal and heart failure, the differential was narrowed to infiltrative disease, viral end organ disease, lupus, or cryoglobulinemia.

Cardiomyopathy in patients with HIV is typically due to cardiotoxicity of antiretroviral therapy or ischemic heart disease. This patient is unusual in developing HIV cardiomyopathy so early in the course of her disease. The pathophysiology of this process is likely multifactorial with cardiomyopathy occurring at a wide range of CD4 counts and viral loads. HIV-1 has been shown to have direct toxicity on myocardial cells through cardiac macrophages and production of inflammatory mediators.

HIV-associated nephropathy (HIVAN) is likely secondary to viral infection of renal epithelial cells by HIV-1 resulting in epithelial cell proliferation and apoptosis. HIVAN is more clearly associated with CD4 counts <200 and viral load greater than 400, and usually occurs later in the disease course.

This case suggests that HIVAN itself may be able to occur earlier than previously postulated, though perhaps only in conjunction with an additional insult to the kidneys such as new-onset heart failure.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3842189/

https://doi.org/10.1016/j.jacc.2016.09.977

https://www.ncbi.nlm.nih.gov/pubmed/24924830

CONCLUSION: This case illustrates the potential for the development of rapidly progressive HIV complications, and thus the importance of a robust HIV screening and treatment strategy as early detection of HIV and treatment with ART can prevent these complications.

A CASE OF ORGANIZING PNEUMONIA PREDOMINANT VAPING ASSOCIATED PULMONARY INJURY

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LEARNING OBJECTIVE #1: To understand the association between E-Cigarette and pulmonary injury

LEARNING OBJECTIVE #2: To recognize 4 different types of VAPI

CASE: 22-year-old female with PMH of PTSD and significant THC/CBD use via vaporizer presented to the ED with 2 week history of dyspnea that worsened in the past 4 days. On presentation, her pulse oximetry was 88% on room air. Her dyspnea was associated with productive cough, vomiting, and pleuritic chest pain. During this interval, she had increased her THC/CBD consumption from baseline of 3-4, 30-minute sessions each day. CXR showed bilateral infiltrates in the lung. Chest CTA was significant for diffuse ground-glass opacities and bilateral infiltrates, more prominent on the right. CBC was notable for a WBC of 14.2, so she was given broad-spectrum antibiotics, IV corticosteroids, and nebulized bronchodilators. She was admitted to ICU for acute hypoxic respiratory failure from severe pulmonary injury and placed on BiPAP. ABG was significant for hypoxia with a pO2 of 68.9% on FiO2 of 65%. She became more tachypneic and hypoxic on the second day with a FiO2/pO2 ratio of less than 150, so she was intubated and required ventilator support for the next 5 days. Bronchoscopy and BAL with culture were negative for any growth, and the pathology analysis showed acute inflammation. The patient continued to receive IV steroids and finished a 7-day course of antibiotics. She was successfully extubated and continued a tapering course of steroids. Chest CT before discharge showed improved consolidation and all remaining microbial studies, including Legionella antigen, blood, and respiratory cultures were negative

IMPACT/DISCUSSION: The use of E-cigarettes has dramatically increased in recent years among young adults. These devices have been marketed as safer alternatives to traditional cigarettes by their manufacturers despite a lack of adequate safety data. The exact pathophysiology of VAPI remains unknown, however one hypothesis suggests that the initial alveolar injury is followed by leakage of plasma proteins, recruitment of fibroblasts, and fibrin formation within the alveolar lumen. Most cases presented similarly to ours with dyspnea, hypoxia, fever, and flu-like symptoms. There are four different patterns of VAPI that have been reported: acute eosinophilic pneumonia predominant, organizing pneumonia predominant, lipoid pneumonia predominant, and diffuse alveolar hemorrhage predominant. Systemic steroid and supportive care are the primary treatment for the first two patterns and have been used for the other two with no clear benefit. Bronchoscopy is primarily used to exclude infection and to help to diagnose various forms of VAPI. Given the clinical presentation, radiological, and bronchoscopic findings, this case follows the organizing pneumonia predominant pattern.

CONCLUSION: 1. E-Cigarette use is associated with VAPI associated with nicotine, Tetrahydrocannabinol (THC) and Cannabidiol (CBD) use.

2. Systemic steroid and supportive care are the mainstay of the VAPI treatment.

A CASE OF PASTEURELLA MULTOCIDA BACTEREMIA FROM A DOG SCRATCH

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LEARNING OBJECTIVE #1: Recognize rare complications of dog and cat scratch, including *Pasteurella multocida* bacteremia

LEARNING OBJECTIVE #2: Recognize the importance of obtaining pet history in the appropriate clinical setting

CASE: An 87-year-old Caucasian female presented to the emergency room with complaints of right leg pain and swelling, fever and chills, nausea, vomiting, and nonproductive cough. Her medical history includes congestive heart failure, hypertension, dementia, dyslipidemia, spinal stenosis, vertigo, and atrial fibrillation. The patient was scratched on the right leg by her dog one week ago. There was no dog bite. Physical examination was remarkable for a temperature of 101.4°F, swollen and erythematous right leg, warm, with a small wound discharging serosanguinous fluid on her shin. Blood culture grew *Pasteurella multocida.* Tetanus prophylaxis was given. The patient was successfully treated with one week of intravenous ampicillin-sulbactam, followed by one week of oral ampicillin-clavulanic acid, as well as local wound care. Repeat blood cultures while on antibiotics showed clearance of bacteremia.

IMPACT/DISCUSSION: *Pasteurella multocida* is a small, nonmotile, non-spore forming, gram-negative aerobic and facultative anaerobic bacteria. In Gram-stained specimens, they generally appear as a single bacillus, often with bipolar staining, but may also be seen in pairs or short

chains. *Pasteurella multocida* infections in humans usually result from bites of cats, and dogs; and rarely swine, lions, panthers, horses, rats, rabbits. Human infection from dog scratch is relatively uncommon, with only a few cases reported. Local cutaneous infections are most common. Other reported sites of isolation of this organism include sputum, bronchoalveolar lavage, cerebrospinal, pleural, ascitic, and joint fluid. Systemic *Pasteurella* infections occur more commonly in immunocompromised and elderly patients with various underlying co-morbidities. Mortality of up to 30% has been reported in patients with *Pasteurella* bacteremia. Our patient had multiple comorbidities, including congestive heart failure, hypertension, hyperlipidemia, which likely made her more susceptible to developing this severe infection. *Pasteurella multocida* is often susceptible to penicillins, beta- lactams, carbapenems, second and third generation cephalosporins, and tetracyclines. Our patient was successfully treated.

CONCLUSION: High index of suspicion and detailed history are vital in making diagnosis. Given the high mortality associated with P. multocida bacteremia, prompt treatment with appropriate antibiotics and other other ancillary supportive measures are necessary to guarantee good outcome.

A CASE OF PERSISTENT FEVER: THE IMPORTANCE OF THE DAILY PHYSICAL EXAM

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LEARNING OBJECTIVE #1: Identify culture-negative endocarditis as a cause of persistent fever

LEARNING OBJECTIVE #2: Recognize the importance of the daily physical exam to make a difficult diagnosis

CASE: 34 YOM presented to outside ED with 4 days of fever & headache. MR brain and LP were normal. Admitted and started on antibiotics after drawing blood cultures. After 4 days, discharged on doxycycline with negative cultures. Initially improved, but headache and fever recurred, so he went to our ED 2 weeks after symptom onset. On ROS, endorsed pain in left 3rd toe. Past medical history of ADHD on Adderall. Denied intravenous drug use (IVDU). Had recent exposure to fox urine. In our ED, BP 117/50, HR 100, and Temp 101.9 F. Normal physical exam. Labs with Hb 11.3, WBC 13K, Na 129, ALT 88, AST 53. Normal contrasted CT head. Blood cultures and serologies for zoonotic infections were sent, and he was admitted. On day 2, started on doxycycline (concern for tick-borne illness), with improvement in fever. Pain in 3rd toe persisted, and it had new erythema and purplish discoloration. A transthoracic echocardiogram (TTE) showed no vegetations. On day 3, developed numbness in left cheek, hand, & foot. Toe discoloration worsened, and a transesophageal echocardiogram (TEE) showed a large vegetation in the mitral valve. Due to paresthesias, MR brain was obtained, which showed areas of recent infarction, consistent with emboli. On day 5, blood cultures grew Haemophilus parainfluenza, and antibiotics were switched to ceftriaxone. On day 7, headache resolved. On day 8, had a mitral valve replacement. Discharged on 6-weeks of ceftriaxone.

IMPACT/DISCUSSION: Infectious endocarditis (IE) has multiple manifestations and is often severe (20% mortality). Fever is the most common symptom (90% of cases). Blood cultures are crucial in the diagnosis, but culture-negative IE represents 11% of non-IVDU native valve IE cases. In this category is H. parainfluenzae, part of the HACEK group which has a mean duration of symptoms of 30 days before diagnosis. Our patient's outside blood cultures were negative at 5 days, which shows the importance of holding them for longer in cases of persistent fever.

Our case highlights the importance of the daily patient assessment. Our initial workup was misled by the epidemiological risk factors that put zoonotic infections higher in the differential, and the repeat physical exam was most helpful in the diagnosis. Note that although our patient reported toe pain initially, he only developed discoloration consistent with septic emboli in later days, which prompted us to get a TEE despite a normal TTE. We must recognize that in spite of the predominant role of technology in medicine, the physical exam serves as a tool to rationally order ancillary tests for more definitive answers. Although often seen as redundant, if we avoid the daily examination of a patient, simple diagnoses may be missed.

CONCLUSION: The physical exam strengthens the patient-physician relationship and makes physicians more efficient.

A CASE OF PYOMYOSITIS FROM AN UNLIKELY SOURCE

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LEARNING OBJECTIVE #1: Recognize pyomyositis as a differential diagnosis in patients prone to complicated UTI who present with lower extremity pain and swelling.

CASE: A 79 year old man with a history of prostate cancer s/p transurethral resection of the prostate complicated by urethral stricture and retention, and recurrent deep vein thromboses (DVT) not on anticoagulation presented with swelling and redness of his right leg following a 6-hour drive 2 weeks prior to presentation. His medial right thigh was erythematous with no rashes or breaks in skin. An ultrasound of the right lower extremity revealed a right femoral DVT. He was treated with enoxaparin and later IV vancomycin and ceftriaxone as he became persistently febrile with a leukocytosis to 22. Given his lack of improvement, a CT scan of his lower extremities was ordered revealing large multiloculated collections in his bilateral quadriceps. He was HIV and hepatitis negative, and he had no history of IV drug use. He had no symptoms suggestive of a recurrence of malignancy, no recent travel, or trauma. Due to a lack in clinical improvement on antibiotics, he underwent ultrasound guided drainage of the collections which revealed frank pus. Cultures grew E. faecalis. His antibiotics were changed to IV ampicillin/sulbactam, which he received for 2 weeks post-op. He improved and was discharged on oral amoxicillin/clavulanate for 5 weeks. At follow up 1 month later, he was able to ambulate without pain, and a repeat CT scan showed complete resolution of the left thigh abscess with a decrease in size of the right thigh collection.

IMPACT/DISCUSSION: Pyomyositis is a skeletal muscle infection with abscess formation that may be caused by hematogenous spread in the setting of pre-existing muscle damage. It is usually an infection of the tropics with affected patients who are otherwise healthy. In temperate climates such as the United States, patients tend to be immunocompromised or have other major comorbidities such as diabetes. The most common culprit organism is S. aureus, whereas our patient was infected with E. faecalis. Interestingly, a urine culture collected at the beginning of his admission also resulted positive for E. faecalis. We believe our patient had a preceding urinary tract infection (UTI) with transient bacteremia and subsequent hematogenous seeding of the bilateral quadriceps. Although he had no major risk factors which could put him at risk of developing pyomyositis, he did have a significant genitourinary history requiring frequent self-catheterization and penile clamping. This likely made him prone to complicated UTI, bacteremia, and later pyomyositis with the same culprit organism.

CONCLUSION: Lower extremity erythema, warmth, pain, and edema is often mistaken for cellulitis and thromboembolic disease. In patients who are prone to complicated UTI, such as those who frequently catheterize, who present with lower extremity pain and swelling, physicians should consider pyomyositis as part of their workup.

A CASE OF RECURRENT PYOGENIC CHOLANGITIS COMPLICATED BY HEPATIC ABSCESS ORIENTAL CHOLANGIOHEPATITIS

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LEARNING OBJECTIVE #1: Diagnose oriental cholangiohepatitis in high risk populations

CASE: A 78-year-old, Chinese male with a history of recurrent pyogenic cholangitis (RPC) status post cholecystitis and Roux-en-Y hepaticojejunostomy, presented with 2 weeks of fevers, abdominal pain, and flu- like symptoms. He was prescribed a course of Levofloxacin for a presumed pneumonia as an outpatient prior. History of RPC was not documented until later during his admission. He was febrile to 38.6°C on presentation and labs were notable for leukocytosis (14K/uL; 82% neutrophils); direct hyperbilirubinemia (total 1.2mg/dL); an INR of 1.4; and normal AST, ALT, and ALK. An MRCP revealed a 7.7x7.4x7.3cm, multiseptated right hepatic abscess, intrahepatic biliary dilation, and pneumobilia. He was managed with Meropenem and IR-guided drainage. Cultures revealed pan-sensitive E. coli, while blood cultures were negative throughout his hospitalization.

IMPACT/DISCUSSION: Recurrent pyogenic cholangitis (also known as oriental cholangiohepatitis) is characterized by intrabiliary pigment stone formation, resulting in recurrent bouts of cholangitis. We present a patient from China who presented with a hepatic abscess; a rare complication of RPC.

RPC is usually seen in middle-aged individuals living in a rural, Southeast Asia. However, the incidence in the West appears to be increasing due to the immigration from endemic countries. Although there is no clear etiology, multiple theories including parasitic infections and nutritional deficiency have been proposed. This condition poses a diagnostic challenge as the presenting symptoms are similar to cholangitis due to any other cause, and can occasionally present as pancreatitis. Diagnosis is established by imaging of the liver and biliary system in patients with compatible history, and is only attained in 15-30% of patients after their first presentation. A right upper quadrant ultrasound is a useful initial test; ductal dilation and stones can be seen in 85-90% of patients. MRCP is a non-invasive test that can provide detailed visualization of the extent of biliary involvement. Complications include sepsis upon presentation, liver abscesses, cholangiocarcinoma, and cirrhosis - likely from repeated damage to bile ducts and liver parenchyma. The management of patients with recurrent pyogenic cholangitis should involve a multidisciplinary approach since endoscopic, surgical, and radiologic interventions may be required. Acute bouts of RPC are treated -as is norm for cholangitis and choledocholithiasis- with antibiotics, biliary drainage, and stone extraction. Resection of hepatobiliary segments with biliary-enteric anastamoses can be considered in a subset of patients to alleviate possible long- term complications.

CONCLUSION: Clinicians should have a high index of suspicion for diagnosing RPC in patients from endemic areas

RPC can present with liver abscess and needs thorough evaluation

The case highlights the importance of overcoming language barriers in healthcare

A CASE OF RECURRENT SYNCOPE SECONDARY TO A RIGHT CORONARY ARTERY WITH A MALIGNANT COURSE

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LEARNING OBJECTIVE #1: Recognize the common presentations of a malignant RCA

LEARNING OBJECTIVE #2: Understand diagnosis and management of malignant RCA

CASE: A 40-year-old female with a past medical history of hypertension, combined systolic and diastolic heart failure, and bipolar schizophrenia presented with recurrent syncopal episodes, dyspnea, and angina. She had multiple hospital admissions with similar complaints and poor outpatient follow up.

She presented initially with angina and underwent a full cardiac workup. Stress test revealed a large but mild defect in the basal, mid, and apical anterior and basal and mid anteroseptal walls, but the study was limited by breast attenuation. Cardiac catheterization showed a dominant RCA that arose anomalously from the left sinus of Valsalva, but her coronary arteries were free of disease. Cardiac MRI was suggested, but she was lost to follow up.

One month later, she presented to the ED again with dyspnea. A CTA was done that ruled out pulmonary embolism but, unfortunately, no comment was made regarding the course of the RCA.

During her most recent hospitalization, the cardiac MRI was completed and noted a normal proximal course of the RCA, but distal course was not identified. Closer analysis of the previously performed CTA revealed her RCA passed between the ascending aorta and the pulmonary artery.

Though she was at high perioperative risk due to her super morbid obesity and severely decreased ejection fraction, operative intervention was felt necessary due to her high risk of sudden cardiac death. A single coronary artery bypass graft was successfully performed, and the patient recovered well.

IMPACT/DISCUSSION: Coronary artery anomalies are relatively common and often have no clinical significance. However, a malignant right coronary artery is a rare, and potentially fatal, congenital anomaly found in approximately 0.1% of patients undergoing angiography. A right coronary artery with a malignant course arises anomalously from the sinus of Valsalva and courses between the pulmonary artery and aorta. Many individuals are asymptomatic, but symptoms of angina, syncope, and dyspnea can occur secondary to compression of the RCA between the aorta and the pulmonary artery. Myocardial infarction or sudden cardiac death can occur in these patients in the absence of atherosclerosis. Malignant RCA is diagnosed by CT angiogram. Current literature suggests management of malignant RCA on a patient by patient basis.

CONCLUSION: While malignant RCA is rare, it is not unseen in the general population. In a patient with unexplained angina, presyncope, syncope, or cardiac arrest, malignant RCA should remain in the differential.

Special attention to the coronary arteries should be paid on CTA in order to make this diagnosis. The patient we report had risk factors for cardiac disease but did not have coronary artery disease on catheterization. Some patients can be medically managed, but single coronary artery bypass graft remains a surgical option to resolve the anatomic defect.

A CASE OF REFRACTORY NAUSEA AND VOMITING

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LEARNING OBJECTIVE #1: Diagnose splenic vein thrombosis in a patient with a history of pancreatic surgery.

LEARNING OBJECTIVE #2: Recognize clinical features of splenic vein thrombosis.

CASE: 46-year-old male presented to the ER with nausea and vomiting of two days duration. He had associated diffuse abdominal pain that was slightly more central, with no radiation, 8/10 in intensity, sharp in character, and had no relieving factors. Patient also complained of reflux symptoms. He reported that he had not been taking his insulin for the

previous two days because he had been unable to eat. He also mentioned not taking his anti-hypertensive medication for two days as he has had a tendency to immediately vomit after taking medications.

His past medical history includes T2DM and HTN. His surgical history encompasses insulinoma resection in 2005. His home medications were amlodipine, losartan, atorvastatin, aspart, glargine. On physical exam he was found to have a soft abdomen, mild tenderness to palpation in umbilical area, lack of abdominal distension, and positive bowel sounds.

Patient was admitted a month ago for similar symptoms, at that time he was diagnosed with diabetic ketoacidosis. His symptoms resolved with insulin management and he was sent home. On his current admission to the hospital for nausea and vomiting, his blood glucose was 251 and bicarbonate was 17, he was appropriately managed with insulin. However, this time his nausea and vomiting was refractory to treatment. CT abdomen showed thickening of stomach and distal esophagus. At this time gastroenterology was consulted. EGD was performed which revealed large isolated gastric varices.

IMPACT/DISCUSSION: Splenic Vein thrombosis is a common complication of pancreatic pathologies such as pancreatic cancer, trauma, or chronic pancreatitis. Splenic vein thrombosis over the course of time will lead to collateral flow through the short gastric veins and the coronary vein; prominent gastric mural varices develop in the gastric cardia and fundus. This results in isolated gastric varices from enlargement of short gastric collaterals without portal hypertension or abnormal liver function; this phenomenon is known as left- sided or sinistral portal hypertension. These gastric varices may cause severe gastric bleeding, although the risk is less than that of esophageal varices. Patients present with UGI bleeding or with splenomegaly. If patient is asymptomatic no intervention or treatments are indicated, however, if there is bleeding, splenectomy should be considered. For a newly diagnosed splenic vein thrombosis anticoagulation not is indicated, unless there is a systemic disease leading to a hypercoagulable state present.

CONCLUSION: - Consider EGD to diagnose SVT in patients with a present or previous history of pancreatic pathology.

- Monitor for UGI bleeding in patients with SVT and secondary isolated gastric varices.

A CASE OF STREPTOCOCCUS INFANTARIUS BACTEREMIA ASSOCIATED COLORECTAL CANCER

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LEARNING OBJECTIVE #1: Assess for colorectal cancer in patients with Streptococcus infantarius bacteremia

CASE: 73 year-old male presented to the emergency department following a positive blood culture that was drawn at his infectious disease clinic. He has past medical histories of coronary artery disease, severe aortic stenosis, coronary artery bypass surgery, open heart aortic valve replacement, endocarditis, chronic heart failure, and chronic anemia. His records revealed that he was previously treated for endocarditis of the biopresthetic valve and bacteremia due to Streptoccous infantarius spp coli. Although he had normal findings on a screening colonoscopy 3 years prior to the bacteremia, the patient was advised to follow up with gastroenterologist on discharge. However, he was lost to follow up.

Five years following the initial episode of bacteremia, he returned to our emergency department with a recurrent Streptococcus infantarius spp infantarius bacteremia. His only symptom was intermittent chills. Physical exam revealed 2/6 systolic murmur best heard in the left sternal border and trace edema of lower extremities. The workup included transesophageal echocardiogram which did not show any vegetations or periventricular abscess. Indium white blood cell scan showed an increased white cell loculation in the right lateral abdomen, and subsequent CT scans showed a mass in the ascending colon measuring 4.4 x 3.4 cm without any definite extension through the wall of colon. He underwent diagnostic colonoscopy which found a large mass in the ascending colon that occupied 2/3rd of the lumen. Right hemicolectomy was performed and the pathology confirmed pT2N0MX mucinous adenocarcinoma. Patient was discharged following a completion of antibiotics and confirmed negative repeat blood cultures.

IMPACT/DISCUSSION: Streptococcus infantarius is a subspecies of SBEC, and the taxonomy of SBEC includes 4 main subspecies: Streptococcus gallolyticus subsp. gallolyticus, Streptococcus infantarius subsp. infantarius, Streptococcus infantarius subsp. coli, Streptococcus gallolyticus subsp. Pasteruianus. The study done by Corredoira et al found that colorectal cancer in S. infantarius bacteremia occurred in 10% of the studied patients and that of S. gallolyticus subsp. gallolyticus bacteremia was 63%. Despite the lower incidence of colorectal cancer in S. infantarius bacteremia, the importance of early detection cannot be undermined as misdiagnosis can be life-threatening. Our patient had a history of S. infantarius bacteremia and endocarditis and presented with recurrent bacteremia with the same species that localized at the site of colorectal cancer. We aim to highlight that formerly known S. bovis is further classified into 4 different subspecies under a unified group, SBEC. In addition, S. infantarius bacteremia warrants a thorough investigation to rule out a potential colorectal cancer.

CONCLUSION: It is essential to investigate for colorectal cancer for an early detection in patients with S. infantarius bacteremia.

A CASE OF THE NEPHROTIC SYNDROME: AA-AMYLOID NEPHROPATHY IN A CHICAGO HEROIN USER

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LEARNING OBJECTIVE #1: Recognize the association between subcutaneous heroin use and renal AA amyloidosis

LEARNING OBJECTIVE #2: Recognize that renal biopsy is key in identifying the etiology of nephrotic syndrome

CASE: A 53 yr old man presented with 3 days of abdominal swelling, pain, and chronic lower extremity edema. Medical history was significant for untreated hepatitis C. He was an active heroin user for >30 years, and regularly practiced “skin popping.” He had anasarca and numerous <1cm round wounds and scars throughout his extremities. Notable labs were Cr 4.2, eGFR 15, total protein 6.7, albumin 2.1, HC viral load 396,321, HIV non-reactive, Urine protein:cr 8,493, and serum cryoglobulins were elevated at 1.5%. Workup was negative for myeloma and endocarditis. Due to concern for cryoglobulinemia causing renal dysfunction he was started on high dose prednisone and diuresis. Rituximab was recommended after no improvement in renal function. However, a renal biopsy revealed diffuse AA amyloid. Steroids were tapered and he was discharged. He follows regularly in renal and hepatology clinics, is being treated for HCV, and has enrolled in a methadone clinic. He has progressed to ESRD and is on dialysis.

IMPACT/DISCUSSION: Presence of heavy proteinuria, hypoalbuminemia, and peripheral edema should prompt workup for nephrotic syndrome. Differential diagnosis for this patient accounted for his serum protein gap and untreated hepatitis C, initially most concerning for cryoglobulinemia. However he lacked other features of active disease. Renal biopsy confirmed an alternate diagnosis sparing him immunosuppression.

AA amyloidosis is a secondary amyloidosis associated with chronic inflammation. Amyloid A protein is produced by fibroblasts in sustained acute phase responses and deposits in tissues. Underlying disorders are

themselves risk factors, including chronic inflammatory disorders (e.g. rheumatoid arthritis) and infections (e.g. pressure ulcers). AA amyloidosis primarily affects the kidneys causing nephrotic syndrome and progressive damage (median time to ESRD 2.4 years) with high mortality (median 4.2 years from diagnosis).

Our patient had a classic presentation of a rare and morbid condition, which we expect will be increasing with the opioid epidemic. Subcutaneous heroin use is associated with AA amyloidosis through chronic skin abscesses. This was initially reported in the 1970s, but was then absent from the literature until recently. The risk of AA amyloidosis has been estimated at 170x higher in heroin users compared with non-users. Only halting amyloid production can slow disease progression. Therefore, in at-risk patients it is key to diagnose the condition and intervene with substance abuse resources.

CONCLUSION: - Renal biopsy is key in identifying the etiology of nephrotic syndrome

- Subcutaneous heroin use is associated with AA amyloidosis

- AA amyloidosis can present as nephrotic syndrome, progresses to ESRD, and the only treatment is to avoid further amyloid creation

A CASE OF THE SWOLLEN ANKLE, WITH A TWIST!

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LEARNING OBJECTIVE #1: Recognize the clinical presentation of TB arthritis.

LEARNING OBJECTIVE #2: Broaden the differential diagnosis of the swollen joint.

CASE: A 44-year-old Chinese man with no prior medical history presented with worsening of a swollen ankle. He was in his usual state of good health until one year ago when he twisted his left ankle. He then suffered progressive swelling and pain with ambulation. One month prior to presentation, he used a nail clipper to incise the area of swelling and reported minimal drainage. He then developed worsening swelling, pain, and redness over the area and presented to the hospital. He denied fevers. His exam revealed edema and erythema over the left medial malleolus and midfoot, a pinhole ulceration, and limited ankle range of motion. There was left calf muscle atrophy without sensory deficits. An MRI revealed septic arthritis, osteomyelitis, and degenerative changes suggestive of neuropathic arthropathy. Wound cultures grew pan-sensitive S. aureus and appropriate antibiotics were started. Just prior to discharge, it was noted that he lacked neuropathic deficits to fully explain his arthropathy. Ankle biopsy returned PCR and cultures positive for M. tuberculosis (TB). Induced sputum was also positive for TB. The patient was isolated and RIPE therapy was initiated.

IMPACT/DISCUSSION: The swollen joint is a common problem encountered by general internists. Causes include crystal arthropathy, systemic rheumatic disease, osteoarthritis, reactive arthritis, and infectious arthritis. A great mimicker of these entities is M. tuberculosis, which eludes early diagnosis due to its indolent and progressive course. It is often a “cold” monoarthritis, presenting with minimal erythema or warmth. It is less painful than other types of septic arthritides, explaining how our patient had preserved ambulation for months. Populations at higher risk include those with travel to endemic areas and immunocompromised status. Suspicion should be raised when patients fail to respond to standard antibiotics or when synovial fluid samples repeatedly show sterile leukocytosis. TB arthritis also produces joint destruction that is radiographically similar to neuropathic arthropathy. This information was critical to the final diagnosis in our patient, but confirmation bias led us to initially disregard radiographic evidence inconsistent with our physical exam and anchor on S. aureus, a more common culprit in septic arthritis. This was ultimately determined to be a superinfection due to unsterile manipulation.

CONCLUSION: TB arthritis is a mimicker of many acute and chronic joint conditions and should be included in the differential for a swollen joint. Suspicion is greater in cases of indolent and progressive monoarthritis in which standard antibiotics fail and when radiologic data is inconsistent with history and exam. Risk factors include travel to endemic areas or immunocompromised state. Diagnosis is made by PCR and culture. Pulmonary TB should be ruled out, though treatment is generally the same.

A CASE OF THE WOBBLY VOICE

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LEARNING OBJECTIVE #1: Recognize symptomatology of Hashimoto Encephalopathy for early referral and treatment.

CASE: A 67-year-old right handed retired pediatrician presented to the clinic with complaints of voice changers, she was evaluated and treated for anxiety. She subsequently presented with worsening symptoms and was sent to the ER. She described spells that started five months ago, with progressive dysarthria and confusion. Within the last month her neurological symptoms had progressed to her left ear and hand. She also complained of a tingling sensation surrounding her left ear, decreased dexterity and coordination of her left hand, as well as new onset hypertension. She underwent an urgent MRI of her head and neck. The findings showed multifocal subcortical and cortical FLAIR signal abnormalities and was admitted to the hospital. Physical exam was notable for dysarthria. Work up: Lumbar puncture – elevated CSF proteins (NUC 0, protein 154, RBC 0, Glucose 45mg/dL). She was negative for meningitis. Lipids, Metabolic profile, and thyroid tests, and initial immune work up were negative. She was immediately treated with plasmapheresis and steroids with some relief and subsequently found to have elevated anti-TPO antibody (54 U/ml). The patient had a repeat brain MRI with the addition of a cervical and thoracic MRI. Her head MRI demonstrated signs of a possible atypical hypertensive encephalopathy, the other images were unremarkable.

She was diagnosed to have Hashimoto’s Encephalopathy (HE) and started on Prednisone and monthly IVIG infusions with improvement of symptoms.

IMPACT/DISCUSSION: HE is a rare disorder which is often not considered in the context of neurological dysfunction. The pathophysiology of HE is not clearly defined, however the disease has no correlation with thyroid dysfunction. The only definitive finding for the diffuse disruption of the cerebrum is microvascular lymphocytic infiltration of postmortem patients plagued with fatal status epilepticus. The condition is classically associated with high levels of anti-thyroid antibodies with normal thyroid function levels. However, elevated levels of anti-thyroid autoantibody do not correspond with the neurological disease progression.

Clinical manifestation of HE is characterized by altered mental status, seizures, psychosis, and myoclonus. HE can more specifically be characterized by dividing symptom manifestation into two subgroups: acute stroke like presentation or a diffuse chronically progressive pattern. The most common of the two subgroups being the latter, with general symptoms seen in both cases. HE is a rare disease that is difficult to diagnose. It is important for physicians to be aware of the disease, its association with autoimmune diseases and early treatment.

CONCLUSION: HE is an infrequent clinical siting however when encountered it is often misdiagnosed

HE diagnosed and treated swiftly lowers patient complications and overall patient well-being can be improved.

A CASE OF WALKING-STICK URETERS AND HEPATIC ABNORMALITIES ASSOCIATED WITH KETAMINE USE

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LEARNING OBJECTIVE #1: Recognize the clinical features of ketamine-associated urinary and hepatic abnormalities

LEARNING OBJECTIVE #2: Elicit a history of ketamine use or abuse in patients with unexplained urinary and hepatic abnormalities

CASE: A 40 year-old woman with history of anemia and prolonged ketamine use presented to the ED with a 2-day history of severe cramping abdominal pain, fatigue, and vomiting. Physical examination was remarkable for diffusely tender abdomen and left costovertebral percussion tenderness. Laboratory tests showed blood urea nitrogen 69 mg/dL (reference range 7-18), creatinine 4.9 mg/dL (reference range 0.5-1.3), hemoglobin 6.8 g/L, alkaline phosphatase 692 IU/L, gamma-glutamyl transpeptidase 1,503 IU/L (baseline values not available). The urinalysis was positive for large leukocyte esterase and white blood cell, with urine culture growing >100,000 Streptococcus agalactiae. A CT of abdomen and pelvis showed severe bilateral hydronephrosis and hydroureter extending to the ureterovesicular junctions but no obstructing calculus. The CT also showed moderately distended gallbladder with diffuse wall thickening and a distended common bile duct but no calcified gallstones. The patient was evaluated by pyelography with XR fluoroscopy revealing ureteral strictures in a segmental beading pattern. Bilateral ureteral stents were placed, and renal function slowly improved (discharge creatinine 2.1 mg/dL). Liver function abnormalities persisted during subsequent outpatient follow up and the patient was eventually re-admitted for acute cholecystitis with no evidence of obstruction in the common bile duct. Patient declined surgery and was discharged with oral antibiotics.

IMPACT/DISCUSSION: Ketamine is used in clinical settings primarily for analgesia and sedation and, more recently, for the treatment of depression as well as severe asthma.[1] The effects of ketamine on the urinary system and biliary system have been previously described, especially in Taiwan and Hong-Kong. [2-5] Less commonly described is the concomitant presence of ketamine-induced urinary tract damage characterized by "walking-stick ureters"[6] and liver abnormalities with bile duct dilatation, as in our patient.[7, 8] This initially led to further investigation of alternative infiltrative etiologies, including amyloidosis and IgG4 disease, and patient underwent biopsy with negative results. The exact pathogenesis of ketamine- induced damage is still under investigation, possibly involving direct or immune-related injury by ketamine or its metabolites.[9] Abstinence results in symptomatic improvement but full recovery may not be achievable depending on the severity of damage.[2]

CONCLUSION: Given the presence of large Asian communities in NYC, in which the prevalence of ketamine use is likely to be significantly higher than the overall US,[10] ketamine-induced urinary and biliary tract disease should be considered in patients with the findings described here. Immediate cessation of ketamine use will be key to recovery.

A CASE OF WORSENING LOWER BACK PAIN

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LEARNING OBJECTIVE #1: Recognize the signs and symptoms of high-risk back pain

LEARNING OBJECTIVE #2: Diagnose and treat spinal tuberculosis

CASE: A 38-year-old man from Ethiopia consulted his primary care physician for management of lower back pain without fevers or night sweats, which began after lifting a heavy object. He had no neurological deficits and was discharged with a diagnosis of musculoskeletal back pain and prescribed nonsteroidal anti- inflammatory drugs and physical therapy. A year later, the patient presented to clinic with daily fevers up to 103°F over the previous week. The patient reported lower back pain radiating down both legs, night sweats, and weight loss of ten pounds in five months. Physical examination revealed new midline lumbar tenderness and mild lower extremity weakness. Infectious workup including complete blood count, chest X-ray, urinalysis, and HIV testing were negative. Additional history revealed that the patient tested positive for Quantiferon-TB Gold with a negative CXR in 2013 and had previously declined treatment for latent tuberculosis (TB) infection. Computed tomography of his lumbar spine showed a lucent lesion in the L3 vertebral body. MRI of the lumbar spine revealed L3 intraosseous abscess, epidural abscess from L3-S2 causing severe canal narrowing at L5/S1, and multiple left psoas abscesses. At this point, a bone biopsy of the vertebra was performed, which showed mycobacterium-TB complex. The patient was started on rifampin, isoniazid, pyrazinamide, and ethambutol for vertebral osteomyelitis and associated epidural abscess secondary to extrapulmonary TB. This treatment would continue in the outpatient setting with a community nurse for directly observed therapy.

IMPACT/DISCUSSION: Spinal TB, or Pott disease, is rare in the United States and seen most often in immigrants from countries where TB is endemic. It often has an insidious onset, on average over 4-11 months, and chronic back pain is the most frequent symptom. Patients usually seek advice when there are constitutional symptoms such as fever or weight loss, worsening back pain or neurological symptoms such as lower extremity weakness. MRI is the most valuable imaging study but the gold standard is neuroimaging- guided biopsy for histopathological diagnosis. The optimal treatment is antimicrobial therapy similar to treatment of pulmonary TB. Surgical management may be required in select cases.

CONCLUSION: Back pain is the most common cause of occupational disability in the world. Thus, it is a common complaint in the primary care practice. This case demonstrates the importance of obtaining a thorough history and maintaining a wide differential for a frequently encountered symptom in the outpatient setting. Additional consideration should be given to spinal TB in immigrants from countries where TB is endemic.

A CASE REPORT OF FEVER OF UNKNOWN ORIGIN FROM CONCOMITANT ACUTE, IGM NEGATIVE PCR POSITIVE ANAPLASMOSIS AND WEST NILE VIRUS INFECTION

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LEARNING OBJECTIVE #1: Recognize the importance of travel history in evaluating fever of unknown origin

CASE: A 62 year old female presented to the emergency department in July with fevers, headaches, and bleeding gums for 3 weeks. On presentation, she was febrile to 101.5°F.

She had travelled extensively across the Western hemisphere over the past 6 months and spent a significant amount of her time outdoors. Areas where she travelled included Tennessee 2 weeks prior, a farm in upstate New York 3 weeks prior, Vancouver 4 weeks prior for a business conference where she also went hiking, Tulum, Mexico 8 weeks prior where she went spelunking, and the Virgin Islands 5 months prior to presentation.

Labs:

White blood cells 6.1 x103/μL, Hemoglobin 13.2 g/dL, Platelets 18 x103/μL . AST 131 (11-32 U/L), ALT 101 (3-30 U/L)

Given her extensive travel history, she was evaluated for possible zoonotic infections. She was started empirically on doxycycline 100 mg IV twice daily. She continued to have fevers up to 103.5 F, and defervesced after being on doxycycline for 24 hours. Her zoonotic infection workup was notable for:

Anaplasma IgM negative, but IgG positive 1:1024

Anaplasma phagocytophilum DNA detected by PCR

West Nile Virus IgG negative, but IgM positive

Lyme IgG positive with 8/10 bands. IgM negative 0/3 bands

She tested negative for acute mononucleosis, babesiosis, histoplasmosis, blastomycosis, and Q fever.

IMPACT/DISCUSSION: Fever of unknown origin is defined as a fever of 38.3° C on several occasions for at least 3 weeks. This patient had an extensive travel history with potential exposure both to a range of insect vectors and to infections linked to spelunking (e.g. histoplasmosis), putting her at risk for multiple vector borne and other travel and exposure related infections. A detailed history elucidating her numerous diverse possible exposures provided guidance on her diagnostic evaluation which ultimately led to her diagnoses of anaplasmosis and West Nile virus infection. As anaplasmosis is transmitted by ticks, and West Nile virus by mosquitoes, this patient had two infections from two different vectors.

Although her anaplasma IgM antibodies were negative, her significantly elevated IgG titers and the positive PCR suggest active infection from Anaplasma phagocytophilum. She was also found to have IgM antibodies to West Nile Virus suggestive of an acute West Nile Virus infection. As there is no specific treatment for West Nile virus infection and as anaplasmosis requires treatment, she was treated with a 3 week course of doxycycline 100 mg orally twice daily with resolution of her signs and symptoms.

CONCLUSION: - In evaluating fever of unknown origin, patient's travel history, exposures, and timing of symptoms is important to elucidate to guide diagnostic evaluation

- Acute anaplasmosis can still be present despite negative IgM antibodies

- It is appropriate to consider the possibility of concomitant active infections, particularly when patients have multiple possible exposures

A CASE REPORT OF POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME

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LEARNING OBJECTIVE #1: Diagnose posterior reversible encephalopathy syndrome (PRES) in postpartum female with mild hypertension.

LEARNING OBJECTIVE #2: Recognize the risk factors of PRES.

CASE: A 31-year-old woman, gravida 4 para 1, with no significant past medical history presented with witnessed seizures 14 days after spontaneous vaginal delivery. She was found in the bathtub by her mother complaining of dizziness and blurry vision, with subsequent generalized tonic-clonic seizures and foaming from the mouth. Patient didn't have a fall or experience loss of consciousness. On physical exam, she was alert with no focal neurological deficit, afebrile with blood pressure (BP) of 160/90 mmhg and heart rate of 70/min. Labs were unremarkable. Head CT scan revealed right frontal hemorrhage measuring 3.6 x 2.0 x 3.0 cm for which patient was admitted to the medical ICU. Neurosurgery was consulted and recommended no intervention. Brain MRI revealed patchy areas of edema within the right cerebral hemisphere compatible with PRES. Repeat head CT scan showed stable intracranial hemorrhage along with sites of diminished attenuation in the subcortical white matter which correlates with PRES. The patient was started on nicardipine drip and eventually switched to oral nifedipine for BP control. She remained neurologically stable, BP was well controlled and patient was subsequently transferred to obstetric service on day 2.

IMPACT/DISCUSSION: PRES was first described in 1996 as a clinicoradiographic entity. Its clinical presentation varies from headache, confusion, dizziness up to seizures and focal neurological deficit.

Radiologically, it's characterized by symmetric vasogenic brain edema most commonly affecting parietal and occipital lobes seen on brain CT or MRI.

Pathogenesis is not well understood, but autoregulatory failure of maintaining cerebral blood flow along with hypertension and endothelial dysfunction remains the proposed mechanism for developing PRES. In various case reports, PRES has been established in patients with preeclampsia/eclampsia, hypertension, bone marrow transplant or sepsis. In our case, the patient didn't meet the diagnostic criteria for eclampsia, therefore hypertension was believed to be the inciting risk factor for developing PRES, even with mild elevation of BP. Treatment varies depending on the condition causing this syndrome, therefore treating the associated factors and control of BP will lead to its reversibility within days to weeks.

CONCLUSION: Hypertension plays a major role in PRES. However, many patients do not have severe hypertension making the rapid fluctuations in BP more important than the BP itself.

PRES is considered a reversible condition, therefore clinicians should always have high suspicion index in patients with risk factors like pregnancy and hypertension for early recognition and management.

ACCELERATED DECOMPENSATION IN UNTREATED CUSHING'S DISEASE

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LEARNING OBJECTIVE #1: Clinicians should consider all aspects of the endogenous hypercortisolism and determine the necessity of empiric treatment in the absence of definitive diagnosis

CASE: Patient was a 79 year old female with a past medical history of Hypertension, Hyperlipidemia, Type 2 Diabetes Mellitus, and recent compression fractures who presented with lethargy and failure to thrive for ten days duration. At presentation, she developed hypokalemia despite oral repletion, uncontrolled diabetes despite poor oral intake and scheduled insulin, uncontrolled hypertension with systolics regularly in the 200's, and uncontrolled pain secondary to nine new compression fractures throughout her spine. On exam, she was hypertensive and tachycardic, with ecchymosis diffusely. Her physical appearance was negative for striae, hirsutism, purpura, or hyperpigmentation. Labs were significant for Adrenocorticotropic hormone (ACTH) of 233 pg/ml, 24 hour urine cortisol of 4580 ug/d, a serum cortisol of 209 mcg/dL after low dose dexamethasone stimulation test and 71.4 mcg/dL after high dose test. A total body computed tomography scan demonstrated a 3.2 x 4.4 cm left upper lobe mass, bilateral adrenal hyperplasia, a solid thyroid nodule (classified TI-RADS 4). Magnetic resonance imaging of the sella suggested a 5 mm hypoenhancement, consistent with a microadenoma. Endocrinology determined that a lung biopsy was warranted due to concern of ectopic production of ACTH. Prior to receiving her lung biopsy, the patient became hemodynamically unstable on multiple occasions and experienced several rapid response episodes due to newly developed atrial fibrillation with rapid ventricular response. The patient passed away five weeks after presentation of symptoms.

IMPACT/DISCUSSION: The incidence of endogenous Cushing's has been approximated to 1 per 500,000 cases per year. Despite very few etiologies, the disease has complex symptomology involving cortisol production, including pituitary adenomas and exogenous production from underlying malignancies. If left untreated, this rare disease can have fatal consequences, making its accurate diagnosis important but also an ethical dilemma in moribund patients.

CONCLUSION: While Cushing's Disease is a rare clinical occurrence, the initial signs and symptoms of the disease are often nonspecific and overlap with various metabolic processes. It is important to recognize associated risk factors including malignant hypertension, hypokalemia, and hyperglycemia as these findings can cause fatal sequelae. Endocrinologists are an excellent resource when available to assess the need to start treatment along with clinical judgement. Although the annual incidence of exogenous hypercortisolism is quite low, it is important for clinicians to consider all aspects of the disease. Ultimately, disease progression may develop into an ethical dilemma as patients with severe disease often become moribund without notice and provider's should not forgo empiric treatment for definitive diagnosis.

ACCOMPANIMENT OF A MEDICALLY COMPLEX PATIENT WITH SOCIAL HEALTHCARE BARRIERS

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LEARNING OBJECTIVE #1: Assess patient priorities in medically and socially complex cases

LEARNING OBJECTIVE #2: Manage patient-centered care with a multidisciplinary team and commitment to long-term accompaniment

CASE: Ms. W is a 28 year-old woman with a medical history of hypertension, major depression (suicide attempt), Systemic Lupus Erythematous complicated by nephritis, and a hypercoagulation disorder of unknown etiology leading to a myocardial infarction, stroke, and pulmonary embolism in 2017, and a painful abdominal rash which biopsy suggested was cutaneous lupus. Her medications included hydroxychloroquine and warfarin. Her INR was chronically subtherapeutic due to medication non-adherence caused by difficulty maintaining work and benefits. She was given an hour-long visit at our multidisciplinary Comprehensive Care Clinic, resulting in referrals to specialists, education about her medications, and access to social resources. She subsequently missed her referral appointments, her INR remained subtherapeutic, and she was lost to follow-up. Several months later, she presented to a local emergency room for management of her painful abdominal rash. Our nurse care manager reached out and encouraged her to re-engage. It was discovered that she had briefly moved out of state, but decided not to return to our clinic because she felt that her rash had been inadequately prioritized. She was quickly sent to dermatology, then started on prednisone, tofacitinib, and a pain control regimen. She has since maintained a therapeutic INR on warfarin and established care with subspecialists. She has frequent contact with our nurse care manager and follows closely with the clinic.

IMPACT/DISCUSSION: Patients with frequent emergency room visits and hospitalizations are a source of disproportionate cost in the American healthcare system, so research and policy are increasingly focused on how to approach these patients.[1] In the case of this medically complex patient with frequent but uncoordinated health care contact, her treatment was initially ineffective due to multiple social barriers and a lack of trust in her healthcare providers. Once our multi-disciplinary team, lead by our nurse care manager, prioritized her goals and committed to sustained accompaniment with frequent and open communication, the patient saw significant improvement in quality of life, reduced risk of coagulopathy, and sustained treatment for her chronic medical conditions.

CONCLUSION: For medically complex patients facing social healthcare barriers, providers should prioritize patient goals and approach biopsychosocial problems with a multidisciplinary team. While it may take time to see results, and it may be difficult to measure success, we should commit to long-term accompaniment using patient-specific strategies to address patient needs.

1. Ganguli I, Orav EJ, Weil E, Ferris TG, Vogeli C. What Do High-Risk Patients Value? Perspectives on a Care Management Program. J Gen Intern Med. 2018 Jan;33(1):26-33

ACHES FOR DAYS: A RARE CAUSE OF MYOPATHY

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LEARNING OBJECTIVE #1: Identify causes of idiopathic inflammatory myopathies

CASE: A 51-year-old female with no significant past medical history presented with a 1 month history of myalgias. After coming back from a one-week vacation in India she began experiencing diffuse myalgias, predominantly in her quadriceps and hamstring group muscles. She was initially seen by her primary care physician at which time lab work revealed elevated aminotransferases with an ALT and AST of 328 units/L and 357 units/L respectively, and with a positive total anti-Hepatitis A antibodies. She was diagnosed initially with presumed Hepatitis A, but her symptoms progressed and she returned for reassessment. Lab work obtained after that visit illustrated an increased ALT and AST at 424 units/L and 441units/L, positive ANA with a 1:640 cytoplasmic pattern, and CPK strikingly elevated at 14,616 units/L. Given her symptoms with abnormal labs she was referred to the emergency department for further evaluation. Upon presentation vitals were stable with mild lower extremity proximal muscle weakness and significant pain upon extension. Labs revealed CPK of 17,749 units/L and ALT of 433 units/L and AST of 505 units/L. An autoimmune serologic workup was pursued and patient underwent muscle biopsy that revealed nonspecific mild necrotizing changes without evidence of vasculitis or inflammatory myopathy. With rheumatology guidance she was started and discharged on a prednisone taper. At follow up myositis serologies returned positive for Anti-SRP antibodies, consistent with the diagnosis of Necrotizing Autoimmune Myositis (NAM). Given her progressive symptoms with functional decline she was transitioned to azathioprine, IVIG, and thereafter rituximab with clinical improvement.

IMPACT/DISCUSSION: This case highlights an extremely rare cause of myopathy. Idiopathic Inflammatory Myopathies (IIM) consist of dermatomyositis, polymyositis, myositis associated with antisynthetase syndrome, immune-mediated necrotizing myopathy, and inclusion body myositis with an overall annual incidence of approximately 1 in 100,000 (1,3). NAM comprises 19% of IIM and is characterized by necrotic muscle fibers with absent or minimal inflammation (1). The predominant clinical feature is proximal muscle weakness as with other myopathies (2). Unfortunately, there have not been any clinical trials performed to guide therapeutic decisions. Most recommendations are extracted mostly from observational data and experience (2).

CONCLUSION: Idiopathic Inflammatory Myopathies including NAM are uncommon. It is prudent for clinicians to be aware of these spectrum of conditions in order to achieve timely diagnosis, and hopefully avoid secondary long term disability.

ACHY BREAKY AMYLOID HEART

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LEARNING OBJECTIVE #1: Recognize the electrocardiogram and transthoracic echocardiogram findings associated with cardiac amyloidosis.

CASE: A 63 year old man presented to the hospital for chronic dyspnea on exertion and lower extremity edema for the past 9 months. He had tried ACE wraps and furosemide prescribed by his doctor without improvement for his edema. He reported 3-pillow orthopnea and weight loss of 40 pounds in the prior year. He denied chest pain and palpitations. Cardiac exam revealed regular rate and rhythm with appreciable S1 and S2 without S3. JVP was 10 cm with patient at a 45 degree angle. He had 3+ pitting edema to his hips bilaterally. Initial labs were notable for negative troponin and BNP 662. Electrocardiogram (EKG) revealed normal sinus rhythm with low voltage. Transthoracic echocardiogram (TTE) showed severe left ventricular hypertrophy and mildly decreased ejection fraction of 45-50%. Given these findings, there was concern for amyloid cardiomyopathy. Both serum and urine protein electrophoresis (SPEP, UPEP) revealed monoclonal expansion with elevated lambda light chain, raising concern for AL amyloidosis. A subsequent cardiac biopsy revealed amyloidosis involving the arteries and interstitium, confirming the diagnosis of AL amyloidosis. His symptoms improved with intravenous furosemide and he went on to establish care with hematology and a cardiac amyloid center for further treatment.

IMPACT/DISCUSSION: Cardiac amyloidosis is an infrequent, progressive cardiomyopathy that is often fatal. In diagnostic testing for heart failure symptoms, this disease will present with a low voltage EKG and ventricular hypertrophy on TTE. Typically, ventricular hypertrophy is associated with high voltage EKG, as in hypertension. This atypical pattern occurs in very few disease states, two being amyloidosis and endomyocardial fibrosis. As infiltrative cardiomyopathies, they cause enlargement of the heart wall but diminish the voltage of the EKG by insulating the electrical activity traced by the EKG leads. Since these conditions can be differentiated by further testing and subtle differences on TTE imaging, referral to cardiology is recommended for this paradoxical pattern of EKG and TTE.

In the setting of heart failure, AL amyloidosis has poor prognosis if untreated (1 year survival is 38%). Initial work-up of suspected cardiac amyloidosis begins with bloodwork including light chains, SPEP and UPEP. The mainstay of treatment involves chemotherapy and/or autologous stem cell transplant in order to eradicate the plasma cell dyscrasia. Referral to both a hematologist and cardiac amyloid specialist is recommended. Earlier diagnosis and treatment of AL amyloid can prolong survival.

CONCLUSION: Pursue work-up for cardiac amyloidosis in patients with heart failure symptoms, low voltage EKG, and ventricular hypertrophy on TTE.

ACHY BREAKY HEART: A CASE OF POST- MITRAL VALVE REPAIR (MVR) CHOREA IN AN ADULT

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LEARNING OBJECTIVE #1: Recognize chorea as a rare neurologic sequela of cardiac surgery in adults

LEARNING OBJECTIVE #2: Distinguish common and rare sequelae of adult cardiac surgery

CASE: A 61 y/o woman was admitted with left-sided weakness following her third mitral valve repair (MVR). Her history included coronary artery disease, severe mitral regurgitation requiring repeat MVRs and stroke with residual right-sided weakness. Admission CT showed evolving right middle cerebral artery territory infarction with stable occlusion of the inferior division of the right M2 segment. Within four hours, her left-sided weakness significantly improved, and neurology recommended no acute intervention. The stroke was attributed to valve thrombosis from warfarin non-adherence. Admission exam was notable for choreoathetoid movements of her left hand and foot, which she reported had started after her latest MVR twelve days prior.

On day two, the patient developed transient right-sided weakness along the distribution of her previous stroke. A repeat CTA showed short segment occlusion of the left paraclinoid internal carotid artery with collateral flow and improvement in the small acute infarcts. Disruption of the basal ganglia's corpus striatum through injury or ischemia can cause chorea. However, her neuroimaging did not demonstrate basal ganglia vascular compromise and therefore could not explain her left-sided choreoathetoid movements. A trans- thoracic echo showed mildly dilated left atrium with a negative bubble study and no thrombus. Her medication history was unrevealing. The choreoathetoid movements gradually diminished and had fully resolved by discharge on day six.

IMPACT/DISCUSSION: Our patient experienced two neurologic complications of valve replacement, one most common (CVA) and one very rare (post-pump chorea). Post-pump chorea has been described most frequently in pediatric populations. The pathophysiology is hypothesized to be due to the multifactorial effects of hypothermia, extra corporeal circulation, and aortic cross-clamping in decreasing blood flow to the basal ganglia and slowing cerebral metabolism, resulting in a reversible watershed effect. The literature describes only two other adult cases: one five days after aortic valve replacement and a second case of chorea two weeks after the repair of a thoracic aortic aneurysm. In our patient, her neuroimaging, medication history and initial acute left-sided weakness could not explain the choreoathetosis; only her recent history of MVR provided the key to the diagnosis. This case highlights that patients who undergo cardiac surgery can be at risk for subtle neurologic complications that may mimic more devastating ones like CVA.

CONCLUSION: Cardiac surgery can provoke neurologic sequelae. Common neurologic complications include encephalopathy, stroke, seizure, and peripheral nerve injury. Post- cardiac surgery chorea is more common in children and rare in adults.

A CLASSIC CASE OF PITUITARY APOPLEXY

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LEARNING OBJECTIVE #1: Recognize pituitary apoplexy as a cause of thunderclap headache

LEARNING OBJECTIVE #2: Manage pituitary apoplexy including initiation of stress-dose steroids

CASE: A 54-year-old-male presented with headache. One week prior he had sudden onset, severe headache upon awakening. In the ER, CT head showed no acute process and the patient was discharged on oral antibiotics for incidental leukocytosis. He re-presented three days later with ongoing headache, new diplopia and mild ptosis. MRI brain identified a pituitary mass, and heparin drip was initiated for possible sinus thrombosis. His headaches and ptosis worsened which prompted him to leave and present at UCLA.

At admission to our institution, he reported ongoing headache and inability to open his left eye. Exam was notable for normal vital signs, complete left-sided ptosis and impaired extraocular movement with inability to elevate, adduct, or depress the eye. The left pupil was dilated to 8mm and fixed with normal visual fields. MRI brain showed a large pituitary mass with likely internal hemorrhage. His sodium and potassium were normal, TSH was 0.21, FT4 1.1, LH 1.0, FSH 1.4, PRL 9.7, ACTH 13, and 8 am Cortisol 4.

He was diagnosed with a non-functioning pituitary macroadenoma compressing cranial nerve III, complicated by pituitary apoplexy and panhypopituitarism. Levothyroxine and dexamethasone were given with significant improvement in headache symptoms. He underwent excision of the pituitary tumor via endonasal transsphenoidal approach, complicated by progressive hyponatremia and SIADH treated by fluid restriction, salt tabs, and a hydrocortisone taper.

IMPACT/DISCUSSION: Although pituitary apoplexy is a rare event, its early management is crucial for clinical outcome and differs from management of other diagnoses on the differential at time of presentation, highlighting the importance of recognizing its clinical features. Our case is a classic presentation featuring the two most common symptoms: headache (often thunder-clap, > 80% of cases) and visual disturbance (most commonly ocular palsy, > 50% of cases). Less common (25-75%) are signs of meningeal irritation such as nausea/vomiting and altered mental status. Of note, > 90% of cases present without prior diagnosis of pituitary adenoma or reported symptoms consistent hypothalamic-pituitary axis dysfunction. The most recognized precipitants are major surgery and initiation of anticoagulation, consistent with the worsening our patient reported following initiation of heparin.

For the internist, the most crucial step in management is initiation of stress-dose steroids to prevent or treat hemodynamic collapse from loss of cortisol, followed by neurosurgical consultation for surgical versus conservative management.

CONCLUSION: Pituitary apoplexy is a rare diagnosis often on the differential of subarachnoid hemorrhage, bacterial meningitis, cavernous sinus thrombosis, and midbrain infarct that requires unique and urgent treatment from its mimickers. Start stress-dose steroids if pituitary apoplexy is suspected.

A COMMON DRUG CAUSING AN UNUSUAL ERUPTION: FUROSEMIDE TRIGGERING BULLOUS PEMPHIGOID

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LEARNING OBJECTIVE #1: Recognize a rare side effect of a very commonly prescribed medication.

LEARNING OBJECTIVE #2: Describe the importance of investigating medication exposure in the evaluation of bullous diseases.

CASE: A 65 year-old man with no known autoimmune disease history was hospitalized for shortness of breath and peripheral edema, diagnosed with decompensated heart failure, and treated with IV furosemide.

Within a day, he developed a 1 cm, tense, fluid-filled bullous lesion on his lower abdomen. The next day, three larger bullous lesions with surrounding erythema appeared nearby. Based on clinical appearance and timing, he was diagnosed with drug-induced bullous pemphigoid. Furosemide was stopped and treatment switched to bumetanide. Symptoms improved with no further bullae formation and he was sent home with PO bumetanide and follow-up. Furosemide was added to his list of allergies and he was counseled to avoid this medicine.

IMPACT/DISCUSSION: Furosemide, a loop diuretic, is the 20th most prescribed medication in the United States. This case illustrates a rare adverse effect known by few of a medication prescribed exceedingly commonly in the clinic and hospital. Bullous pemphigoid (BP) is an IgG-mediated autoimmune subepidermal blistering disease that targets hemidesmosomes that hold the dermis and epidermis together, causing the two layers to separate and blisters to form. Along with idiopathic causes, drugs are BP inducers, with furosemide included among them. The mechanism for drug-induced BP is poorly understood; one postulated mechanism involves drug induction of antibodies against the basement membrane through binding to a lamina lucida protein thus changing its antigenic properties. Unlike Stevens-Johnson syndrome or toxic epidermal necrolysis, in BP bullae tend to be tense, rarely involve mucosal surfaces, and often affect the lower abdomen, thighs, and forearms. Questions remain why this reaction happens with furosemide but far less commonly with bumetanide, another sulfa loop diuretic. The drug reaction in this case occurred over one day while most reported cases presented days to weeks after exposure. Still, the fact the eruption occurred with drug initiation and ceased after discontinuation strongly implicates furosemide in our patient.

CONCLUSION: As immediate medication discontinuation is critical, it is important to recognize that furosemide, a common drug used in patients, can cause bullous pemphigoid. Bullous pemphigoid should be considered in all older adults who develop tense bullae, and an exhaustive drug exposure history is critical to recognizing and discontinuing possible inciting medications.

A COMMON PRESENTATION WITH AN UNCOMMON TIMELINE

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LEARNING OBJECTIVE #1: Consider malaria in a patient with a remote travel history.

LEARNING OBJECTIVE #2: Evaluate recurrent fevers in a patient with multiple risk factors.

CASE: A 40-year-old man with HIV, latent TB, and a distant history of malaria infection presented with intermittent fevers for four days. Prior to admission, he felt warm with chills and shortness of breath which prompted him to go to the emergency room. The patient was given fluids and antipyretics and discharged home. The symptoms resolved but returned two days later. The patient again presented to the hospital and was admitted for further workup. He denied any recent travel outside of the US but migrated from Nigeria 7 months ago and went camping in upstate New York 3 weeks ago. He reported having sexual intercourse with a new partner. Other than a fever of 101.3°F present on admission, physical exam was unremarkable. Chest x-ray and urinalysis were negative for any sources of infection. STD testing, including chlamydia, gonorrhea, syphilis, and hepatitis, was negative. Given recent outdoor activity, suspicion was high for babesia.

Additionally, although he emigrated from Africa months ago, malaria was also considered as the patient had been previously infected 25 years ago. Blood smear results were positive for plasmodium non-falciparum species based on the morphology of the gametocytes present in the erythrocytes.

IMPACT/DISCUSSION: Cyclical fevers are commonly associated with malaria. Patients can present with a combination of nonspecific symptoms including chills, sweats, myalgias, and headaches. The disease is spread through the bite of the *Anopheles* mosquito with an incubation period of about 7 to 30 days.

Although the time course did not suggest a recent infection, the patient exhibited typical symptoms of malaria. Given a previous malarial infection 25 years ago, relapse of *plasmodium vivax* or *plasmodium ovale* that was not properly treated is more likely than a new infection obtained 7 months ago prior to arrival in the US. These species of malaria have dormant liver parasites called hypnozoites, which are eradicated with primaquine or tafenoquine. Before administration, G6PD deficiency testing must be performed as these medications can cause hemolysis.

The patient's history also brought attention to other possible etiologies of his symptoms. His recent camping trip in upstate New York raised

concern for babesiosis. The symptoms are very similar with fevers that can also be intermittent. Given concern for STDs, chlamydia, ghonorrhea, syphilis, and hepatitis are all infections that also share the nonspecific symptoms of fever, chills, and fatigue. However, these are less likely to present in a cyclical fashion. With all these different risk factors in mind, appropriate work-up guided the team towards the diagnosis of malaria.

CONCLUSION: In patients with cyclical fevers with a distant travel history to endemic areas, malaria relapse should be highly suspected. These situations provide an opportunity for proper treatment to prevent future reactivations.

A CONCERNING EKG IN A YOUNG MALE WITH CARDIAC COMORBIDITIES

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LEARNING OBJECTIVE #1: Recognize and distinguish clinical features of ischemic ST elevations, pericarditis and benign early repolarization.

CASE: A 37-year-old male with a history of chronic hepatitis B, pericarditis 8 years prior, and chronic back pain presented to the clinic, referred by an interventional pain specialist for evaluation of an abnormal EKG with ST elevations in lead II, V2-V6. History revealed no current chest pain, dyspnea on exertion or palpitations, unlimited exercise tolerance; no family history of cardiac arrythmias or sudden deaths; no current medications. Exam revealed normal cardiopulmonary findings. Repeat EKG showed identical changes. Review of his record found almost identical EKG findings during a prior episode of pericarditis. Echocardiogram then showed normal ventricular function and pericardium without effusion. Recent lab findings revealed a minimally elevated ESR of 15 mm/hr and a mildly elevated creatine kinase level of 761 U/L.

IMPACT/DISCUSSION: Diagnosis of pericarditis can be challenging especially when presented with other comorbidities. Accurate history and elucidation of symptoms is crucial for the correct diagnosis.

Most important is to differentiate it from an ST Elevation Myocardial Infarction (STEMI). This is based on differences in symptoms, EKG findings and imaging. Exertional chest pain would favor ischemia, whereas positional or pleuritic would favor pericarditis. EKG differences: pericarditis usually retains the ST concavity waveform; the ST elevation in pericarditis is usually less than 5 mm and the distribution is in more than one vascular territory, no reciprocal changes except in V1 and avR, and no concurrent ST elevations with T wave inversions.

Although the EKG was consistent with pericarditis, this is not sufficient to diagnose pericarditis. Pericarditis requires at least two of the following findings: symptoms of pericarditis, EKG findings consistent with pericarditis, evidence of pericardial effusion and/or elevation of inflammatory biomarkers. On this presentation, only the EKG findings were consistent with pericarditis. EKG changes in pericarditis are due to a current of injury and therefore, progress over time and eventually normalize. In early repolarization, the EKG abnormality is a physiological abnormality that persists. Given the consistencies of EKG abnormalities, absence of symptoms, and documented normal echocardiogram, it was decided this was likely never pericarditis, but rather early repolarization. Upon review of the initial encounter for pericarditis, the symptoms were not consistent with pericarditis. Lab abnormalities were likely related to inflammation from his known hepatitis B but required further assessment.

CONCLUSION: Pericarditis must be differentiated from a STEMI based on symptoms and EKG criteria. Diagnosis of pericarditis requires more than EKG changes alone.

Early repolarization can be diagnosed with multiple EKGs showing consistent changes over time.

A CONSUMING CASE OF RENAL FAILURE AND THE GREAT IMITATOR

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LEARNING OBJECTIVE #1: Recognize active tuberculosis as a cause of secondary amyloidosis leading to renal failure

CASE: A 60-year-old South Asian man with no prior history presented with three days of subjective fevers and dry cough. He denied other symptoms. Initial vitals and exam were only notable for a fever of 38.4C. Chest x-ray showed increased markings at the left base. Labs showed 15,500 WBC with 78% neutrophils, albumin of 1.5, total protein of 4, BUN of 43, and creatinine of 7.7, up from 1.4 one year ago. He received empiric community-acquired pneumonia coverage, which resolved his presenting symptoms. His worsening renal function prompted further inpatient workup.

Urinalysis showed >1000 protein and 11-20 RBC. Total urine protein was elevated at 1360. Serum protein electrophoresis showed low total protein of 4.1, elevated a2-globulin fraction of 1.1, and two weak gamma-migrating paraproteins. Bence jones protein was negative. Urine kappa and lambda levels were unremarkable. Urine immunofixation showed no monoclonal bands. Kidney biopsy revealed a new diagnosis of AA / secondary amyloidosis.

He underwent extensive workup to determine the etiology of his AA amyloidosis. Computed tomography imaging showed findings read as characteristic of nodular parenchymal amyloidosis: a 2.7cm mass posterior to the right mainstem bronchus, peripheral nodular opacities in the left lung, and enlarged lymph nodes in the mediastinum, mesentery, and retroperitoneum. Initial quantiferon gold was indeterminate. Hepatitis, HIV, and RPR screening and extensive rheumatological workup were negative. EGD and colonoscopy only showed gastric amyloidosis. A repeat quantiferon gold, obtained weeks after initial presentation, was positive.

Sputum AFB testing was positive for Mycobacterium tuberculosis complex. His final diagnosis was active Pulmonary Mycobacterium Tuberculosis causing AA amyloidosis and renal failure.

IMPACT/DISCUSSION: Tuberculosis and other chronic infections were historically common causes of AA amyloidosis; prevalence decreased as access to effective antimicrobial agents and health services improved.

In the United States, inflammatory arthridities and inflammatory bowel disease are now frequently identified as the most common causes of underlying AA amyloidosis. In developing and TB-endemic countries, however, tuberculosis is listed as a common cause of AA and renal amyloidosis, sometimes leading to renal failure. As this patient clinically improved with empiric community-acquired pneumonia treatment and only endorsed the initial fever and cough on original presentation, there was a delay to rule-out tuberculosis, even though he previously lived in a TB-endemic country. While this is an unusual case, the general internist should be aware that untreated active tuberculosis can present with nonspecific symptoms and can induce chronic inflammation leading to secondary amyloidosis and eventual renal failure.

CONCLUSION: Though rare in the US, untreated TB can lead to secondary amyloidosis and renal failure

ACTIVE TUBERCULOSIS DIAGNOSED FROM BELL'S PALSY EVALUATION

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LEARNING OBJECTIVE #1: Identify treatable etiologies of Bell's Palsy

LEARNING OBJECTIVE #2: Recognize the importance of incidental findings and understand when further evaluation is needed

CASE: 48-year-old female with HIV/AIDS and recent Streptococcus pneumoniae bacteremia secondary to pneumonia presented to the emergency department due to acute onset of left facial droop without other neurologic symptoms. She endorsed ongoing dyspnea since her recent hospitalization, subacute worsening of her posterior neck pain, but otherwise no other symptoms including hemoptysis, weight loss, and night sweats. Family and social history was noncontributory. Her exam was notable for left lower motor neuron facial nerve palsy. CT head and CTA head and neck was negative for acute stroke. She was evaluated by neurology and deemed stable for discharge with diagnosis of Bell's palsy. However, CT scan also revealed an incidental upper lobe consolidation which was initially attributed to her recent pneumonia. On chart review, she was found to be TB Quant Gold positive. She was admitted for workup for active tuberculosis. AFB sputum cultures were positive. Given the positive sputum cultures, MRI brain was obtained to determine if Bell's palsy was a manifestation of leptomeningeal disease such as tuberculosis meningitis, which did show facial nerve enhancement in the internal auditory canal. Lumbar puncture was negative, and the patient was treated with RIPE therapy for active pulmonary tuberculosis, and valacyclovir for Bell's palsy attributed to viral infection.

IMPACT/DISCUSSION: We present the case of a patient who presented for Bell's Palsy, but was incidentally found to have pulmonary consolidation on CT scan, which led to the diagnosis of active pulmonary tuberculosis. There are two teaching points to this case. 1) While the etiology for Bell's palsy for most patients can be attributed to viral infections, immunocompromised patients such as those with HIV/AIDS are at a higher risk for tuberculosis meningitis. Although this patient fortunately did not have tuberculosis meningitis, this should still be included in the differential. Other rarer etiologies of Bell's palsy include HIV itself or stroke. 2) It is important not to immediately assume pulmonary consolidations are due to recent pneumonia, and to perform a thorough history and chart review. Active tuberculosis was almost missed in this patient, a diagnosis with both patient and public health level concern.

CONCLUSION: While tuberculosis meningitis is not a common etiology of Bell's palsy, this should remain in the differential for immunocompromised patients. Internists should also view all incidental findings as valuable, and they should always be further evaluated.

A CURIOUS CASE OF HYPEREOSINOPHILIA

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LEARNING OBJECTIVE #1: Review the differential diagnosis of eosinonophilia

LEARNING OBJECTIVE #2: Recognize Hypereosinophilic Syndrome and the challenges in diagnosing it

CASE: Hypereosinophilic syndrome (HES) is a rare but potentially morbid condition consisting of peripheral eosinophilia with organ involvement. In this case, a 61 year-old woman with history of hypertrophic obstructive cardiomyopathy, hypothyroidism, and asthma presented with acute painful submandibular lymphadenopathy, sudden- onset abdominal pain, nausea, vomiting, and diarrhea. Of note, she had been evaluated for peripheral eosinophilia two years prior with a trans-bronchial lymph node biopsy that revealed a reactive process of unclear etiology. The abdominal pain was in the right lower quadrant, radiating to the back, and associated with 2 weeks of anorexia and a faint abdominal rash. The patient denied changes in diet, exposures to new materials, travel or sick contacts. She was recently hospitalized for acute decompensated heart failure with preserved ejection fraction and had been discharged five days prior to presentation. Courses of Doxycyline and Trimethoprim-Sulfamethozazole had been recently completed for suspected pneumonia. Exam was significant for a faint maculopapular rash on the abdomen, a large submandibular ecchymosis, submandibular lymphadenopathy, and right upper quadrant tenderness to palpation. The patient was found to have significant peripheral eosinophilia (Eosinophil Count 7900/μL, White Blood Cell 19,900/μL), normal hemoglobin and elevated Mean Corpuscular Volume (103 fL) and acute kidney injury. Tryptase and Vitamin B12 levels were both markedly elevated. Computed tomographic imaging of the abdomen revealed multiple renal infarcts and mesenteric panniculitis. A bone marrow biopsy was negative for malignancy. Given her chronically mild elevation of MCV, tryptase and B12, along with her history of an unremarkable work-up 2 years previously, she was given a presumptive diagnosis of myeloid-related hypereosinophilia syndrome. The patient was begun on steroid therapy by the Hematology-Oncology Service and has done well.

IMPACT/DISCUSSION: Hypereosinophilic syndrome (HES) includes the presence of elevated peripheral eosinophilia with organ involvement. In this case, it is assumed that the patient had organ involvement given her multiple renal infarcts and panniculitis. HES is a rare and difficult to diagnose condition, as seen in this case where the patient did not meet all criteria for myeloid-type HES but given suspected progression to multiple organ involvement, was treated as such.

CONCLUSION: Hypereosinophilic syndrome (HES) is a rare but potentially morbid condition that is difficult to diagnose. Appropriate identification and treatment is essential to acheiving positive outcomes.

A CURIOUS CASE OF TAMPONADE

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LEARNING OBJECTIVE #1: Distinguish between etiologies of pericardial effusion

LEARNING OBJECTIVE #2: Recognize and manage cardiac tamponade

CASE: 77 year old male with history of complete heart block with permanent pacemaker placement and recent diagnosis of nonvalvular atrial fibrillation on apixaban presented to the emergency department with chief complaint of abdominal pain and dyspnea on exertion. The complete blood count, electrolyte panel, and serum creatinine were unremarkable. The initial troponin was elevated and EKG showed sinus tachhycardia. Transthoracic echocardiogram (TTE) showed circumferential pericardial effusion with findings concerning for tamponade. Cardiology was consulted and emergent pericardiocentesis was performed with removal of 560 milliliters of hemorrhagic fluid. A repeat TTE showed no pericardial effusion after drainage. Gram, fungal, and mycobacterial stains were negative and bacterial, fungal, and mycobacterial cultures on pericardial fluid showed no growth. Cytology was negative for malignancy and serum TSH was normal.

After ruling out hypothyroidism, malignancy, and infectious etiologies, the patient's cardiologist was noted to have adjusted pacemaker leads 2 weeks prior to admission. It was determined that the pericardial effusion was most likely iatrogenic due to microperforation of the right ventricle during pacemaker lead adjustment, with bleeding exacerbated by apixaban use.

IMPACT/DISCUSSION: Pericardial effusions have a wide range of etiologies including infection, inflammation, and malignancy. Right

ventricular perforation is an uncommon cause of pericardial effusion, occurring in 0.1-0.8% of pacemaker placements. Risk factors for ventricular perforation include the use of active fixation leads compared to passive fixation leads, low volume operators (less than 50 annual cases), female gender, age greater than 75 years, BMI less than 25, chronic lung disease, and history of coronary intervention. Symptoms can range from asymptomatic to life-threatening and include chest pain, syncope, abdominal pain, and dyspnea. In this instance, due to tamponade, an emergent pericardiocentesis was performed; however, lead extraction was not deemed necessary during this admission. The necessity of lead extraction, and the optimal mean of extraction, whether percuaneous or surgical, remains a matter of controversy.

CONCLUSION: Cardiac perforation is an extremely rare etiology of pericardial effusion; however, it is associated with significant morbidity and mortality.

ACUTE CALCIUM PYROPHOSPHATE CRYSTAL DEPOSITION DISEASE (CPPD): A DIAGNOSTIC CHALLENGE

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LEARNING OBJECTIVE #1: CPPD, though a common occurrence, can sometimes pose real diagnostic difficulties. Through the following case, we aim to highlight the importance of an interdisciplinary approach to care, crucial to the practice of Internal Medicine.

LEARNING OBJECTIVE #2: Recognize the value of gelatinous aspirate in cases of dry tap and employ alternative diagnostic modalities for the diagnosis of CPPD.

CASE: An 82-year old male with a history of osteoarthritis and bilateral rotator cuff tears presented with severe left shoulder pain and a productive cough. Initial workup revealed signs of severe sepsis with consolidation on chest XR and chronic arthritic changes on XR of the left shoulder. Empiric antibiotics were initiated for community-acquired pneumonia and a follow-up MRI left shoulder was scheduled for further evaluation of shoulder pain. This was notable for a large joint effusion. Blood cultures grew group A streptococcus which raised suspicion for septic arthritis, necessitating an arthrocentesis. This yielded a dry tap. Symptoms continued to progress to migratory joint pain involving the right wrist and bilateral ankles. Negative RF, anti-CCP, cryoglobulin, ANA, complement, parvovirus, Lyme, hepatitis serologies and a persistent dilemma between septic arthritis and crystal arthropathy prompted an in-depth imaging review in consultation with Interventional Radiology and Rheumatology. The consensus was to repeat arthrocentesis. 1.5 ml of gelatinous material was obtained, enough to perform a single test only. Given the overall clinical picture, crystal analysis was performed and revealed calcium pyrophosphate crystals, establishing the diagnosis of CPPD. The patient was started on steroids with improvement in joint pain and was discharged to rehabilitation care.

IMPACT/DISCUSSION: Acute CPPD can be difficult to distinguish from septic arthritis and gout due to its similar presentation. Definite diagnosis requires arthrocentesis. Occasionally, aspiration of synovial fluid is difficult due to its increased viscosity. A dry tap presents with diagnostic challenges especially with septic arthritis in the differential. Sometimes, a drop of synovial fluid from the needle of a dry tap, can be extremely valuable for the identification of crystals.

CONCLUSION: This case highlights the value of close communication with different specialties, useful in exploring additional options such as repeating arthrocentesis using ultrasound guidance as well as using gelatinous material for analyses. Additional diagnostic tests such as musculoskeletal ultrasound and dual- energy CT (DECT) scan have been used increasingly for the identification of monosodium urate crystals (MSU) and articular calcium deposits. Some prospective studies have shown, DECT can effectively differentiate CPPD and MSU crystals. When available, it is a valuable, noninvasive modality that can help rule out crystal arthropathy and should be considered in appropriate clinical settings like when septic arthritis is suspected and aspiration of fluid is difficult.

ACUTE ISCHEMIC STROKE SECONDARY TO VERTEBRAL ARTERY DISSECTION IN A YOUNG FEMALE PATIENT

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LEARNING OBJECTIVE #1: Recognize a common cause of acute stroke in young patients

LEARNING OBJECTIVE #2: Manage brain ischemia secondary to vertebral artery dissection

CASE: A 31-year-old woman with history of bipolar disorder and migraines presented to the Emergency Department hours after the sudden onset of unrelenting vomiting, diplopia, and vertigo that worsened with movement. She denied recent trauma or ingestions. Home medications included alprazolam, lamotrigine, lithium, and trazodone.

Vital signs were normal. Physical exam was notable for severe distress and nystagmus on primary gaze and in all directions, with intact cranial nerves and motor function in all extremities without sensory deficits. Exam was limited, as the patient could not move her head without severe nausea.

CT head was normal. MRI brain revealed a small acute infarct involving the right side of the inferior cerebellar vermis. CTA head and neck were normal. However, MRA neck revealed a short dissection between segments V2 and V3 of the right vertebral artery. The patient was prescribed aspirin 81 mg and atorvastatin 40 mg, and diazepam as needed and scopolamine patch for vertigo. She was discharged with instructions to repeat MRA in 3-6 months

IMPACT/DISCUSSION: This case involves a young woman presenting with new, nonspecific but severe neurological symptoms. Though the patient's symptoms, age, and lack of risk factors may have suggested benign positional vertigo or migraine as explanations, her overall clinical appearance and exam heightened clinical suspicion of a more dangerous etiology—ischemic disease. The location of her acute infarct was consistent with her vertigo. MRA identified vertebral artery dissection as the underlying cause of the stroke. Cervical artery dissection (CAD), including vertebral artery dissection accounts for 1-2% of all ischemic strokes but up to 25% of strokes in middle-aged or younger patients (2). CAD most commonly presents as transient ischemic attack or ischemic stroke (67% of cases) (3).

While CTA is generally the preferred diagnostic modality to diagnose CAD (1-5), MRA is preferred in the setting of neurologic deficits, contraindication to IV contrast, or high clinical suspicion for carotid dissection. MRA was critical in this case.

Guidelines recommend treating ischemic cerebral events secondary to dissection with tPA as indicated, followed by anticoagulation or antiplatelet therapy (5). In cases involving subarachnoid hemorrhage, pseudoaneurysm, progression of dissection or acute massive stroke, endovascular therapy or surgical repair may be warranted.

CONCLUSION: Ischemic brain injury must be considered in younger patients experiencing nonspecific neurological symptoms; CAD is a common cause.

Treatment consists of tPA (if appropriate) and antiplatelet therapy/therapeutic anticoagulation. Endovascular intervention or vascular surgery may be warranted after large vessel occlusion.

ACUTE LIMB ISCHEMIA AS PRESENTATION OF OCCULT HEPATOCELLULAR CARCINOMA

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LEARNING OBJECTIVE #1: Diagnose arterial thrombosis as a complication of malignancy

CASE: A 62-year old male with history of prior cocaine abuse and 25 pack year tobacco use presented with acute worsening left leg pain associated with distal numbness and tingling up to the left knee. Vitals were unremarkable and physical exam was notable for a cool left lower extremity and non-palpable pulses without motor or sensory deficits. CT angiogram of the abdomen and lower extremities showed occlusion of the left common, external iliac, and superficial femoral arteries. The patient was taken urgently for left leg open thrombectomy and angioplasty with stent placement. The CT angiogram also showed an incidental finding of a large hypervascular liver mass measuring 9 x 8 x 7cm with several small hypervascular nodules and a 1.2 cm hypervascular focus in the gallbladder. A subsequent MRI revealed a 10 x 10 cm heterogeneous hypervascular hepatic mass compatible with hepatocellular carcinoma with mass effect on the right hepatic vein. Laboratory tests revealed positive hepatitis C antibody with a hepatitis C viral load of 32,865 IU/mL and genotype 1A. Hepatitis B serology and alpha-fetoprotein were normal. It was later discovered that the patient had a remote diagnosis of hepatitis C at an outside hospital, but had never followed up for treatment.

The patient ultimately underwent transarterial chemoembolization and subsequent right hepatectomy during a complicated and prolonged hospital course.

IMPACT/DISCUSSION: Traditionally, cancer has been associated with increased risk of venous thromboembolism given alteration in clotting factors. However, the risk of arterial thrombosis is not well established and more recently it is being recognized as a serious complication of malignancy. Few cases of spontaneous arterial thrombosis with no iatrogenic or atherosclerotic cause in cancer patients have been reported in the literature and these have been associated with poor prognosis. This case highlights the diagnosis of a primary malignancy of hepatocellular carcinoma during the management of acute limb ischemia caused by the primary malignancy and shows the high morbidity of such complications and the need to be aware of the thrombotic risks of cancer. Therefore, further studies need to be conducted to determine whether patients with cancer would benefit from receiving antiplatelet or anticoagulation medications to prevent arterial thrombosis in an effort to improve long-term survival outcomes.

CONCLUSION: 1. Arterial thrombosis is a potentially life-threatening complication of malignancy and therefore should always be at the top of the differential diagnosis for patients presenting with symptoms of limb ischemia in the setting of known malignancy.

2. Unexpected arterial thrombosis should raise suspicion for an undiagnosed malignancy as a can't miss diagnosis.

ACUTE MYOPERICARDITIS AS THE ATYPICAL PRESENTATION OF ACUTE MYELOID LEUKEMIA (AML)

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LEARNING OBJECTIVE #1: Recognize AML as an uncommon and rapidly lethal etiology of acute myopericarditis

LEARNING OBJECTIVE #2: Manage ischemic event among AML patients who have high bleeding risk

CASE: A 56-year-old male presented with chest pain that worsened with inspiration and improved when leaning forward. He was found to have fever, tachycardia, with elevated troponin and diffuse ST-T elevation on electrocardiogram. Echocardiogram was normal. He had mild pancytopenia with 3.9 x 10^9/L white cell count, 11.5 g/dl hemoglobin and 84 x 10^9/L platelets. A diagnosis of acute myopericarditis in the setting of presumed viral infection was made. Despite treatment, the patient deteriorated rapidly. Within 24 hours he developed atrial fibrillation, hypoxia necissating intubation and acute renal failure that eventually required dialysis. His pancytopenia continued to worsen gradually. Repeat echocardiogram demonstrated new moderate pericardial effusion.

Given the concern for hemodynamic compromise, the patient underwent pericardiocentesis with 250ml clear fluid removed. Extensive infectious and homogenous workups were initially unremarkable. On hospital stay day eight, flow cytometry eventually revealed 3% myeloblast and subsequent bone marrow biopsy showed 26% myeloblasts, consistent with AML. He received daunorubicin and cytarabine, but he then suffered from tumor lysis syndrome. Additionally he was noted to be minimally unresponsive. Magnetic Resonance Imaging of brain revealed a large ischemic stroke. Weighing risks and benefits, he was placed on heparin intravenously and it resulted in hemorrhagic conversion of stroke and herniation. The patient passed away after 44 days of hospitalization.

IMPACT/DISCUSSION: This case has several teaching points as follows. First, cardiac catheterization is not always warranted if suspicion of myopericarditis is high. Left heart catheterization might delay the diagnosis of underlying disease. Second, despite a CHADSVASC score of 3, anticoagulation should be started with caution as patients with AML have a high risk of clinically significant bleeding. Third, though the underlying pathophysiology is not completely known, including AML as an uncommon etiology of myopericarditis is essential and could potentially be life saving.

CONCLUSION: AML is lethal if early diagnosis is not made or early intensive chemotherapy is not initiated. The overwhelmingly rapid progression and high mortality calls for early recognition and diagnosis of this disease. Clinicians must be familiar with the typical and atypical manifestations of AML for early diagnosis.

ACUTE PANCREATITIS IN A PATIENT WITH PULMONARY SARCOID

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LEARNING OBJECTIVE #1: Pacreatitis as a result of hypercalcemia from sarcoidosis

LEARNING OBJECTIVE #2: Rare cause of pancreatitis in a patient of pulmonary sarcoid.

CASE: A 55 year old female with pulmonary sarcoidosis presented to our hospital with 2 weeks of progressive nausea, non-bilious, non-bloody vomiting and abdominal pain. She also noted generalized weakness and fatigue for the same time. She was found to have a calcium level of 15.6mg/dL and Lipase of 2033 units/L. Parathyroid hormone(PTH) levels were normal and no parathyroid hormone related peptide was detected. Imaging studies including Computed Tomography(CT) of the abdomen showed intraparenchymal pancreatic and mesenteric fluid collection with peripancreatic stranding suggestive of acute pancreatitis. She was treated with calcitonin and zoledronate in addition to intravenous fluid resuscitation.

She was also started on prednisone 30mg/ day for her pulmonary sarcoid which was thought to be the cause of her hypercalcemia. As she continued to remain symptomatic, an MRI of the abdomen was done

which revealed a retrogastric pseudocyst. A stent was placed to drain the fluid which lead to marked symptomatic improvement. She was finally discharged home on a maintenance dose of corticosteroids.

IMPACT/DISCUSSION: Hypercalcemia is a well known complication of sarcoidosis with a prevalence of about 40-60% in published literature. Although most cases are asymptomatic, clinically significant hypercalcemia occurs in about 5% of the patients. Often causing renal impairment with complications like nephrolithiasis and chronic renal failure from long standing hypercalcemia, symptomatic hypercalcemia as a complication of sarcoidosis leading to pancreatitis is extremely rare.

Although hypercalcemia is a common etiological factor in pancreatitis, most cases of hypercalcemia causing pancreatitis are a result of hyperparathyroidism which in turn is most commonly due to a parathyroid adenoma. Sarcoidosis does not usually lead to hypercalcemia to levels high enough to cause pancreatitis. On one hand, our case emphasises on the importance of being vigilant about the different causes of hypercalcemia in a patient with pancreatitis. On the other hand, this case also highlights the possibility of symptomatic hypercalcemia including acute pancreatitis in patients with pulmonary sarcoidosis.

CONCLUSION: Our case describes an interesting combination wherein a common complication of a disease process (hypercalcemia from sarcoidosis) triggered another common disease process. (Pancreatitis from hypercalcemia). Although both entities are commonly encountered in isolation, their combination is very rarely seen.

ACUTE PERICARDITIS MIMICKING BRUGADA SYNDROME

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LEARNING OBJECTIVE #1: Recognize the features of pericarditis and Brugada syndrome on electrocardiogram and to avoid further unnecessary interventions.

CASE: A 35-year-old male patient without significant medical history presented to our hospital with substernal chest pain of 1-day duration. Patient described his substernal chest pain as radiating to his back and worsening with inspiration and leaning forward. His history was remarkable of having a cold 2 weeks prior to his presentation.

Upon arrival to the hospital, his vitals were unremarkable. His labs showed normal while blood counts, normal lipid profile and hemoglobin A1c. A chest X ray didn't show any evidence of pneumonia. A chest computed tomography angiography was negative for pulmonary embolus or aortic dissection.

Two assays of troponin were performed 6 hours apart and were negative. His electrocardiogram (ECG) showed diffuse ST-PR discordance which was highly concerning of pericarditis along with type II Brugada pattern which manifested in lead V2 as saddle-back pattern with a least 2 mm J-point elevation and at least 1 mm ST elevation with a positive T-wave. An Echocardiogram was performed and showed normal left ventricular ejection fraction of 55% without regional wall motion abnormality or pericardial disease.

Patient was treated with nonsteroidal anti-inflammatory drugs for 2 weeks with significant improvement in his symptoms and complete resolution of his ECG features.

IMPACT/DISCUSSION: Brugada syndrome is a genetic heart disease characterized by disturbances affecting the electrical activity within the heart. Patients with Brugada syndrome might experience syncope or sudden cardiac death due to serious abnormal heart rhythms such as ventricular fibrillation.

Brugada syndrome is diagnosed by identifying certain patterns on ECG. However, similar ECG patterns might be seen in a variety of other conditions such as electrolyte disturbances or with the use of certain medications such as sodium channel blockers. In these different conditions, the Brugada ECG pattern is expected to disappear within a few days of withdrawal of the provoking factor.

Here we reported a case of a patient with acute pericarditis who developed a Brugada ECG pattern that completely resolved with the treatment of the underlying pericarditis.

CONCLUSION: Acute pericarditis may mimic Brugada syndrome. The ECG pattern of Brugada syndrome shouldn't be considered as a specific marker of the syndrome, but rather as a sign of electrical heart disease that can be due to various other conditions.

ACUTE PROSTATITIS PRESENTING WITH ITS FEARSOME COMPLICATION

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LEARNING OBJECTIVE #1: Recognize the importance of early diagnosis and treatment of acute bacterial prostatitis to prevent complications

LEARNING OBJECTIVE #2: Assess for risk factors for Methicillin Resistant Staphylococcus Aureus(MRSA) prostatic abscess

CASE: A 55-year-old male with no known past medical history presented to the ER with dysuria, difficulty in micturition and perineal pain for 1 week. He denied fever, chills, nausea, vomiting, abdominal pain, hematuria or urethral discharge. He admitted current use of amphetamine and heroin. No high risk sexual behavior. His vitals were stable, physical exam was unremarkable except for boggy and tender prostate on DRE. Initial labs reveal neutrophilic leucocytosis, UA shows: Leukocyte esterase 3+, nitrate negative, glucose 3+, WBC >50, RBC 11-20, HbA1c 11.3, HIV -ve. CT pelvis reported complex multilocular fluid collection in the prostate gland and the inferior left hemipelvis. CT-guided percutaneous drainage of hemipelvic abscess yielded 40cc of pus. He was treated with Vancomycin and Meropenem. TURP with foley catheter insertion was performed. Urine, fluid and blood culture grew methicillin resistant Staph aureus. He was discharged to finish 4 weeks of Daptomycin.

IMPACT/DISCUSSION: Though prostate infections are commonly related to UTI-causing Gram-negative organisms, acute *Staphylococcal* prostatitis can lead to rare cases of MRSA prostatic abscess, 26 documented per literature review in 2017. Although 90% of cases in that review resolved with timely treatment, 3 cases had fatality. Considering such outcomes, it's important to early identify those patients, they are often sick and septic, deep perineal pain with signs of urinary obstruction should warrant imaging with either US or CT. Our patient presented with risk factors consistent with previously reported cases such as newly diagnosed diabetes mellitus and polysubstance use. No other risk factors were present in this such as urethral instrumentation and Hepatitis C. MRSA prostatic abscesses warrant prompt treatment with appropriate antibiotic coverage and urological consultation for management of the abscess. After pelvic drain and TURP, subsequent imaging showed no residual pelvic collection. Daptomycin was chosen in this case due to ease of administration and monitoring in the outpatient setting.

CONCLUSION: MRSA prostatic abscess is an uncommon complication of acute bacterial prostatitis. We report a case of newly diagnosed diabetic and previous IVDU who presented with dysuria, difficulty in micturition and perineal discomfort. He was diagnosed with MRSA prostatic abscess

with complications of extraprostatic extension of abscess in hemipelvis and bacteremia which was successfully treated with CT- guided percutaneous drainage, transurethral resection drainage and intravenous antibiotics. MRSA prostatic abscess is very rare in immunocompetent host and has high mortality rate unless diagnosed early and treated with proper antibiotic and abscess drainage.

ACUTE RHABDOMYOLYSIS: A NON-PULMONARY VAPING-RELATED TOXICITY?

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LEARNING OBJECTIVE #1: To promote awareness about non-pulmonary vaping- related toxicity

LEARNING OBJECTIVE #2: To describe a case of acute rhabdomyolysis in a young male with heavy liquid nicotine consumption

CASE: A previously healthy 21 year-old male presented to the emergency department complaining of 4 days of myalgia and dark urine. Patient reports extreme exercise 5 days prior to presentation followed by myalgia and dark urine within 24 hours. Because of persistent and worsening pain, he presented to our institution 4 days after symptom onset and was admitted for acute rhabdomyolysis. Other than exertion, there were no identified triggers. No trauma, no seizures, no over-the-counter or prescribed medications, no recent travel to tropical area, no evidence of infectious pyomyositis, no known family history of myopathy. His initial CK was 168,000 U/L. There was no evidence of acute kidney failure or hyperkalemia. No significant past medical or surgical history. Social history revealed tobacco dependence and heavy liquid nicotine (vaping) use. Physical examination was noteworthy for marked tenderness to palpation over muscles. His work up included a negative UTOX, evidence of transaminitis AST>ALT, with unrevealing BMP and CBC. He received fluid resuscitation. At day 2, CK was 48,000 U/L. He was discharged home with exercise precautions, and oral hydration recommendations. Special attention was paid to counselling about liquid nicotine use.

IMPACT/DISCUSSION: Liquid nicotine use has been increasing in popularity, but the safety of the products is still in question. In addition to the pulmonary complications that have been reported with liquid nicotine use, another potential concern is rhabdomyolysis. Liquid nicotine use and rhabdomyolysis are connected due to toxicity of chronic nicotinic exposure. Nicotine poisoning can manifest in several different presentations based on its effects on both muscarinic and nicotinic receptors, including rhabdomyolysis (nicotinic muscle receptors). Initially it was believed that liquid nicotine devices would have very low peripheral effects due to the low affinity of peripheral nicotinic acetylcholine receptor compared to those found in the brain, but recent studies have shown that chronic nicotinic exposure results in changes to peripheral tissues like skeletal muscle. These studies have shown elevated resting membrane potentials in skeletal muscle after just one month of chronic nicotinic exposure. It has also been shown that nicotinic plasma levels has increased with newer generations of devices by up to 72% and increases up to 54% as the user becomes more comfortable with using their devices. Our case demonstrates that liquid nicotine use can potentially lead to extra-pulmonary complications like rhabdomyolysis

CONCLUSION: With the raising popularity of liquid nicotine use, it is imperative to be vigilant for additional complications when a patient's social history is significant for heavy liquid nicotine use.

ACUTE RHEUMATIC FEVER PRESENTING AS A MIMICKER OF SEPTIC ARTHRITIS

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LEARNING OBJECTIVE #1: Work though the diagnostic challenge of differentiating atypical acute rheumatic fever (arthritis) from its mimickers (i.e. post strep reactive arthritis); and understand the importance of doing so

LEARNING OBJECTIVE #2: Treat the arthritis of acute rheumatic fever and post strep reactive arthritis

CASE: History of Present Illness: A 39-year-old man with no medical comorbidities presented with abrupt onset left wrist pain, swelling, and fever for one day. The patient reported history of similar pain and swelling around his ankles a week before that resolved with NSAIDS use. On review of systems, the patient had sore throat 1 month prior to presentation but denied any history of urethritis, conjunctivitis, recent alcohol use, and or any tick bites.

Physical Exam: Febrile with (temp. 102.2F), tachycardic (HR 129). Painful range of motion of the left wrist, with erythema and swelling

Diagnostic Workup: Leukocytosis (17,200). Synovial fluid analysis from the left wrist aspirate revealed 23,000 WBCs, no crystals, and was culture negative. Blood cultures were negative. ESR and CRP levels were elevated.

Inpatient Course: Empirically started on IV antibiotics for suspected septic arthritis. However, patient continued to spike fevers. By Day 2, pain and swelling in the left wrist resolved. New onset pain and swelling was noted in his ankles (b/l) and right hip.

Further Diagnostic Workup: Investigations including, syphilis EIA, heterophile monospot, ANA, Complement levels, Rheumatoid factor, Anti-CCP, ANCA levels, Gonorrhea/Chlamydia urine, pharyngeal and rectal swab, and Urine Histoplasmosis, were negative. Based on history of sore throat that was partially treated, Antistreptolysin titers were ordered and returned significantly elevated (533).

IMPACT/DISCUSSION: Diagnosis: With migratory polyarthritis, fever, and elevated acute phase reactants, our patient fulfilled 1 major, and 2 minor components of the Jones criteria, and was diagnosed with Acute Rheumatic fever. He was started on NSAIDs, and had resolution of his arthritis within 48 hrs. of initiation. Post streptococcal reactive arthritis was considered among other differentials. However, considering our patient's quick response to NSAIDs, and his presentation satisfying the Jones Criteria, ARF was deemed more likely. Patient was discharged with Ibuprofen and prophylactic IM Penicillin Benzathine x 5 years

CONCLUSION: - In regions, where ARF incidence is high, its incidence is more common in children aged 5-14 years and ARF incidence ranges from 2-3.2 % in the 35-44-year age group.

- Migratory polyarthritis is earliest symptomatic manifestation of ARF (< 3 wks. of GAS)

- The arthritis of ARF typically affects large Joints: ankles, knees, elbows, wrists

- Arthritis of ARF is very responsive to NSAID's and leaves no residual joint deformity

- Identifying PSRA as an ARF variant has important implications for secondary prophylactic treatment

ACUTE SYPHILITIC HEPATITIS: AN UNUSUAL PATTERN

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LEARNING OBJECTIVE #1: Recognize acute hepatitis and jaundice as a presentation of syphilis.

LEARNING OBJECTIVE #2: Identify serology tests that can be falsely positive in bacterial infections.

CASE: A 31-year-old man presented with one week of cough, headaches, and abdominal pain. Initial laboratory evaluation revealed a total bilirubin level of 15.6 mg/dL, ALP 181 U/L, ALT 518 U/L, AST 829 U/L. Lipase was not elevated. Chest and abdominal imaging showed no abnormalities. He had a 13 pack-year smoking history but no alcohol or recreational drug use. Urine drug screen was negative, and acetaminophen level was undetectable. There was no relevant family history, recent travel, or new sexual partners. On examination, he was jaundiced with RUQ tenderness and hepatomegaly. He had multiple homemade tattoos.

Investigation confirmed vaccination against hepatitis A and B. Viral studies for hepatitis C, HIV, EBV, CMV, ADV, and VZV were negative. Further studies demonstrated a positive ANA (1:640) and AMA. HSV IgM was positive, while IgG was negative for which he was treated with IV acyclovir for suspected HSV hepatitis. Despite the treatment, his bilirubin and transaminases continued to rise.

On day six, he developed a maculopapular rash over the torso, palms and soles. Testing for syphilis revealed a positive RPR titer and a reactive treponemal antibody test. One dose of 2.4 MU of penicillin G benzathine was administered. Liver biopsy obtained the next day showed portal and lobular hepatitis and hepatocyte necrosis. HSV-1 and HSV-2 immunohistochemical stains were non-reactive, and spirochetes were not visible on Steiner stain. Following penicillin administration, transaminases trended downwards and he reported profound symptomatic improvement.

IMPACT/DISCUSSION: Syphilis is often considered in the context of painless genital ulcers, lymphadenopathy, and cutaneous manifestations in high-risk populations. Hepatitis is an uncommon manifestation of syphilis. Reported findings typically follow a cholestatic pattern with marked elevations in ALP and GGT and milder elevations in aminotransferases. This case is remarkable due to mild ALP elevations and impressive elevations in AST and ALT. Several possible diagnoses competed before testing for syphilis occurred, including HSV hepatitis. In this case, despite antiviral medication, transaminitis continued to worsen until penicillin was administered. Falsely positive ANA and AMA have been previously reported in patients with bacterial infections, including syphilis. The diagnosis of syphilitic hepatitis was made based on the dramatic clinical and laboratory improvement seen after penicillin administration. Moreover, the biopsy findings in this case were consistent with a systematic review of 55 liver biopsies taken from patients with syphilitic hepatitis.

CONCLUSION: Syphilis should be suspected as a possible cause in patients with acute hepatitis and jaundice.

Liver enzymes can be markedly elevated in syphilitic hepatitis with mild increases in ALP. False positive serology testing can occur in syphilis.

ACUTE VASO-OCCLUSIVE CRISIS WITH SPLENIC SEQUESTRATION IN A PERSON WITH SICKLE CELL DISEASE FOLLOWING PERFLUTREN LIPID MICROSPHERE ADMINISTRATION FOR CARDIOVASCULAR ULTRASOUND ENHANCEMENT

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LEARNING OBJECTIVE #1: Recognize the risks of using Perflutren Lipid Microsphere in sickle cell disease patients

CASE: A 53-year-old African American female with a past medical history of sickle cell-beta+ thalassemia presented for routine echocardiogram with Perflutren Lipid Microspheres (PLM). Prior to the procedure, patient was in her usual state of health with no complaints of pain or other vaso-occlusive crisis (VOC). Shortly after the procedure, she experienced acute pain in her lower extremities that progressed caudally to her abdomen and chest. At presentation to the Emergency Department, she was hypoxic and tachypneic. Physical exam revealed diffuse chest pain reproducible with palpation. Laboratory analysis was remarkable for microcytic anemia and neutrophilia. Chest radiograph revealed an ill-defined opacity in the right middle lobe. She was admitted for VOC with acute chest and subsequently developed fever and tender left upper quadrant abdominal pain. Laboratory analysis revealed thrombocytopenia, leukocytosis, and worsening anemia. Infectious disease workup was negative. Acute splenic sequestration crisis (ASSC) was suspected. Abdominal ultrasound revealed splenomegaly and an exchange transfusion was performed. Post-transfusion laboratory analysis initially revealed worsened hemolysis (elevated lactate dehydrogenase, direct hyperbilirubinemia, and increased anemia) and acute kidney injury concerning for hyperhemolysis and multi-organ failure syndrome. She was treated with ongoing transfusion support, intravenous immune globulin infusion, and supportive care. Over two days, the patient's hemolytic parameters and her abdominal pain improved.

IMPACT/DISCUSSION: The patient's clinical course included a VOC complicated by ASSC and multi-organ failure syndrome in an adult with sickle cell disease (SCD). We suspect that her VOC and ASSC were related to the echocardiogram contrast agent (ECA), PLM. Review of the literature reveals no documentation of VOC or ASSC with ECA use. However, at our institution, this is the second patient with SCD who experienced VOC following PLM use. In 2017, the FDA revised the black box warning for ECAs (initiated in 2007 after four deaths in patients without SCD), which included the deletion of the mandated 30-minute monitoring period following ECA use. Further, a previous abstract awarded for a small business investigation research grant mentions an increased concern in patients with SCD, but no follow-up data is available. Interestingly, the VOC in the two patients at UAB began within, or close to, this monitoring period. Avoiding PLM in individuals with SCD or further monitoring patients with SCD receiving ECA should be considered.

CONCLUSION: -Perflutren Lipid Microsphere's safety profile in SCD patients warrants examination

-Clinical judgment should be used to determine if ECA use is necessary for cardiac evaluation in SCD patients or if alternative methods should be used (such as cardiac MRI)

-VOC can be complicated by ASSC in adults with SCD

A DAGGER TO THE HEART: STIMULANT USE AND SPOTANEOUS CORONARY ARTERY DISSECTION

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LEARNING OBJECTIVE #1: Recognize the presentation of spontaneous coronary artery dissection (SCAD).

LEARNING OBJECTIVE #2: Recognize amphetamine use as a potential risk factor for SCAD.

CASE: A 33-year-old woman with a history of anxiety and ADHD on dextroamphetamine and amphetamine presented with acute onset sharp,

substernal chest pain radiating to her left arm and neck since the morning. It felt similar to a "heartburn" episode a month ago. While in EMS, she felt nauseous, vomited, and described a "sensation of doom." She denied any dyspnea, cough, or lightheadedness. She endorsed a remote history of cocaine use and recent stressors at work causing increased anxiety.

Her physical exam was unremarkable. EKG showed 0.5-mm ST-depression in leads V4-V6, III and aVF with T-wave inversions in leads V1-V3. She received aspirin 325mg, aluminum-magnesium hydroxide-simethicone, and famotidine 20mg. Initial troponin I was 0.11ng/mL. D-dimer, urine drug screen, chest x-ray, and echocardiogram were normal. Repeat troponin 6 hours later was 11.3 and the EKG remained unchanged. Cardiac catheterization revealed a spontaneous coronary artery dissection (SCAD) in her distal left circumflex artery causing a 95% occlusion. No intervention was performed. She was discharged on aspirin and clopidogrel. Dextroamphetamine and amphetamine was discontinued.

IMPACT/DISCUSSION: SCAD is a common cause of non-atherosclerotic coronary artery disease in women under age 50, accounting for 24% of myocardial infarctions [1] and recurrence is common. Young women with anxiety or GERD are often assumed to have non-cardiac chest pain and may not be considered for coronary catheterization [2]. This may lead to underdiagnosis of SCAD. Pathophysiology of SCAD is not completely understood, but the proposed mechanism is an intimal tear or bleeding of vasa vasorum, causing a false lumen with an intramural hematoma. Early coronary angiography is critical for diagnosis. Risk factors include connective tissue disease, pregnancy, physical and emotional stress. Our patient was not pregnant and did not have a connective tissue disorder. While cocaine is typically associated with SCAD [3,4], her use was remote and urine test was negative. Interestingly, there are a few case reports showing an association between amphetamine use and risk of SCAD [5,6]. The scarcity of data could be due to rarity of the condition as well as under-diagnosis from lack of awareness that amphetamine use is a risk factor for SCAD. Appreciating amphetamine use as a possible risk factor for SCAD may prompt earlier recognition and treatment. Furthermore, heightening awareness among providers may trigger education of patients on the dangers of misusing or overusing amphetamines.

CONCLUSION: Patients with SCAD typically do not have risk factors for coronary artery disease; they are young, healthy and predominantly female. It is critical to maintain a high level of suspicion for SCAD in healthy patients who present with cardiac chest pain and to recognize stimulant medication use as a potential risk factor.

ADDRESSING THE GAP: AIDS PRESENTING AS HERPES ZOSTER POLYCRANIAL NEURITIS WITH A GLOBULIN GAP AND PAROTID LYMPHOEPITHELIAL LESIONS

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LEARNING OBJECTIVE #1: Diagnose HIV in patients presenting with Herpes Zoster, a globulin gap, or with lympoepithelial lesions.

LEARNING OBJECTIVE #2: Recognize that Herpes Zoster can present with polycranial neuritis.

CASE: A 37 year-old-female presented with a painful, burning rash on the left face that spread to the oropharynx over the course of three days. Associated symptoms include dysgeusia, otalgia, vertigo, headache, and pain with opening her jaw. She denied fatigue, night sweats, fevers, weight loss, hearing loss, or ocular symptoms. On exam, she was afebrile with normal vital signs and appeared uncomfortable. There was a vesicular rash on the left external auditory canal, auricle, cheek, chin, and lower lip. Ulcerations were present on the left tongue, soft palate and anterior tonsillar pillar that did not cross midline. There was no ocular involvement. A left-sided facial nerve palsy and cervical lymphadenopathy were noted. Labs noted lymphopenia, globulin gap, and HIV positivity with a CD4 count of 54 (normal >500). Maxillofacial CT revealed parotid lymphoepithelial lesions and nasopharyngeal abscess superimposed on a herpes zoster (HZ) cluster. She was diagnosed with HZ with polycranial involvement (cranial nerves V and VII) in the setting of newly diagnosed Acquired Immunodeficiency syndrome (AIDS). Treatments included IV acyclovir, prednisone, empiric antibiotics for the abscess not amenable to drainage, cortisporin otic drops, and supportive care. She was started on bictegravir/emtricitabine/tenofovir as acute retroviral syndrome could not be ruled out. The patient clinically improved and was discharged with close follow-up.

IMPACT/DISCUSSION: Ramsay Hunt Syndrome (HZ Oticus) classically presents with HZ reactivation involving the facial nerve with ipsilateral facial palsy and rash in the ear and mouth. HZ can also involve the trigeminal nerve. The ophthalmic branch is most commonly affected; the maxillary and mandibular branches are rarely involved. Here we describe a rare presentation of HZ with polycranial involvement of both the facial and the mandibular branch of the trigeminal nerve. Patients with HZ should be monitored closely for development of ocular involvement which is associated with significant morbidity. Other complications of HZ include abscess formation as varicella infection predisposes to secondary bacterial infection as seen in this patient. Another important point is that this patient initially presented to an outside hospital and was diagnosed with HZ; however, her globulin gap was not evaluated and her HIV status was not assessed. In this case, why would a young patient present with Herpes Zoster with a globulin gap and parotid lympoepithelial lesions? Immunodeficiency must be considered and recognition will result in earlier diagnosis with improved outcomes.

CONCLUSION: HIV status should be assessed in patients presenting with Herpes Zoster, a globulin gap, or lymphoepithelial lesions. Herpes Zoster can present with polycranial neuritis and timely treatment is essential to decrease morbidity.

A DETOUR THROUGH THE DIAPHRAGM – AUSTIN REZIGH MD, DIVNEET MANDAIR MD, MARISA ECHANIZ MD

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LEARNING OBJECTIVE #1: Recognize patients at risk for pancreaticopleural fistula.

LEARNING OBJECTIVE #2: Select the appropriate imaging study for diagnosis of pancreaticopleural fistula

CASE: 33 year old male with PMH: smoking, alcohol abuse presented with dyspnea. One month prior to admission, our patient developed shortness of breath. He noted a dry cough x 1 week that caused him to stop smoking, and pleuritic chest pain, N/V/D.

CXR noted a LLL consolidation and large L effusion. The patient was initially treated for CAP. Thoracentesis was performed, revealing an exudative effusion with an amylase level of 37,350. Pleural fluid cytology and culture were negative.

At this point, pt went for CT chest/abdomen/pelvis which demonstrated large bilateral pleural effusions, peripancreatic fat stranding and possible pseudocyst posterior to the pancreatic tail. A diagnosis of pancreaticopleural fistula (PPF) was made and was initially managed medically. ERCP was later performed, which revealed ductal injury in the pancreatic genu with downstream stricture for which a plastic stent was placed. The stent was upsized 5 days later given continued reaccumulation of the effusions. His effusions and dyspnea subsequently resolved, and he underwent uneventful stent removal 6 weeks later.

IMPACT/DISCUSSION: Pleural effusions that develop from PPF are rare, occurring in <1% of cases[1]. These are distinct from the more common sympathetic effusions seen in ~17% of cases of acute pancreatitis[1,2]. PPFs generally form from a ruptured or incompletely formed pseudocyst that allows leakage of pancreatic enzymes across fascial planes. To drain into the pleural space, a fistulous tract often forms across the aortic or esophageal hiatus of the diaphragm[2].

Central to diagnosing PPF is understanding the clinical context in which it occurs. Most patients present with dyspnea sans abdominal pain, often delaying the diagnosis by >1 month[2]. Evidence of chronic pancreatitis in patients with refractory effusions should raise suspicion for PPF. Chronicity of pancreatitis, more than chronologic age, is a risk factor for formation[3]. Amylase levels from pleural fluid are often diagnostic. Many conditions, from pulmonary TB to esophageal perforations, may present with elevated pleural amylase; but levels >10,000 are seen, almost exclusively, in PPF[4,5].

Diagnosis is often made by non-invasive imaging modalities. MRCP is the gold standard as it excels in visualization of pancreatic ductal anatomy[6]. CT has an acceptable performance, visualizing the fistula in ~70% of cases[3]. While minimal ductal dilations may be managed medically, disruptions in the pancreatic head or body, or a stricture, are best managed with ERCP. Surgery is favored when complete ductal disruption or obstruction distal to a fistula is seen[2,4].

CONCLUSION: PPF can be difficult to diagnose without a high clinical suspicion. Amylase levels in pleural fluid are often diagnostic. Non-invasive imaging modalities, such as MRCP and CT, are essential for guiding appropriate management.

A DIFFERENT DIFFERENTIATION SYNDROME: A CASE WITH AZACITIDINE

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LEARNING OBJECTIVE #1: Recognize differentiation syndrome caused by an atypical drug

CASE: A 76 year old male with history of prostate adenocarcinoma status post radical prostatectomy, leuprolide, and external beam radiation subsequently developed myelodysplastic syndrome as a consequence of prior radiation exposure. Initial treatment with erythropoietin stimulating agents failed. Treatment with azacitidine was pursued. Two weeks later, he presented to the hospital with chief complaints of dizziness, malaise, and shortness of breath. He was hypoxic requiring 4LNC but otherwise hemodynamically stable. Initial lab workup revealed: new leukocytosis of ~60,000 with 50% blasts, worsening anemia (6.7 g/dL) and thrombocytopenia (26/nL) without DIC, and acute kidney injury with associated elevated uric acid and LDH. Chest CT revealed small subsegmental filling defects suggestive of pulmonary emboli vs. leukostasis, patchy ground glass opacities, and pleural effusions. Broad spectrum antibiotics were initiated for possible pneumonia. Due to concern for possible malignant transformation and questionable hyperleukocytosis, hydroxyurea was initiated. He was also treated for tumor lysis syndrome. Despite treatment, he had worsening leukocytosis and a deteriorating clinical picture with hypotension, worsening respiratory failure, decreasing renal function, and new altered mentation raising concern for differentiation syndrome. Patient was treated with IV dexamethasone 10mg BID with profound clinical improvement noted within 24 hours. Peripheral blood flow cytometry for blast characterization revealed chronic myelomonocytic leukemia vs. possible acute myelomonocytic leukemia.

IMPACT/DISCUSSION: Differentiation syndrome (DS) is known to be caused by the treatment of acute promyelocytic leukemia with all-trans retinoic acid or arsenic trioxide as induction therapy. Other drugs associated with DS include ivosidenib, enasidenib, and gilteritinib. Onset is typically days to weeks following induction therapy. It is a clinical diagnosis that is usually associated with respiratory distress, hypotension, kidney injury, pleural effusions/infiltrates/opacities on radiological studies, fevers, and/or weight gain where no clear cause could be determined. An elevated WBC count is commonly associated with initial presentation; however, it can also present with a normal WBC count. A profound response to IV steroids with the above clinical findings points to a diagnosis of DS.

Azacitidine is a chemotherapy drug commonly used to treat myelodysplastic syndrome. It can also be used to treat acute myeloid leukemia (AML). As with most chemotherapy agents, adverse effects include nausea, fatigue, pancytopenia, etc. To date, reported cases of DS from azacitidine are limited. One report has been found presenting a case of DS following treatment of azacitidine for AML.

CONCLUSION: This report presents a case of differentiation syndrome following induction therapy with azacitidine - a drug that is atypical to cause DS.

A DOUBLE TAKE ON THE DOTATE SCAN!

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LEARNING OBJECTIVE #1: Diagnosis of neuroendocrine tumors (NET) by utilizing ^{68}Gallium DOTATE PET/CT scan.

LEARNING OBJECTIVE #2: Definition of splenosis and when to suspect it.

CASE: A 62-year-old male with medical history of traumatic spleen rupture twenty years back, presented to the Emergency Room with sudden onset abdominal pain, nausea and vomiting. Physical examination revealed left lower quadrant tenderness. Initial laboratory tests were within normal limits. Computed Tomography showed a 4* 5 mm proximal left ureteral stone. It also showed incidental findings of a lobulated 4*3*4 cm soft tissue mass within the mesenteric root and a 2.5* 1 cm pleural based nodule within the left lung base. Patient's symptoms were thought to be from ureteric colic. The soft tissue mass seen on the CT was concerning for a neuroendocrine tumor, so he had further workup. His serotonin level was elevated at 300 (56-244 ng/ml), Chromogranin A level was 1400 (0-160 ng/ml) and 24- hour urine HIAA was 19.7 (<10 mg/24 hr.). ^{68}Gallium DOTATE scan showed intense uptake in the mass within the root of mesentery and also in the pleural based lung nodule. He underwent small bowel resection and mesenteric lymphadenectomy. Pathology was consistent with a well differentiated neuroendocrine tumor. Since it is unusual to have pleural metastasis from small bowel carcinoid, a biopsy of the nodule was performed, which showed benign lymphoid tissue with small lymphocytes consistent with spleen.

IMPACT/DISCUSSION: ^{68}Gallium DOTATE is a somatostatin analogue that has high affinity for somatostatin receptor type 2. ^{68} Ga-DOTA-DPhe[1], Tyr[3]- octreotate (^{68} Ga-DOTATE) PET/CT scan is more accurate than conventional imaging like Octreoscan, PET scan in the diagnosis of neuroendocrine tumors. It can greatly impact management by directing patients to curative surgery by identifying a primary tumor site and directing patients with multiple metastasis to systemic therapy. Various physiologic and pathologic processes express somatostatin type 2 receptor resulting in false positive results. Most notable are pancreatic uncinate process, splenic tissue, osteoblastic and inflammatory processes. Ectopic autotransplantation of the splenic tissue after surgery or trauma is called splenosis. It is mostly an incidental finding on the imaging done for other purposes. Once the diagnosis of splenosis is made, no further intervention is required unless the patient is symptomatic.

CONCLUSION: Splenosis should be kept in mind for the patients with history of splenectomy or splenic rupture. This has management implications to prevent the patients from getting unnecessary workup and systemic therapy in cases of concomitant tumors. In our patient, since the biopsy from the pleural nodule showed splenic tissue, he did not receive systemic chemotherapy and is undergoing periodic surveillance imaging following his surgery.

ADULT STILL'S DISEASE: MACROPHAGE ACTIVATION SYNDROME SECONDARY TO MYCOPLASMA PNEUMONIAE

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LEARNING OBJECTIVE #1: Diagnose Adult Still's disease (ASD) with macrophage activation syndrome (MAS)

LEARNING OBJECTIVE #2: Recognize Mycoplasma pneumoniae (M. pneumoniae) as a potential trigger for MAS

CASE: A 40-year-old male presented to the hospital with nausea, vomiting, diffuse abdominal pain, fever and chills for 2 days. He had arthralgias and a dry cough over the past week. Medical history included juvenile idiopathic arthritis (JIA) and GERD; he takes omeprazole and ibuprofen. He was febrile, hemodynamically stable, ill-appearing, with a blanchable, erythematous rash on his back and arms. He had micrognathia, mild abdominal tenderness, no hepatosplenomegaly, and restricted range of motion in bilateral joints. Labs showed leukocytosis, transaminitis, hypertriglyceridemia, elevated ferritin and CRP. Chest X-ray, RUQ ultrasound, and portal system doppler were unremarkable. Abdominal and pelvic contrast CT revealed colitis and degenerative joint changes. Urinalysis, respiratory viral panel, hepatitis panel, stool enteric pathogens and blood culture were negative. ANA, RF, CCP, ASMA, AMA, ceruloplasmin, hemochromatosis HFE gene, and alpha 1 antitrypsin tests were unremarkable. EBV, CMV, tick-borne viruses, hantavirus, fungal and tuberculosis tests were negative. However, M. pneumoniae IgG was positive and IgM reactive.

Broad spectrum antibiotics upon admission were narrowed to doxycycline. Infectious disease, gastroenterology, rheumatology and hematology were consulted and the diagnosis of ASD was made. On day 5, he developed leukopenia, thrombocytopenia, hemolytic anemia, worsening ferritinemia and transaminitis; meeting criteria for MAS. He was started on high dose oral steroids and Anakinra; labs and symptoms significantly improved. He was stable for discharge by day 8 with outpatient rheumatology follow-up.

IMPACT/DISCUSSION: ASD is characterized by daily fevers, arthralgias, rash, leukocytosis, elevated ferritin and may include cardiopulmonary involvement, liver disease, abdominal pain and nausea. As a diagnosis of exclusion, alternative systemic rheumatologic diseases, malignancy, infection, and drug reactions must be ruled out. MAS, a form of hemophagocytic lymphohistiocytosis, is a severe complication that occurs in a minority of JIA and ASD patients. Elevation of serum ferritin and CRP, anemia, leukopenia, thrombocytopenia, transaminitis and hypertriglyceridemia in the setting of ASD should raise concern for MAS. Typically seen in pediatrics, MAS rarely occurs in adults, but diagnosis and prompt treatment is critical as it can be life threatening. A common cause of MAS is infection; most often viral such as EBV.

Bacterial infections, specifically M. pneumoniae, have been reported in childhood MAS and in one adult case report.

CONCLUSION: In a patient with a history of JIA, consider the development of ASD and MAS. As a diagnosis of exclusion, the differential for ASD should be broad. The workup of infectious etiologies should include bacteria like M. pneumoniae, recognizing that this infection can trigger MAS in ASD.

ADVERSE HEMATOLOGICAL REACTIONS ASSOCIATED WITH DAPSONE USE

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LEARNING OBJECTIVE #1: Recognize adverse hematological reactions associated with dapsone use.

LEARNING OBJECTIVE #2: Blood test monitoring for patients taking dapsone.

CASE: A 78-year-old woman presented for evaluation of a pruritic skin rash. Her past health history included hypertension, hysterectomy for fibroid uterus and mild mitral valve regurgitation. Skin rash developed 3 years ago and she had tried various over-the-counter remedies without benefit. Subsequently she was prescribed triamcinolone cream and oral non-sedating antihistamines. After a skin biopsy by the local dermatologist, she was diagnosed with IgA bullous dermatosis. She was started on 25 mg of dapsone initially and the dosage was increased to 6-7 tablets daily. On routine laboratory testing, she was found to have hemoglobin of 12 with normal white count and platelet count. MCV was elevated to110.7 with normal B-12 and folic acid levels. Electrolytes, liver function tests, serum creatinine were also normal. Further testing showed an elevated reticulocyte count (6%) and absent serum haptoglobin. Peripheral smear demonstrated bite cells. Urinalysis was normal.

IMPACT/DISCUSSION: Our patient had a significantly elevated MCV with normal B12 and folic acid levels. Elevated reticulocyte count, absent serum haptoglobin and the presence of bite cells in the peripheral smear suggested hemolysis. This was felt to be secondary to dapsone related oxidative stress. Dapsone has been used to treat various forms dermatitis, severe apthous ulcers, prophylaxis and treatment pneumocystis pneumonia and toxoplasma. Adverse hematological reactions are not uncommon from this treatment. They include reticulocyte increase (2% to 12%), hemolysis (>10%; dose related; seen in patients with and without G6PD deficiency), hemoglobin decrease (>10%; 1-2 g/dL), methemoglobinemia (>10%), shortened red cell life span (>10%), Agranulocytosis, leukopenia can also occur. It is important to recognize the side effects relating to dapsone use and institute monitoring. It is suggested that CBC and reticulocyte counts every 2 to 3 days during the first 2 to 3 weeks, monthly for the first 3 months, and then every 6 months.

She was recommended a visit the dermatologist to discuss alternative treatments for her skin condition. G6PD testing was not done because it may not be reliable in the acute setting. She is recommended to have this test done after resolution of hemolysis.

CONCLUSION: It is important to recognize hematological side effects relating to dapsone use and institute monitoring.

A FACE SHIFTED: AN UNCOMMON PRESENTATION OF A RARE CARCINOMA

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LEARNING OBJECTIVE #1: Cite the full differential diagnosis of persistent ear pain

LEARNING OBJECTIVE #2: Recognize discordant data as a reason for reassessment of a "common diagnosis"

CASE: 64-year-old female with a history of heart failure, diabetes mellitus, CAD s/p CABG, HTN and HLD presented as a new patient to establish care. Her only complaint was 2 weeks of left ear pain. On the initial visit, physical exam was remarkable for pre-auricular tenderness to palpation, erythema and edema around the ear. She was treated for

superficial inflammation with cold compresses and ibuprofen for pain. However, over the next few weeks she continued to experience left ear pain despite improvement in the swelling. CT temporal bone revealed an effusion with concern for chronic mastoiditis and a referral to ENT was made. A month later, she was prescribed Clindamycin for presumed parotitis by ENT. At a follow up visit 1 month later with her PCP, she noted new left sided facial paralysis and a "shifted" face which she stated had been worsening over time. A repeat CT of her head and neck revealed a necrotic mass of the parotid gland with lymph node involved highly suspicious for malignancy. Multiple subspecialists, including ENT, plastic surgery, cardiology, and oncology weighed the risks and benefits of treatment, and the patient began chemotherapy with Pembrolizumab rather than pursuing surgery. Subsequent scans gave a final diagnosis of primary squamous cell carcinoma of the salivary gland with metastases to the lymph nodes and liver. Over the course of many months, the left facial paralysis started to improve and the patient was relieved that her face was no longer shifted to the right, and her multidisciplinary team was working toward a positive outcome.

IMPACT/DISCUSSION: This case gives multiple learning points from both a medical knowledge and multi-disciplinary approach standpoint. This case involved multiple physicians, both GIM and subspecialists- who anchored on her seemingly simple outpatient presentation, and treated her for cellulitis, otitis media, and parotitis over multiple months before clear facial paralysis forced a reexamination of the differential and additional imaging, which lead to the diagnosis of metastatic primary squamous cell carcinoma of the salivary gland. This case is an example of an almost missed- "zebra"- case that can occur in medicine. While it is always important to treat common things first, acute reassessment with discordant data is necessary to avoid anchoring bias and appropriately diagnose and treat patients.

CONCLUSION: Salivary gland carcinoma is a rare carcinoma that occurs usually in the elderly with history of radiation exposure. The most common presenting symptoms include a swelling in the jaw/mouth, or numbness of the face, but can present in a variety of ways, and should be considered when persistent facial pain and swelling do not improve over time. This case can alert internists to expand their differential when treating common complaints that worsen despite appropriate therapy.

A FATAL CASE OF HEPATIC KAPOSI SARCOMA IN AN UNTREATED HIV PATIENT

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LEARNING OBJECTIVE #1:

Hepatic KS is more commonly asymptomatic but it can have lethal complications. It must be a consideration in patients with uncontrolled HIV/AIDs.

LEARNING OBJECTIVE #2: Hepatic KS has specific lesions on imaging

CASE: A 30 year old man from Thailand with untreated HIV (diagnosed 7 years prior) presented with fever, night sweats, weight loss, fatigue, cough and epigastric pain. On examination, he had severe wasting, with cervical and inguinal lymphadenopathy. Labs on presentation showed Hb 6.3, ALP 581, AST 65, ALT 53 and a normal bilirubin. He was found to have a high viral load, a CD4+ cell count of 15/mm3 and pancytopenia. Hepatitis viral panel was negative. CT scan on admission showed numerous pulmonary nodules, retroperitoneal lymphadenopathy, and hypodense liver lesions. Antiretroviral therapy was started and a cervical lymph node biopsy was done which showed Kaposi Sarcoma (KS). AFB cultures done grew Mycobacterium Avium Intracellulare and treatment was initiated. He developed progressive jaundice noted initially on day 10 which worsened up to a TB of 38, DB 30, ALP 913, AST 123, and ALT 91. A biliary drain placement with liver biopsy was done which showed lesions due to KS. However, the patient's condition kept deteriorating with a GI bleed (likely variceal from portal hypertension) and worsening kidney function, suspected to be due to HRS, culminating in the need for hemodialysis which was not tolerated due to hemodynamic instability. Chemotherapy for Kaposi Sarcoma could not be initiated due to worsening hepatic and renal dysfunction. The patient's mental status declined due to hepatic/uremic encephalopathy and multi-organ failure leading to his death on inpatient day 31.

IMPACT/DISCUSSION: KS is seen in 35% of AIDS patients, and generally occurs at CD4 <150 cells/mm. Hepatic KS is mostly found incidentally and less commonly with clinical manifestations of liver disease. Autopsies have shown 35% of KS patients with hepatic KS lesions. Liver US shows nonhomogeneous lesions with multiple hyperechoic periportal bands and nodules. CT generally reveals numerous small liver nodules, often in the periportal area with portal and hilar contrast enhancement. On MRI, these appear as hypointense T1-weighted and hyperintense T2-weighted nodules. This has been seen in the few cases of hepatic KS reported in literature and were also seen in our patient. Pulmonary involvement in KS occurs in 20% of the patients and is the most life-threatening form of the disease. HRS is a much-dreaded outcome of liver failure. It has a poor prognosis with an expected mortality within weeks to months and is generally seen among decompensated cirrhotics. However, there has been one case in literature where a liver mass (suspected to be HCC) caused portal hypertension and HRS.

CONCLUSION: Disseminated KS should be considered early in the differential of patients with uncontrolled AIDS with jaundice and liver lesions since hepatopathy can progress rapidly and if tissue diagnosis and treatment is delayed, the condition may prove fatal.

A FROST FROM THE TROPICS

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LEARNING OBJECTIVE #1: Recognize cultural aspects of caring for patients who practice Vodou

LEARNING OBJECTIVE #2: Consider the cost borne by an individual to engage in hemodialysis

CASE: A 61-year-old Haitian-Creole speaking male construction worker with no past medical history presented with shortness of breath, leg swelling and dyspnea for two months. He had moved to the U.S. to earn money for his Haitian family. Exam revealed pelvic dullness to percussion, bilateral lower extremity edema and white facial crusting consistent with uremic frost. Bladder straight catheterization removed two liters of urine. He was admitted to the ICU with acute renal failure (BUN/Cr 125/28, potassium 7.2, pH 7.2) in the setting of urinary retention. He received hemodialysis (HD) for three days. On the fourth day of hospitalization his labs remained consistent with renal failure requiring long-term HD and he appeared became agitated. He felt better overall and wanted to return to work. The patient explained through an interpreter that he was upset because his nurse had woken him too early and so his spirit wouldn't return to him. Our interpreter clarified this as a belief based in his practice of Vodou.

IMPACT/DISCUSSION: Caring for our patient in a culturally appropriate way required understanding his reasons for delay and in seeking and accepting our care recommendations. He presented with uremic frost, a rare (0.8-3%) sign of advanced uremia usually associated with BUN levels above 200 mg/dl. He delayed due to cost concerns and his spiritual framework for health.

Even when covered by health insurance, dialysis has significant financial burdens. Assuming our patient takes two or three weekdays off of

work for HD, his income would be reduced by 30-40%. Peritoneal dialysis and nocturnal HD are more cost-effective compared to center-based HD. To travel to Haiti our patient would also face complex arrangements for any dialysis method.

Much of the published literature on caring for Vodouoists comes from the HIV/AIDS epidemic. In the mid-1990's, some Haitian Vodouoists believed spirits protected them from HIV/AIDS and the epidemic was a myth introduced by Western medicine. They demonstrated a distrust of medicine seen in many faith communities globally, and influenced by the cultural repercussions of Haitian colonization and slavery. Our patient sought care from a Vodou priest first, perhaps influenced by this historical mistrust.

He believed that his spirit left him every evening and returned in the morning, and that ill spirits or ignoring his spirit caused sickness. Dialysis did not address his spiritual framework, and early wakening challenged it. Beyond language interpretation, our patient's recovery might have been aided by concurrent cultural interpretation and spiritual consultation.

CONCLUSION: Uremic frost is a rare manifestation of renal failure and a marker of our patient's reluctance to seek medical care. Our treatments and interventions were financially inconvenient and failed to address his spiritual framework of health.

A FUZZY DIAGNOSIS

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LEARNING OBJECTIVE #1: Recognize vision change as a symptom of metabolic disturbance

LEARNING OBJECTIVE #2: Identify the rapid progression of latent autoimmune diabetes

CASE: A 33-year-old white man presented to clinic for a well exam. He was obese with history of episodic elevated blood pressure. He reported 6 months of new onset, intermittent, self-resolving episodes of binocular blurry vision lasting 1 hour without headache or systemic symptoms. He denied polyuria, polydipsia, polyphagia or paresthesia. He used alcohol occasionally. He had a family history of premature cardiovascular disease and an aunt with diabetes. He was well appearing, temperature 98.2°F, HR 66, RR 20, BP 120/90. Cardiopulmonary, skin and neurological exams were normal. Labs one year ago: normal metabolic panel, glucose 86 mg/dL, LDL 121 mg/dL and total cholesterol 191 mg/dL. Ophthalmologic exam showed normal visual acuity, lens, and fundus. Head and neck imaging did not reveal neurological or vascular abnormalities.

One month later, he presented to the ED with worsening blurry vision and new dyspnea. Visual acuity and cardiopulmonary evaluation were normal. However, glucose of 323 mg/dL triggered additional labs revealing HbA1C of 9.1%. Metformin and glipizide were started. Two months later, blurry vision and HbA1C (7.8%) had improved. Elevated anti-GAD65 antibodies (222 U/mL, range 0-5) with adequate beta cell function (serum insulin 108 IU/mL, range 3-25 and C-peptide 9 ng/mL, range 1-4 during glucose challenge) led to the diagnosis of latent autoimmune diabetes in adults (LADA).

IMPACT/DISCUSSION: We describe a case of LADA presenting with isolated episodic blurry vision. Episodic blurry vision as the sole symptom of LADA is rare. Although chronic diabetic eye disease encompassing retinopathy, macular edema, cataracts and glaucoma is well recognized, reversible changes localizing to the lens is less so. Transient increases in the aqueous humor glucose content and its enzymatic conversion to sorbitol in the lens increases osmotic pressure within the lens fibers. Resultant swelling of the lens causes acute myopic shifts and loss of refractive power leading to blurred vision. Patients with LADA may progress to severe hyperglycemia faster than type 2 diabetes due to coexistence of a type 2 diabetes phenotype and anti-islet cell antibody positivity; the prevalence of autoantibodies in type 2 phenotypes may be upwards of 10%. This results in earlier insulin dependency, but insulin initiation is often delayed due to misdiagnosis as type 2 diabetes. Episodic blurry vision in the absence of other symptoms should raise suspicion for a metabolic process. Moreover, knowledge of diabetic phenotypes may prompt earlier glucose testing, as well as autoantibodies in the appropriate clinical context, potentially obviating more extensive workups.

CONCLUSION: Isolated episodic blurry vision should prompt consideration for transient hyperglycemia. More rapid progression in apparent type 2 diabetes should prompt evaluation for autoimmune-induced diabetes, such as LADA.

A HAIRY SITUATION: AN UNUSUAL CAUSE OF HIRSUTISM

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LEARNING OBJECTIVE #1: Describe the workup of hirsutism in a female patient

LEARNING OBJECTIVE #2: Differentiate between pathologies that can lead to hirsutism

CASE: A 51 yo cisgender female with history of lupus and left 1.2cm adrenal adenoma presented to clinic with new facial hair growth. She did not report acne, voice changes, baldness, or hair-thinning. She had been amenorrheic since IUD removal 7 months prior. Dark, coarse hair above the lip as well as soft hair in the distribution of a beard was noted.

Total testosterone was elevated at 323 ng/dL [ref: 8-60]. Androstenedione was elevated at 331 ng/dL [ref: 30-200] and 17-hydroxprogesterone also at 466 ng/dL [ref: <80 follicular, <285 luteal, or <51 postmenopausal]. Dehydroepiandrosterone Sulfate (DHEAS) was low at 9.6 mcg/dL [ref: 27-240]. Transabdominal and transvaginal ultrasounds demonstrated normal ovaries. CT-Abdomen showed a stable 1.2cm left adrenal adenoma. MR-Pelvis was ordered for reevaluation of an ovarian source, revealing enhancing hypervascular lesions of the ovaries bilaterally, 1.4cm on the right and 0.9cm on the left.

Given new ovarian findings and stability of the adrenal mass, the presentation was felt to be secondary to one or both of the ovarian lesions. Bilateral salpingooophorectomy was performed. Pathology revealed nodular stromal hyperthecosis of the left ovary and a right 1.5cm steroid cell tumor. Repeat laboratory tests 3 weeks later showed complete normalization of testosterone. The hirsutism was resolved upon return to the clinic.

IMPACT/DISCUSSION: It is essential for the internist to be familiar with the key elements of history, examination, and diagnostic workup of hirsutism. Polycystic ovarian syndrome is the most common cause of hirsutism in premenopausal women. Ovarian hyperthecosis, the presence of nests of luteinized thecal cells in the ovarian stroma, is common in peri- and post-menopausal women. Virilizing ovarian tumors can present similarly to ovarian hyperthecosis. With rapid onset of symptoms, significant testosterone elevations (>150 ng/dL) are more suggestive of neoplastic etiology, ovarian or adrenal. In such cases, imaging with pelvic US is indicated. A technique in our workup that has been infrequently utilized is use of pelvic MRI following a negative ultrasound. Data are currently limited but encouraging regarding MRI in identification of hormone-secreting ovarian tumors, suggesting high sensitivities; this case supports the potential for evaluations of hyperandrogenism. DHEAS may help differentiate out adrenal pathology. In this case, DHEAS was low and the adrenal tumor stable from prior imaging, making an adrenal source

less likely. Our patient was found to have two potential ovarian causes; however, given the acute development of hirsutism, the primary cause of her symptoms was likely the right-sided steroid cell ovarian tumor.

CONCLUSION: Hirsutism in women is typically a sign of excess androgen from diverse etiologies. Initial workup including morning testosterone, DHEAS, and pelvic US can guide diagnosis and management.

A HANDY CLUE IN DIAGNOSIS: MALIGNANT BRACHIAL PLEXOPATHY AS A PRESENTATION OF RECURRENT DUCTAL BREAST CARCINOMA

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LEARNING OBJECTIVE #1: Recognize the presentation of brachial plexopathy (BP) and identify an approach to the diagnosis of its cause.

LEARNING OBJECTIVE #2: Maintain a high suspicion to pursue diagnostic workup for malignancy when the diagnosis of BP is identified.

CASE: A 65 year-old female with remote history of stage III ER/PR + ductal carcinoma (DC) of the right (R) breast, peripheral neuropathy, and type 2 diabetes mellitus presented with six months of progressive neuropathic pain in her R hand and wrist. She noted redness and occasional purple discoloration of her hand. NSAIDs, acetaminophen, and gabapentin provided no relief. She denied any fullness in her axilla but noted "knots" in her R chest wall. She had a history of lymphedema in her R upper extremity (UE), secondary to axillary lymph node dissection. Use of a compression sleeve provided no relief. Her DC was treated with lumpectomy and radiation, followed by hormonal therapy. Mammogram was negative three months prior.

On exam vitals were normal. RUE Non-pitting edema and hyperemia were noted. She had hyperesthesia on the dorsal and palmar surface of the R hand. Sensation and motor function were intact in bilateral UEs. Strength exam was limited by pain with range of motion in R wrist and fingers. UE pulses and capillary refill were normal bilaterally. Breast exam revealed nontender nodules in the upper outer quadrant of the R breast and R axillary lymphadenopathy (LAD).

Doppler ultrasound was negative for deep venous thrombosis, but showed axillary and supraclavicular LAD. A contrasted CT chest was performed, which showed R axillary and supraclavicular LAD confluent with an irregular soft tissue mass invading the R axillary artery. Biopsy of the mass was performed confirming ER/PR+ DC. Oncology was consulted and prescribed palliative chemotherapy in the setting of non-resectable, locally recurrent disease. Following initiation of treatment, the patient had improvement of her pain at six month follow-up.

IMPACT/DISCUSSION: BP is an uncommon neurologic complication in which the brachial plexus is compromised by trauma, ischemia, radiation damage, or direct compression. It is cited to have an incidence of 0.4% in patients with a history of malignancy (most commonly breast and lung cancer) and 2-5% of patients who have undergone radiation therapy. The diagnosis of BP should be suspected in patients with unilateral progressive neuropathic UE pain with a history of malignancy or radiation. Presenting symptoms include vague, neuropathic pain while late findings include sensory loss, weakness, atrophy, and Horner's Syndrome. The diagnostic workup should include nerve conduction studies/electromyography. Brachial plexus ultrasound and chest CT/MRI are recommended in patients with a history of malignancy to evaluate for a compressive mass.

CONCLUSION: - A high suspicion should be maintained to pursue advanced imaging in patients with a history of malignancy and new neurologic complaints.

- Negative surveillance imaging may not be sufficient to rule out recurrence of malignancy.

A HEAD-SCRATCHER WITHOUT AN ITCH: PRESUMPTIVE PRIMARY BILIARY CHOLANGITIS IN AN ELDERLY MAN

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LEARNING OBJECTIVE #1: Develop a rational approach to the evaluation of liver disease of unknown etiology.

LEARNING OBJECTIVE #2: Diagnose primary biliary cholangitis (PBC) according to clinical and biochemical criteria, and understand how shared decision-making may impact consensus recommendations for obtaining liver biopsy.

CASE: A 73-year-old homeless man with no prior medical diagnoses presented with acute abdominal pain, diarrhea, and hematochezia. He reported unintentional weight loss but denied fatigue or itching. He took no prescription medications or supplements and denied alcohol or injection drug use. Physical exam revealed lean habitus and ascites, without jaundice, scleral icterus, asterixis, or other significant findings. Initial imaging revealed ascites, esophageal and gastric varices, and a cirrhotic-appearing liver. The portal veins were patent. Liver function tests, including alkaline phosphatase (ALP), were normal other than mildly low protein and albumin. Coagulation studies and lipid panel were normal. The patient was diagnosed with decompensated cirrhosis and an etiology was pursued. Viral hepatitis panel, HSV, HIV, iron studies, alpha-1 antitrypsin, and ceruloplasmin were unrevealing. An expanded autoimmune workup was sent and returned positive only for anti-mitochondrial antibody (AMA) at a high titer of 1:324. Given the high specificity of this serologic test, he was presumptively diagnosed with primary biliary cholangitis (PBC).

IMPACT/DISCUSSION: Liver disease is commonly encountered by general internists. Usually, history and basic tests reveal an etiology. In this case, we first excluded common causes, then rationally evaluated for increasingly rare conditions.

PBC is an autoimmune disease leading to progressive destruction of intrahepatic biliary ducts. Several features of our patient's presentation are atypical, namely his demographics (elderly, male), lack of fatigue or jaundice, and normal ALP. A positive AMA is 98% specific for PBC, though this remains difficult to interpret in the setting of low pre-test probability. Reports of new diagnoses of PBC in males of this age are uncommon [PMID: 20016440]. In the absence of elevated ALP, definitive diagnosis of PBC requires liver biopsy. However, this was deferred after shared decision-making, as the results would not significantly alter management. Treatment with urosdeoxycholic acid was not pursued; benefit was felt unlikely given the patient's already advanced liver disease.

CONCLUSION: AMA is a highly sensitive and specific serologic test for PBC. Thus, liver biopsy is not always required for diagnosis [PMID: 15017500].

When a diagnosis is uncertain, a rational approach is preferred over "shotgun" testing. Shared decision- making is advised when diagnostic tests will not alter management.

A HEEL OF A PRESENTATION OF CRYPTOCOCCUS

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LEARNING OBJECTIVE #1: Identify the differential of heel pain

LEARNING OBJECTIVE #2: Recognize Cryptococcus as an etiology of isolated heel osteomyelitis

CASE: A 42 year old male with HIV on antiretrovirals (ARV), an undetectable viral load (VL), and CD4 of 364 cells/mm^3 (28.31%) presented with a 3-month history of left heel pain with a 60-pound weight loss, and no rashes, fevers, or chills. He was treated conservatively for suspected plantar fasciitis. Due to lack of improvement he received a local corticosteroid injection. Interval worsening of symptoms and development of a firm mass at the injection site prompted an outpatient MRI revealing a posterior calcaneus mass extending into the surrounding soft tissue concerning for neoplasm. An open biopsy revealed lymphocytes, inflamed granulation tissue with necrosis, and granulomatous inflammation with multinucleate giant cells. Fungal culture grew budding yeast. Serum cryptococcal Ag was positive with a titer of 1:320. CT chest and CSF analysis were negative for involvement. The patient was treated for cryptococcal osteomyelitis with two-weeks of amphotericin B and flucytosine, to be followed by treatment with fluconazole guided by clinical response and cryptococcal titers.

IMPACT/DISCUSSION: Heel pain is common and the differential includes trauma, infection, inflammation, neoplasm, metabolic, and neurologic causes. Patients who are immunosuppressed are at higher risk for infection– particularly opportunistic infections that can occur in patients who have HIV, even with an undetectable VL. Initially, plantar fasciitis, bone spur, nerve entrapment, and heel pad syndrome were the most likely causes for the patient's symptoms. Enlarging mass and worsening pain following corticosteroid injection increased the likelihood of an alternative diagnosis. Imaging and biopsy of the mass were consistent with cryptococcal osteomyelitis. Cryptococcus is the most prevalent and fatal fungal disease worldwide. It became recognized as a major health threat in persons living with HIV in the 1980s during the peak of the AIDS epidemic. Cryptococcus infections commonly present as meningitis or pulmonary disease with significant mortality and morbidity. Bony involvement has an estimated prevalence of only 5% and is associated with disseminated disease. Isolated cryptococcal osteomyelitis is exceedingly rare. It is unclear if osteomyelitis was present prior to the corticosteroid injection or was an iatrogenic complication. Corticosteroids can cause local immunosuppression, which could lead to reactivation of a latent infection. Cryptococcus has a long latency period in host cells and it is theorized that most cases of Cryptococcus represent reactivation of asymptomatic infection, which is possible in this case.

CONCLUSION: This case demonstrates the possibility of localized opportunistic infections in patients with HIV, even with CD4 counts greater than 250 cells/mm^3 and undetectable VL. Clinicians should remain vigilant when encountering seemingly innocuous symptoms in people living with HIV.

A HICCUP IN THE WORKUP OF ALTERED MENTAL STATUS

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LEARNING OBJECTIVE #1: Recognize the clinical significance of persistent hiccups.

LEARNING OBJECTIVE #2: Generate a differential diagnosis for persistent hiccups.

CASE: Mr. LJ is an 80 year-old man with past medical history significant for recently diagnosed chronic lymphocytic leukemia (CLL) who presented with subacute onset of generalized weakness and confusion. On admission the patient was found to be febrile to 38C and hemodynamically stable. He was oriented to self only and unable to identify family members. Four weeks prior to presentation the patient was diagnosed with CLL following prolonged upper respiratory illness. He received treatment with Imbruvica for three days, but this was discontinued due to worsening confusion. Three weeks ago, Mr. LJ was still working as a farmer and his family denied prior medical conditions or medications. There were no focal deficits, but he was unable to stand due to generalized weakness. Frequent hiccups were also noted. The WBC was 204 (lymphocytic predominance) and potassium 5.5. CT head, chest X-ray, and urinalysis results were unremarkable. Flow cytometry consistent with CLL and did not demonstrate evidence of transformation to higher grade of disease.

Due to continued fevers the patient was started on vancomycin and cefepime on hospital day 2. However, he showed no improvement and urine and blood cultures remained negative. During this time patient continued to have persistent hiccups.

On hospital day 4 patient underwent lumbar puncture (LP) that demonstrated positive Cryptococcal antigen and fungal culture. Treatment was initiated with Amphotericin B and Flucytosine. After three days of treatment hiccups resolved and patient became more alert. After six weeks of treatment repeat LP showed positive Cryptococcal antigen with negative fungal culture. After discharge Mr. LJ continued to show improvement in cognition, energy, and strength.

IMPACT/DISCUSSION: Patients with CLL are at risk for opportunistic infections and general internists often care for patients with CLL. In this case, hiccups raised clinical suspicion for meningitis. The etiology of persistent hiccups (lasting >48 hours) can be divided into central (ex. stroke, meningitis, mass lesions) and peripheral (ex. diaphragmatic irritation from surgery or gallbladder pathology) etiology. Workup is driven by symptoms, so by recognizing common central and peripheral causes and applying them to individual scenarios is crucial. In this case altered mental status with immunosuppression led us to suspect meningitis, and Cryptococcal meningitis specifically can elevate intracranial pressure, which may have contributed as well. Recognition of persistent hiccups can serve as an important diagnostic clue.

CONCLUSION: Persistent hiccups should be investigated

Use patient characteristics to guide workup directed at uncovering central and peripheral causes of hiccups

A KNEE'D-TO-KNOW DIAGNOSIS: RISK FACTORS FOR PSEUDOMONAS JOINT INFECTION

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LEARNING OBJECTIVE #1: Recognize injection drug use as a risk factor for Pseudomonas septic arthritis

LEARNING OBJECTIVE #2: Appreciate the limited sensitivity of synovial fluid WBC count in diagnosing septic arthritis

CASE: A 61-year-old male with a history of atrial fibrillation, osteoarthritis, and recent injection drug use presented with concern for heat exhaustion after one day of confusion and fever. He was febrile to 39.5C with blood pressure 106/56. On examination, a large effusion with associated warmth, erythema, and pain with passive movement was noted at the right knee joint. Labs were notable for WBC 13.1, ESR 39, and CRP 6.1. Knee radiographs revealed tricompartmental osteoarthritis with a large effusion. Arthrocentesis was performed and empiric treatment with vancomycin was initiated. Synovial fluid analysis revealed 16,000 WBCs (97% neutrophils) with a negative gram stain and no crystals. Synovial fluid cultures grew Pseudomonas aeruginosa, so piperacillin-tazobactam was added to broaden coverage prior to operative washout of the joint. Post-operatively, antibiotics were narrowed to ciprofloxacin based on sensitivities.

IMPACT/DISCUSSION: Septic arthritis is a commonly encountered diagnosis with significant associated morbidity. Diagnosis is based on clinical presentation, synovial fluid analysis and synovial fluid culture data. In immunocompetent individuals, septic arthritis often presents with a synovial WBC count above 50,000cells/mm. Despite this, many studies have shown that using a diagnostic cutoff of 50,000cells/ mm lacks the

sensitivity to rule out septic arthritis and may miss as many as 30% of infections. Lower cutoffs have higher sensitivity but lower specificity. There is some evidence showing WBC differential (%neutrophils greater than 80 or 90) may be a more sensitive predictor of adult non-prosthetic joint infection than the absolute WBC count. Except in cases of direct penetrating trauma, infections are usually monomicrobial with Staphylococcus aureus being the most common isolated pathogen. Gram negative bacteria are uncommon; risk factors for such infections include immunosuppression, injection drug use, and direct trauma. A history of injection drug use should raise suspicion for gram-negative infection and inclusion of an anti-Pseudomonal agent in empiric antibiotic coverage.

CONCLUSION: This case emphasizes both the importance of obtaining a relevant patient history and the limitations of common diagnostic testing. Identifying risk factors for gram negative infection is needed to optimize empiric antibiotic coverage. In the context of injection drug use and clinical symptoms of septic arthritis, empiric treatment should consist of both gram-positive and gram-negative coverage. Importantly, synovial fluid WBC count less than 50,000 cells/mm does not exclude infection. Other synovial fluid studies such as glucose, lactate, and WBC differential (%neutrophils) may be helpful and clinicians should consider all available diagnostic information when considering the diagnosis of septic arthritis.

A LEGAL GUARDIAN'S REFUSAL OF LONG-ACTING REVERSIBLE CONTRACEPTION FOR A SEXUALLY ACTIVE ADULT WITH AN INTELLECTUAL DISABILITY

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LEARNING OBJECTIVE #1: Distinguish between court-assessed competency and capacity for individual decisions for adults with intellectual or developmental disabilities (IDD).

LEARNING OBJECTIVE #2: Describe the approach when a legal guardian disagrees with an incompetent patient who demonstrates capacity for a specific decision.

CASE: MC is a 24-year-old nulliparous cisgender woman with a history of well-controlled migraine headaches without aura, ventriculoatrial shunt, and intellectual disability who presented to the outpatient clinic for a Pap smear. She reported sexual activity with one cisgender man and one cisgender woman, using condoms inconsistently with her male partner. After counseling on contraceptive options, the patient was referred for insertion of an etonogestrel-releasing implant as long-acting reversible contraception (LARC), requesting confidentiality on arrival at the clinic. She denied having unprotected sex with her male partner since her last menstrual period, and a urine pregnancy test was negative. The patient appeared to have capacity for this decision: she expressed a clear choice for LARC; showed understanding of its benefits, risks, and alternatives; and provided a rationale consistent with her values e.g., demonstrated by her attempted use of barrier protection. MC's mother, her court-appointed guardian, refused LARC insertion on her behalf. Follow up was scheduled with a social worker for additional assessment of capacity.

IMPACT/DISCUSSION: Courts determine competency for global decision making, accounting for individuals' level of cognitive impairment, and appoint guardians commensurately. Although MC is legally incompetent to make significant decisions in general, she demonstrated capacity to make a specific decision at a given time. Clinicians should assess capacity, and in the event of disagreement between patient and caregiver, attempt to build consensus, focusing on the alignment of goals. Taking into account the likelihood and immediacy of negative consequences of non-intervention, clinicians should offer less invasive options (e.g., injectable or emergency contraception) while pursuing caretaker buy-in, which is a practical necessity for safe use of LARC in patients with IDD. Clinicians should also seek ethics and legal consultation, as laws and exceptions vary by state. A common legal standard is that guardians' decisions should accord with the reasonable best interests of their wards; however, a ward's stated or presumed preferences may help shape what is in their best interests. Reproductive health conversations are also an opportunity for clinicians to counsel patients with IDD and their caretakers in the context of limited sex education, disparate access to LARC, grey areas of sexual consent, and high rates of sexual abuse.

CONCLUSION: Legally incompetent patients with IDD may still demonstrate capacity for specific reproductive decisions. Clinicians should counsel patients and caretakers on multiple aspects of preventative sexual health.

A LIVER FOR A LIVER: BARRIERS TO TRANSPLANT FOR UNAUTHORIZED IMMIGRANTS

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LEARNING OBJECTIVE #1: Highlight the disparities in access to liver transplant (LT) for unauthorized immigrants (UI) with end-stage liver disease (ESLD)

LEARNING OBJECTIVE #2: Recognize the differences in local policies, resources and services available to this population

CASE: A 51 year old male UI from Mexico with a history of T2DM, cirrhosis and EtOH abuse in remission was admitted for worsening ascites and abdominal pain. Due to lack of insurance and psychosocial stressors in the months preceding admission, he was not engaged in care or taking medications. During his course, he developed hepatorenal syndrome with MELD uptrending to 38. He did not improve on midodrine, octreotide and albumin however he did not yet meet criteria for dialysis. He was evaluated by the LT service and due to his UI status he was deemed ineligible for LT at our center. He was seen by the palliative care team and discharged with home hospice services and follow up care at a safety net hospital.

IMPACT/DISCUSSION: There are many barriers to LT for UI, including stringent psychosocial and financial criteria, language and health literacy challenges, fear of disclosure of documentation status when engaging with care and the possibility of being deported, losing access to aftercare and medications needed for survival. Perhaps the single most important factor for achieving LT is insurance status. There is no strictly medical reason that UI should be ineligible for LT, as recent data has shown similar patient and graft survival outcomes among UI and citizens. Yet, while UI comprise an estimated 3% of deceased organ donors, they represent only 0.4% of LT recipients. Because there are no specific national guidelines for LT access among UI, LT centers set their own policies and differ geographically with California and New York offering the greatest proportion of LT to UI and Texas and Florida the fewest. The majority of UI who have received LT have purchased private insurance or obtained Medicaid in states like California where Medicaid can be extended to UI. General internists are often the first to encounter these

patients, thus it is important to be familiar with local policies, resources and services to link vulnerable patients to culturally competent care. Benefits and services for UI may include public insurance, cash assistance, transportation vouchers and free legal aid. Additional healthcare resources for UI include public hospitals and community clinics where advocacy and case management services can be offered in native languages, treatment centers for mental health and EtOH use disorder, early involvement of palliative care for symptom management and charity hospice services.

CONCLUSION: Recognize the great urgency, need and benefit for LT among UI with ESLD who face significant barriers to care Become familiar with local policies, resources and services which vary by location and LT center

ALKALINE PHOSPHATASE ELEVATION AS THE SOLE MANIFESTATION OF HEPATIC ADENOMATOSIS

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LEARNING OBJECTIVE #1: Distinguish the clinical features of hepatic adenomatosis from those of isolated hepatic adenomas.

LEARNING OBJECTIVE #2: Recognize barriers to timely diagnosis in patients with intellectual disabilities.

CASE: A 25 year old woman with history of intellectual disability, autism spectrum disorder, epilepsy, obesity, and dysmenorrhea on OCPs for over 12 years was incidentally noted to have an elevated alkaline phosphatase (ALP) of 150 in 2017 without jaundice or scleral icterus. ALT, AST, and bilirubin were normal. This ALP elevation persisted, prompting further workup. gGTP was also elevated at 196. ANA and AMA were negative. The patient was not able to tolerate a complete abdominal exam or abdominal ultrasound without sedation so MRCP was completed under general anesthesia. MRCP showed numerous large bilobar hepatic lesions measuring up to 7.3cm with features suggestive of hepatic adenomas. Hepatology plans to discontinue OCPs and repeat imaging in several months to determine whether to pursue biopsy, embolization of the larger lesions, and/or liver transplant.

IMPACT/DISCUSSION: Classic risk factors for hepatic adenomas include OCP use in women, anabolic steroids, genetic syndromes including glycogen storage disorders, and obesity. Hepatic adenomatosis, which is characterized by at least 10 hepatic adenomas and was first described separately in 1985, does not show the same dose-dependent association with estrogen exposure or regression with withdrawal of OCPs or steroids. Patients are often asymptomatic, and elevated ALP and gGTP may be the only abnormalities noted prior to imaging. While hepatic adenomas are benign tumors, their hypervascularity increases the risk for intralesional hemorrhage which can spread to the liver and peritoneum (incidence up to 62.5%). Malignant transformation to HCC is also possible (<10%). The risk of these complications is much higher with hepatic adenomatosis as compared to solitary hepatic adenomas. Many diagnoses including this one are more difficult to make in a timely manner in patients with disabilities that make them unable to provide details of the history or tolerate thorough exams or imaging. As an example, the first line imaging modality for this patient with elevated ALP and gGTP would have been RUQ ultrasound which could have been obtained relatively quickly - instead this patient had to wait to undergo MRCP under general anesthesia. Had she been receiving care in a lower resource setting, this likely would have been further delayed or missed entirely.

CONCLUSION: 1) Hepatic adenomatosis (HA) is a separate entity from solitary hepatic adenomas and does not show the same dose-dependent association with OCP use. 2) HA can present with isolated alkaline phosphatase and gGTP elevation and has a higher risk of complications including hemorrhagic shock and malignant transformation to HCC. 3) Delays in obtaining necessary imaging tests due to the need for sedation are only a subset of the barriers to timely diagnosis in patients with intellectual disabilities.

ALL THAT IS YELLOW IS NOT JAUNDICE

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LEARNING OBJECTIVE #1: Describe the clinical findings of carotenemia and how it differs from jaundice

LEARNING OBJECTIVE #2: Identify the differential diagnosis of carotenemia

CASE: A 55-year-old woman with no significant past medical history presented to clinic with a chief complaint of a 2-month history of yellow discoloration of her palms and soles. She denied pain, pruritis, or systemic symptoms. She has no known past medical history. The patient reported that she takes no medications but takes the following vitamin supplements: vitamin D, iron, folic acid, calcium, and magnesium. The patient's social history was significant for no prior incarcerations, no history of IV drug use, and no new sexual encounters. However, on diet history it was discovered that she recently started to drink several green smoothies most days of the week in an effort to have a healthier diet.

Physical Exam: Notable findings included: absence of scleral icterus, presence of pink sublingual coloration, no abdominal distention, no hepatomegaly, skin findings of yellow coloration of bilateral palms of hands, yellow coloration of bilateral soles of feet, and normal coloration of the rest of the skin.

The following labs were normal (lipid panel, hepatic function panel, hepatitis panel, hemoglobin A1c, thyroid function test, and basic metabolic panel) and ruled out other etiologies of yellow skin discoloration. A diagnosis of carotenemia was made due to the patient's increased dietary consumption of beta-carotene in her kale, carrot, and beet smoothies.

IMPACT/DISCUSSION: Carotenemia is a yellow-orange discoloration of the skin due to increased serum concentration of beta-carotene. It is important to distinguish the discoloration of carotenemia from that of jaundice, as the differential diagnosis changes significantly. Jaundice is caused by increased serum bilirubin and can be seen as sublingual icterus, scleral icterus, and global yellow discoloration of the skin. In carotenemia, there is no sublingual or scleral icterus; instead yellow discoloration of the tip of the nose, palms, soles, and nasolabial folds is more prominent and can sometimes extend to the rest of the body. Additionally, jaundice and carotenemia can be distinguished by the presence of pruritis which, if present, is more specific to jaundice.

Finally, the differential diagnosis of carotenemia includes etiologies other than the ingestion of beta-carotene rich foods. Case reports of carotenemia have been described resulting from diabetes mellitus, hypothyroidism, chronic liver disease, chronic kidney disease and even hyperlipidemia. Additionally, some medications like tyrosine kinase inhibitors have been thought to cause carotenemia.

CONCLUSION: – Carotenemia can be from benign etiologies, like ingestion of beta-carotene rich foods, but can also be a harbinger of a serious medical condition or chronic disease

– It is important to recognize the physical findings that differentiate carotenemia from jaundice, like lack of discoloration of the sublingua or sclera and lack of pruritis

ALTERED MENTAL STATUS AND ACUTE DECOMPENSATED HEART FAILURE WITH INCREASED ABDOMINAL GIRTH AS AN INITIAL PRESENTATION OF PRIMARY EFFUSION LYMPHOMA IN A HUMAN IMMUNODEFICIENCY VIRUS-NEGATIVE (HIV) AND NON- ORGAN RECIPIENT INDIVIDUAL: A CASE REPORT

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LEARNING OBJECTIVE #1: Recognize need for early diagnostic fluid study for patients presenting with new ascites or effusion and constitutional symptoms, despite history of CHF

LEARNING OBJECTIVE #2: Diagnose and manage HIV-unrelated, HHV-8-associated PEL in patients presenting with unusual clinical presentation

CASE: 70-year-old HIV-negative male with advanced heart failure presented with altered mental status and mild hypotension. Physical exam was remarkable for increased abdominal girth concerning for new ascites and lab work was remarkable for mild leukocytosis, hypercalcemia and supratherapeutic INR. With no history of liver cirrhosis, ascites was thought to be secondary to heart failure and congestive hepatopathy and paracentesis was delayed due to elevated INR. Patient remained lethargic despite negative stroke work up, and was treated for aspiration pneumonia. Patient was eventually transferred to ICU for worsening delirium, hypotension, atrial fibrillation with RVR, and new fever of 103 F. Paracentesis with cytology confirmed a new diagnosis of primary effusion lymphoma. Patient tested negative for HIV and Epstein-Barr Encoding region (EBER), but was positive for Human Herpesvirus Type 8 (HHV8). Clinical course was complicated by aspiration pneumonia, C. difficile infection, and persistent hypotension, making him a poor candidate for chemotherapy treatment.

IMPACT/DISCUSSION: Primary effusion lymphoma (PEL) is a rare, high-grade non-Hodgkin's lymphoma (NHL) that typically develops in immunocompromised patients, with HIV or following organ transplant, and often associated with HHV8 or Ebstein-Barr virus. Patients often present with constitutional symptoms and effusions in body cavities with no defining mass or overt sign of malignancy. Our patient presented with new ascites but diagnosis was delayed due to elevated INR and attribution to acute decompensated heart failure with congestive hepatopathy. Recognition of unexplained hypercalcemia and constitutional symptoms followed by early diagnostic paracentesis may have expedited the diagnosis and affected patient's clinical course.

CONCLUSION: Primary effusion lymphoma is a very rare disease that almost exclusively occurs in HIV positive or immunocompromised patients, representing only 4% of NHL cases associated with HIV and only 0.1% to 1% of all lymphomas in patients with other types of immunodeficiency. This case highlights HIV- negative/EBV-negative/HHV-8-positive PEL in a patient presenting unusually as acute decompensated heart failure and altered mental status treated for aspiration pneumonia. It is imperative that patients presenting with new ascites or pleural effusion get an early diagnostic fluid study with a high suspicion of malignancy especially with other constitutional symptoms and metabolic encephalopathy with unexplained hypercalcemia and negative infectious workup. Early recognition in patients particularly with underlying CHF may lead to timely treatment initiation and further reduce complications.

A MASS-IVE TURN OF EVENTS: A CASE OF HEPATIC ACTINOMYCOSIS MIMICKING MALIGNANCY

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LEARNING OBJECTIVE #1: Diagnose and treat a rare infectious etiology of a hepatic mass

CASE: A 71-year-old man with cirrhosis and prior prostate cancer 9 years ago treated with radiation presented to his urologist with acute right-sided abdominal pain and night sweats. CT revealed a 5.2 cm mass concerning for hepatocellular carcinoma. He was referred to oncology for further evaluation and a fine needle aspiration (FNA) biopsy was performed. The FNA showed rare benign stromal cells without evidence of malignancy. A core liver biopsy was thus recommended, and pathology revealed fibrous and granulation tissue without malignant cells. He was then referred for surgical resection of the mass. Of note, during this period of less than two months between outpatient appointments, he developed a painful 3 cm protruding mass out of his right upper abdomen. An MRI showed an interval increase of the liver mass to 8.4 cm with an adjacent multiloculated fluid collection. Given the symptomatic and rapid growth of the mass, he was sent to the hospital for further management. A repeat core biopsy of the liver was performed, and the histologic features suggested an abscess. Fluid cytology was notable for polymorphonuclear leukocytes and bacterial colonies morphologically consistent with Actinomyces. Infectious Diseases was consulted and the patient was diagnosed with hepatic actinomycosis. A 6-week course of intravenous ampicillin-sulbactam was initiated, and a 12-month course of amoxicillin was planned following completion of his IV antibiotics. The patient also underwent incision and drainage of his abscess prior to hospital discharge.

IMPACT/DISCUSSION: The diagnosis of primary hepatic actinomycosis is often difficult due to its rarity (5% or less of actinomyces infections) and non-specific clinical presentation, often consisting of abdominal pain with imaging findings of a hepatic mass. In patients with underlying risk factors for a malignant liver lesion like cirrhosis or a prior cancer history, such a mass may not prompt an infectious work-up immediately. The main risk factor for hepatic actinomycosis is prior abdominal surgery, but the majority (80%) of cases are cryptogenic. Definitive diagnosis for hepatic actinomycosis is based on microscopic exam of biopsies which reveal the characteristic basophilic filament aggregates and prototypical "sulfur granules".

Blood cultures are positive in only 15% of cases and the yield of percutaneous biopsy is not high. Once the diagnosis is made, treatment usually entails a combination of a prolonged antibiotic course (3-12 months), surgical resection and percutaneous drainage, with very successful post-treatment outcomes reported. **CONCLUSION:** Hepatic actinomycosis is a rare but established cause of a hepatic mass that is difficult to diagnose and can be mistaken for malignancy, particularly when the risk for a hepatic malignant lesion is already high. Once diagnosed, a combined medical and surgical treatment approach has been shown to produce very successful outcomes.

A METASTATIC MYSTERY

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LEARNING OBJECTIVE #1: Identify melanoma as an increasing cause of skin cancer in the United States

LEARNING OBJECTIVE #2: Recognize the importance of the skin examination as part of an evaluation for systemic medical illness

CASE: A 36-year-old man presented with a two-month history of progressive lower back pain, now with associated bowel and urinary incontinence, saddle anesthesia, and difficulty maintaining an erection. No history of trauma was reported. He was tachycardic at 101 beats per minute and had an elevated blood pressure of 170/115 mmHg. There was decreased sensation around the anus, scrotum and penis. Decreased sensation was also noted over the left forearm. There was tenderness to

palpation along the spine. No concerning skin lesions were identified. MRI of the spine revealed numerous intradural extramedullary lesions throughout the spinal canal. Neurosurgery was consulted with recommendations of obtaining imaging of the brain. MRI of the brain revealed extra-axial enhancing intracranial lesions. Multiple bilateral pulmonary nodules were appreciated on CT of the chest. Initial considerations on the differential included meningioma, metastatic ependymoma, nuerofibromatosis-2, and non-CNS primary with metastases. Pathology from a core biopsy of a left lower lobe nodule revealed focal diffuse atypical cellular infiltrate that was positive for Melan A and S100, consistent with metastatic melanoma.

IMPACT/DISCUSSION: The incidence of melanoma continues to rise annually in the United States, with the highest incidence and death rates occurring in the non-Hispanic white male population. Close to 97% of melanomas begin as cutaneous lesions, therefore it is imperative that internists regularly perform skin exams especially when metastatic cancer is on the differential. Melanoma often can be identified using the "ABCDEs": Asymmetrical Shape, uneven Border, Color variation, Diameter (6mm or greater- the size of a pencil eraser), and Evolution. Melanoma most commonly metastasizes to the lung, but brain metastasis is estimated to occur in roughly 50% of stage IV melanoma patients. Those with brain metastasis have a seven- fold higher risk of death than patients with lung metastasis. Most cases of melanoma arise from an identifiable primary cutaneous lesion; Melanoma of an unknown primary (MUP) occurs in only 3.2% of all melanomas.

Cases of metastatic melanoma resembling malignant peripheral nerve sheath tumors on pathology have been reported with often no identifiable primary cutaneous melanoma. S-100 and HMB-45 stains help to identify these otherwise inconspicuous tumors. It is hypothesized that the neuroendocrine origin of melanocytes may be responsible for this phenomenon. Furthermore, metastatic melanoma often mimics meningiomas on radiologic imaging.

CONCLUSION: Although a rare entity, melanoma of an unknown primary should be included in a practitioner's differential when working up symptoms suspicious for underlying malignancy. A primary cutaneous melanoma was never identified in our patient despite a thorough skin exam.

A METH-Y SITUATION: PULMONARY ARTERIAL HYPERTENSION (PAH) CAUSED BY METHAMPHETAMINE AND COCAINE ABUSE

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LEARNING OBJECTIVE #1: Assess and treat a patient with Pulmonary Hypertension

LEARNING OBJECTIVE #2: Recognize illicit drugs as an important cause of Pulmonary Arterial Hypertension

CASE: 41-year-old Caucasian female presented to the ED with progressively worsening dyspnea on exertion which began 2 months ago and 1-day history of chest tightness. On arrival, she was tachycardic, and hypotensive. She had no pertinent PMH. She was a 20 pack-year active smoker, active methamphetamine and cocaine smoker. Physical exam was significant for parasternal heave and JVP of 10 cm. Labs were remarkable for negative troponin, urine screen positive for methamphetamines and cocaine. EKG showed sinus tachycardia, right strain pattern. CT Chest ruled out pulmonary embolism, showed enlarged main pulmonary artery as well as right ventricle and atrium, findings consistent with PAH. Transesophageal echo showed enlarged right ventricle and RV hypokinesis. She then underwent a right heart catheterization to confirm right-sided pressures. The PCWP was 5 mmHg (6 - 16), mean PA pressure 47 mmHg (normal < 20 mmHg), pulmonary vascular resistance 16 Wood units (1.9 – 3.1), and the cardiac index was 1.8 (2.8 – 4.2). These findings were consistent with severe pulmonary hypertension and reduced cardiac index, as well as normal right- and left- filling pressures. She was diagnosed with PH Group 1, admitted to the CCU for vasodilator therapies, and discharged home on Sildenafil and Ambrisentan dual-therapy with plans for close follow-up.

IMPACT/DISCUSSION: PH is classified under 5 groups of causes: PAH, left heart disease, lung disease/hypoxia, pulmonary artery obstruction and idiopathic PH respectively. It is important to distinguish the cause of PH, as treatments and prognosis varies greatly. Assessment involves CT chest which in our patient ruled out ILD (Group 3), pulmonary embolism (Group 4) and TTE which ruled out Group 2. RHC confirmed a low PCWP, as well as severely elevated pulmonary artery pressure, which was consistent with Group 1.

PAH is a rare disease that affects 5 – 52 people in a million, with a female to male ratio of 1.7 – 4.8:1. After idiopathic and heritable causes, drugs and toxins are the most important etiology. Cocaine and methamphetamine use have both been associated with a high risk of PAH, and deserve respect as an important cause in the right clinical setting. This case of a young, otherwise healthy, female highlights the steps needed to diagnose PAH, as well as emphasizes the need for a thorough social history to recognize rare causes of this already under-recognized condition.

CONCLUSION: PH should always be considered in young patients with new or sub-acute dyspnea on exertion. While connective tissue disease and heritable causes are significant, illicit drugs continue to be an important cause in PAH. RHC is an essential tool to help diagnose and guide therapy, which includes PDE-5 inhibitors and ERAs.

A MISSED CASE OF MIXED CRYOGLOBULINEMIA

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LEARNING OBJECTIVE #1: Recognize the clinical and laboratory manifestations of mixed cryoglobulinemia

LEARNING OBJECTIVE #2: Diagnose and treat mixed cryoglobulinemia

CASE: Mr. J was a healthy 64 year old male who presented with two weeks of progressive weakness in all four extremities. This had been preceded by a brief flu-like illness with fever and cough. He presented because he could not rise from a chair. On exam, he had flaccid paralysis below the knees, absent patellar reflexes, cold/mottled feet, and reduced upper extremity strength. Laboratory work-up notable for CK 2300, ESR 54, CRP 3.4, normal C3 at 103, undetectable C4, hemoglobinuria on UA, and SPEP with two monoclonal gamma region spikes. EMG showed "patchy axonal denervation changes." IVIG was initiated for a presumed diagnosis of atypical GBS. He initially improved; however, his weakness returned, and palpable purpura developed over his feet. Cryoglobulins from the initial work-up returned elevated, and skin biopsy revealed a leukocytoclastic vasculitis. With his axonal neuropathy, purpuric rash, hemoglobinuria, elevated cryoglobulins, and leukocytoclastic vasculitis, his condition was recognized as mixed cryoglobulinemia. He received plasma exchange and was discharged on rituximab and steroids. Unfortunately, he was still unable to walk.

IMPACT/DISCUSSION: Cryoglobulinemia is uncommon and can be difficult to untangle, with potentially devastating effects if not caught early. Cryoglobulins are proteins that precipitate out of blood at <37 ^{o}C. They are composed of immunoglobulins which may form complexes with complement components. Deposition of these complexes in the walls of small vessels leads to local destruction and inflammation. Clinical manifestations include palpable purpura, glomerulonephritis, arthralgias, and multiple mononeuropathy. Symptoms vary and present at different times during the course. Laboratory findings include elevated cryoglobulins, low C4 (C3 often normal), positive RF, and elevated ESR/CRP. Skin biopsy may show a small vessel leukocytoclastic vasculitis. Cryoglobulinemia should be suspected when patients present with these findings, especially in the setting of multiple

myeloma, chronic autoimmune disease, lymphoproliferative disorders, or chronic infection. Additional work-up should attempt to identify any underlying disorder, rule-out other vasculitides, and assess the degree of organ involvement. Treatment involves management of the underlying disorder, supportive care, and systemic glucocorticoids + rituximab or cyclophosphamide for moderate-to-severe disease. Plasma exchange has a role in severe disease. Prognosis varies greatly depending on the precipitating disorder and extent of organ involvement.

CONCLUSION: In the case presented, work-up was ultimately negative for an identifiable underlying disorder, and the etiology was considered idiopathic type III mixed cryoglobulinemia, perhaps due to his preceding viral illness. We anticipate a good chance at survival with uncertainty about the recovery of peripheral motor function.

A MULTILOCULATED PSOAS ABSCESS FOUND TO BE MYCOPLASMA TB POSITIVE IN A MIDDLE AGED WOMAN

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LEARNING OBJECTIVE #1: Recognize the atypical clinical, radiological, and laboratory features of disseminated TB

CASE: 50 YOF from India with PMHx of LTBI s/p INH, RA on Tofacitinib, HTN, anemia, and osteoporosis presented with a chief complaint of intermittent fevers, chills, 10-15 pound weight loss, decrease in appetite, severe back and left lower extremity pain. Her presenting VS were within normal limits. The PE was significant for 4/5 strength in the left lower extremity with both flexion and extension associated with discomfort and firm swelling of the lateral aspect of the left tibia. In addition, there was tenderness to palpation in the left lateral knee and the left lateral mid-shin. Laboratory workup was remarkable for a Hgb of 8.3, Na of 132 and an albumin level of 2.7. Initial MR imaging was significant for a hyper-intensive mass/collection in the anterior compartment musculature at the head of tibial metaphysis. An ultrasound of the LLE revealed a loculated complex fluid collection in the anterior lateral aspect of the left knee area. This fluid collection was then biopsied and was positive for Mycoplasma TB via PCR. An open decompression procedure of the left tibia and fibula grew acid-fast bacilli. CT chest showed cavitary lesions in the left upper lobe with bilateral nodular and tree in bud opacities concerning for TB reactivation and endobronchial spread. MR of the abdomen, pelvis lumbar spine and left tibia/fibula showed a multi-loculated left psoas abscess with adjacent left retroperitoneal necrotic adenopathy. L1-L4 tuberculosis abscess infiltration of the left proximal and mid-shaft of the tibia with cortical breakthrough and soft tissue mass component was seen.

IMPACT/DISCUSSION: The diagnosis of disseminated TB is often missed due to the nonspecific nature of the presentation and because of the relatively low prevalence and incidence of tuberculosis in the United States. Furthermore, the symptoms are often confused with other disorders. In our case, we attributed the patient's symptoms to a type of Lymphoma based on the initial MR imaging. In addition, some of the initial labs on admission were suggestive of miliary TB including hyponatremia. It is important to consider reactivation of TB despite being treated with INH according to a meta-analysis and systematic review study that looked at different regimens for treating latent TB. The specific reasons include complex immune system interactions and poor compliance with INH. In terms of disseminated TB, the lungs, liver, and spleen are the most commonly affected organs (80-100%) followed by the kidneys (60%), and the bone marrow (25-75%).

It is important to note that in addition to Pott's disease of the spine, abscesses can also be seen in other regions of the body that should raise clinical suspicion for disseminated TB.

CONCLUSION: Clinical suspicions should always be raised in a patient with a history of LTBI who presents with a several month history of fevers, weight loss, and pain with imaging suggestive of an abscess.

AMYLOIDOSIS, WHERE ALL ROADS LEAD TO ONE

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LEARNING OBJECTIVE #1: Recognize the clinical presentation of amyloidosis with renal and cardiac involvement

LEARNING OBJECTIVE #2: Diagnose AL amyloidosis with renal and cardiac involvement

CASE: A 53-year-old woman with a history of irritable bowel syndrome, chronic pain syndrome and years of nonspecific symptoms including chronic diarrhea and neuropathy, presented with bilateral lower extremity edema. Multiple outpatient studies demonstrated questionable monoclonal gammopathy of undetermined significance (MGUS) and a presumed diagnosis of fibromyalgia. Physical exam demonstrated hypotension with a SBP of 90 mmHg and pedal edema. Labs showed anemia (Hb 9.3 g/dL), AKI (Cr 2.23 mg/dL), elevated BNP (9682 pg/dL), proteinuria (100 mg/dL protein) and protein/creatinine ratio 1086 mg/g. Infectious workup including HIV and hepatitis were negative. Complete autoimmune workup only revealed low C3 complement level (63 mg/dL). Serum protein electrophoresis demonstrated hypogammaglobulinemia and elevations in Kappa (2.87 mg/dL) and Lambda (16.99 mg/dL) light chains, with low Kappa/Lambda ratio (0.17). She was started on furosemide for lower extremity edema without improvement. Transthoracic Echocardiogram demonstrated severe diastolic dysfunction. Cardiac MRI showed infiltrative cardiomyopathy, with subsequent nuclear scan equivocal for transthyretin cardiac amyloidosis. Due to worsening kidney function, a renal biopsy was performed and revealed amyloid fibrils. Final bone marrow biopsy confirmed the diagnosis of Primary Amyloidosis, AL-type. Chemotherapy was initiated.

IMPACT/DISCUSSION: This patient's long history of diarrhea, neuropathy, hypotension, and questionable MGUS went undiagnosed for years but rather misdiagnosed as fibromyalgia. Her presentation with lower extremity edema led to a cardiac workup that demonstrated infiltrative disease. Typically, amyloidosis affects either the cardiovascular or renal system. However, this patient's constellation of symptoms and labs demonstrated both cardiac and renal involvement, which is a rare entity with only two cases in the literature. AL amyloidosis should be considered in patients presenting with concomitant diastolic heart failure and renal failure in the setting of elevated serum immunoglobulin light chains. Chemotherapy is the standard treatment with hematopoietic cell transplant as the goal. AL amyloid has varying degrees of response to chemotherapy depending on the extent of disease. The hematologic response is as high as 60% with response rates dropping to 17% and 25% with cardiac and renal involvement, respectively. With localized disease, median survival is typically five years, with poorer prognosis in diffuse involvement.

CONCLUSION: The rarity of amyloidosis, especially with both renal and cardiac involvement, should not deter clinicians from considering the diagnosis in the setting of a constellation of symptoms. Although it may not always be likely, this case highlights the importance of tying together all organ systems in the hopes of identifying a unifying diagnosis.

A MYSTERIOUS CASE OF SEPTIC SHOCK BY KLEBSIELLA FROM PANCREATICOPLEURAL FISTULA

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LEARNING OBJECTIVE #1: Recognize pancreaticopleural fistula (PPF) as a rare complication of chronic alcoholic pancreatitis.

LEARNING OBJECTIVE #2: Recognize magnetic resonance cholangiopancreatography (MRCP) as the imaging study of choice for diagnosis of PPF.

CASE: A 45-years-old African American male with a past medical history of seizure disorder, chronic alcohol abuse, and cervical spine injury, presented to hospital after a witnessed tonic-clonic seizure episode that resolved spontaneously. Initial evaluation revealed hypotension (90/57mmHg), tachycardia (145), tachypnea (36), temperature of 39.1 degrees celsius, leukocytosis (24.2x10^3/microliter) with bandemia, and lactate of 5.7mmol/L. Seizure was presumed secondary to alcohol withdrawal, and patient was admitted to Intensive Care Unit for further management of septic shock. Patient also developed worsening dyspnea, desaturating to 84% on room air. Patient reported chronic diarrhea (with lipase elevated at 149 U/L) likely secondary to pancreatic insufficiency, for which he was started on Creon with meals. Computed Tomography of chest and abdomen showed pancreatic duct dilatation with PPF extending from the pancreatic duct, through the left upper abdominal quadrant (containing several gas foci) to the left lower lobe of the lung. Left pleural space with thick-walled cavitation. Thoracocentesis attempted, no fluid was obtained. Endoscopic retrograde cholangiopancreatography confirmed a dilated pancreatic duct with a leak in the distal tail, and a pancreatic stent was placed to allow drainage into the duodenum. Blood cultures resulted in positive for Klebsiella pneumonia, source attributed to the PPF. Patient initially received empiric antibiotics (intravenous Vancomycin and Zosyn) which was deescalated to intravenous ceftriaxone according to culture and sensitivities. The patient clinically improved with shock resolved and was discharged on oral ciprofloxacin with a follow-up in two weeks for a repeat CT scan.

IMPACT/DISCUSSION: PPF (incidence only ~0.4%) occurs when a posterior pathway forms between the pancreatic duct and the pleura. The most common presentation include dyspnea (65%), abdominal pain (29%), chest pain (23%), and cough (27%). MRCP has higher sensitivity (80%) compared to CT scan (47%), or even ERCP (78%) as in our patient.

The literature revealed no consensus on the appropriate management of PPF but suggests that first-line medical management focuses on conservative approaches, such as thoracentesis, octreotide, antibiotics, and total parenteral nutrition for 2-3 weeks. If failed, endoscopic treatment with balloon dilation and placement of intraductal stenting can be attempted to restore anatomic continuity. Surgery consisting of internal pancreatic drainage and/or pancreatic resections is often the last resort.

CONCLUSION: PPF is a rare complication that may be seen in chronic alcoholic pancreatitis patients and requires a high index of clinical suspicion to diagnose, especially in patients with nonspecific symptoms such as dyspnea or chest pain.

A MYSTERIOUS CAUSE OF CAUDA EQUINA SYNDROME

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LEARNING OBJECTIVE #1: Recognize the clinical presentation of cauda equina syndrome

LEARNING OBJECTIVE #2: Recognize intravascular lymphoma as a rare cause of cauda equina syndrome

CASE: A 68-year-old male with gout presented with 1 month of numbness and pain in bilateral feet. He also endorsed gait unsteadiness, constipation, urinary incontinence, and an unintentional 15-pound weight loss. Physical exam revealed markedly diminished pinprick and vibratory sensation in bilateral lower extremities (LE), absent LE reflexes, and inability to ambulate independently due to a wide-based, unsteady gait. Rectal tone and perianal sensation were normal.

Lab work was notable for elevated LDH 2,201 U/L, CRP 17.6 mg/dL and ESR 62 mm/hr. MRI of cervical, thoracic and lumbar spine ruled out cord compression. MRI brain showed no acute pathology. CSF analysis was negative for infection and malignancy. EMG and nerve conduction studies demonstrated lumbosacral polyradiculopathy affecting bilateral L3/L4 and L5/S1. Pulse dose steroids were administered for 5 days without clinical improvement.

On hospital day 7, repeat MRI spine without contrast was unchanged, contrast-enhanced portion was severely limited by motion artifact but suggested possible enhancement of lumbar nerve roots. On hospital day 15, repeat MRI with contrast confirmed lumbar nerve root enhancement consistent with cauda equina syndrome (CES). IVIG was started empirically for possible autoimmune etiology without improvement. Repeat CSF analysis and cytology were unrevealing. Flow cytometry of peripheral blood and bone marrow biopsy were non-diagnostic. Finally, biopsy of superficial peroneal nerve and peroneus brevis muscle revealed intravascular large B-cell lymphoma (IVLBCL).

Treatment with chemotherapy was initiated with R-CHOP and high-dose methotrexate. After 2 cycles of therapy, his LE strength and sensation gradually improved. MRI spine showed resolution of cauda equina enhancement. He was discharged to an acute rehab and continued to receive chemotherapy.

IMPACT/DISCUSSION: Recognizing signs and symptoms of CES is critical so that urgent neuroimaging can identify a cause. Common etiologies include disc herniation, abscess, or malignancy. IVLBCL is a challenging diagnosis as there is no radiographically identifiable lesion and it does not classically involve the bone marrow, lymph nodes, blood, or CSF. In IVLBCL, lymphoma cells proliferate within the lumen of arterioles, capillaries and venules causing a wide variety of symptoms including: constitutional symptoms, skin lesions, cerebrovascular events, and neuropathy. Often multiple biopsies of involved tissue are required to yield a diagnosis in order to initiate chemotherapy.

CONCLUSION: Early recognition of CES is imperative to prevent further neurologic complications. Urgent MRI of the entire spine should be obtained to establish a diagnosis. When evaluating atraumatic causes of CES, clinicians should consider common and rare malignancies in their differential.

A MYSTERIOUS RASH THAT DOESN'T ITCH

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LEARNING OBJECTIVE #1: Distinguish between the subsets of Cutaneous Lupus Erythematosus

LEARNING OBJECTIVE #2: Describe rare subtype Drug-Induced Subacute Cutaneous Lupus Erythematosus

CASE: A 58 y.o. female with history of hypertension, anemia, and GERD presented with complaint of "red bumps on my legs". She described the rash as a painful, erythematous rash which ascended from her lower extremities to the torso and upper extremities within a 3-day period. No associated fevers, chills, changes to her dish/laundry detergent, diet, or new environmental exposures. Her medications included: Hydroxyzine and Hydrochlorothiazide. Physical Examination revealed a diffuse, non-blanching maculopapular exanthem of her torso, bilateral upper/lower extremities with associated non-pitting lower extremity edema. She tried Hydroxyzine and Triamcinolone cream without improvement.

Laboratory values revealed mild leukopenia and creatinine elevation. Rheumatologic serologies demonstrated a positive cytoplasmic-ANA and elevated ESR, CRP, Kappa, and Kappa/Lambda ratios. Negative C3, C4, anti- dsDNA, histone abs, SSA/SSB, and ANCA labs.

Suspecting a drug eruption or lupus with cutaneous involvement, she was instructed to discontinue HCTZ and referred to Dermatology. Punch biopsy resulted in findings consistent with cutaneous lupus erythematosus. Rheumatologic consultation confirmed no evidence for systemic lupus erythematosus. Dermatology prescribed topical mometasone and agreed with continued discontinuation of HCTZ. The skin lesions resolved, and the patient felt well on follow up.

IMPACT/DISCUSSION: This case illustrates a rare finding of drug-induced subacute Cutaneous Lupus Erythematosus (SCLE) due to HCTZ. Drug-induced Lupus (DIL) often presents with systemic symptoms mimicking idiopathic systemic lupus erythematous (SLE). However, our patient lacked systemic symptoms such as arthralgia, myalgia, fatigue, and serositis, which are required for the diagnosis of SLE.

Dermatologic disease manifestations are typically seen in 80% of patients with SLE, the majority occurring as acute cutaneous lupus erythematous, generally encompassing localized malar and butterfly rashes. A second subset of skin involvement is SCLE, which includes both idiopathic and drug-induced. SCLE skin lesions are typically small, scaly erythematous rashes on sun-exposed areas. The last category is chronic cutaneous lupus or discoid lupus, which presents as red-to-purple rashes with discoloration and significant scarring.

CONCLUSION: Drug-induced Lupus is most commonly caused by antifungals, anti-hypertensives, proton pump inhibitors, and lipid-lower agents. Affected skin areas include the neck, shoulders, forearms, and upper torso.

Diagnosis of DIL can be made based on clinical history and physical examination alone. However, 80% of patients with SCLE lesions are positive for anti-Ro/SSA antibodies. Histopathology obtained via skin biopsy demonstrates leukocytoclastic vasculitis.

Treatment includes discontinuation of the offending agent. Symptoms typically improve within days to weeks.

AN ABNORMAL PRESENTATION OF STATIN-ASSOCIATED AUTOIMMUNE MYOPATHY.

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LEARNING OBJECTIVE #1: Recognize the spectrum of statin related myotoxicity, including the rare entity of anti-HMGCR positive immune mediated necrotizing myopathy (IMNM).

CASE: A 71-year-old African American male with a past medical history of hypertension, hyperlipidemia, diabetes mellitus type two, and prior history of tobacco use disorder presented to the ED with three months of progressive proximal muscle weakness associated with dysphagia and urinary retention. His medications included long-term 20 mg atorvastatin, amlodipine, olmesartan-hydrochlorothiazide, linagliptin, and metformin. The patient was thin with temporal wasting with a normal skin exam, 3/5 strength in the proximal extremities, 5/5 strength in the distal extremities, and areflexia. Laboratory results showed markedly elevated CPK (16,515), AST (425), ALT (400), ESR (20), and UA with large hemoglobin and 1-5 RBCs.

His statin was discontinued, and he received IV normal saline and high dose steroids with subsequent decline in CPK to 5443 during his hospitalization. He underwent an extensive autoimmune and neuromuscular workup and had a negative anti-Jo1. A muscle biopsy revealed necrotizing myopathy with focal mild necrosis. Subsequently, his anti-HMG-CoA reductase antibody was strongly positive (>200 U/mL). He was discharged on oral prednisone to a skilled nursing facility where he showed no change in weakness or urinary retention 2 weeks post discharge.

IMPACT/DISCUSSION: The range of statin related myotoxicity includes: asymptomatic elevated CPK, myalgia, myopathy, rhabdomyolysis, and anti-HMGCR positive myopathy, an IMNM [1]. IMNMs are rare with an estimated incidence of 4 in 100,000 person years and are subcategorized into anti-SRP, anti-HMGCR, and autoantibody negative [2,3]. Anti-HMGCR myopathy was first recognized in 2010, and its predominance is among those with prior exposure to statins with an estimated incidence of 2-3 cases per 100,000 patients on statin therapy per year [3-5]. Between 2012-2013, 39.2 million Americans were prescribed statins; therefore, it is important to be aware of this adverse effect as immunosuppressive therapy is often indicated and it is seldom self-limited [6]. Although it can manifest with a variety of presentations, the diagnosis is confirmed by the presence of myofiber necrosis on muscle biopsy and anti-HMGCR autoantibodies commonly in the context of proximal muscle weakness and elevated CPK [1,3,4,7]. This vignette offers a unique case of an individual with statin associated anti-HMGCR myopathy who presented with the expected proximal muscle weakness and elevated CPK, while also demonstrating areflexia, dysphagia, and urinary retention.

CONCLUSION: Although an uncommon form of statin related myotoxicity, anti-HMGCR should remain on the differential, particularly given its implications on management and clinical course.

Refractory proximal muscle weakness following the discontinuation of statin therapy should prompt anti- HMGCR antibody assessment and consideration for biopsy to evaluate for IMNM.

AN ATYPICAL CASE OF ANTI GLOMERULAR BASEMENT MEMBRANE (GBM) DISEASE WITH ISOLATED RENAL INVOLVEMENT

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LEARNING OBJECTIVE #1: To recognize typical and atypical presentations of Anti GBM disease

LEARNING OBJECTIVE #2: To consider aggressive management of suspected Anti GBM disease while definitive diagnosis is pursued

CASE: Mr. T is a 65 year old Caucasian veteran with a history significant for diabetes mellitus and hypertension on lisinopril who presented with rapidly declining renal function. He initially presented to urgent care with 2 weeks intermittent fevers, 1 week sinus congestion, myalgias, 1-2 large volume watery stools daily, and decreased appetite. Cr was notably 2.3 mg/dL. He was felt to have a viral syndrome, and close outpatient follow-up was recommended. Four days later, Mr. T presented to our hospital with persistent fevers, diarrhea, and oliguria (100-200cc daily). Physical exam was notable only for 1+ peripheral edema. Admission Cr was 7.3 mg/dL, eventually peaking at 16.1 mg/dL on day 3 of admission despite supportive care. Infectious work-up, including blood and urine cultures, stool studies, viral studies, and chest and abdominal imaging was unrevealing. Rheumatologic workup returned on day 5 with markedly positive Anti- GBM antibodies at a titer of 177 U/mL (normal <20 U/mL). Renal biopsy demonstrated all glomeruli with cellular crescent (more than 50% of glomerular capsular circumference) and fibrinoid necrosis consistent with Anti GBM glomerulonephritis. Despite the initiation of steroids, the patient's renal function failed to improve, and he has required ongoing hemodialysis.

IMPACT/DISCUSSION: Anti-GBM disease is a rare autoantibody mediated small vessel vasculitis (incidence 0.1 cases per million) that typically presents with a characteristic triad: pulmonary involvement,

renal injury, and anti-GBM antibodies. While the majority of cases present with both pulmonary and renal findings, isolated renal involvement has been described, particularly in patients over 50 with less indolent courses. Most cases of anti-GBM disease are thought to be triggered by an insult to the renal basement membrane or cross reactivity with exogenous epitopes (i.e. infection, toxins, neoplasia, or renal injury) and many patients present with additional systemic symptoms such as fever, which is found in 67% of presentations.

Emergent management with plasmapheresis, cyclophosphamide, and steroids is needed to treat rapidly progressive anti-GBM disease. Unfortunately, many of the tools used for definitive diagnosis (such anti- GBM antibodies and renal biopsy) often require several days to complete. In addition, there is often concern for infection on presentation. These factors often lead to delays in the initiation of appropriate therapy.

CONCLUSION: Anti GBM disease can present without the typical triad of lung involvement, renal injury, and anti-GBM antibodies. This patient case underlies the need to consider prompt initiation of treatment in rapidly progressive clinical deterioration despite delays in confirming a definitive diagnosis.

AN ATYPICAL CASE OF ATYPICAL HEMOLYTIC UREMIC SYNDROME

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LEARNING OBJECTIVE #1: Recognize atypical hemolytic uremic syndrome (aHUS) as a distinct clinical phenotype

LEARNING OBJECTIVE #2: Discuss the role of eculizumab in treatment of aHUS

CASE: KH is a 24-year old previously healthy woman who presented as an outside hospital transfer for evaluation of suspected aHUS.

Three weeks prior, she had a self-limited non-bloody diarrheal illness and her family experienced similar symptoms. One week after, she developed bilateral flank pain and anuria, prompting emergency room presentation. She denied fevers, headaches or confusion. She denied a family history of thrombotic or autoimmune disease. Her only medication was orthotricyclen, an oral contraceptive (OCP) started 4 months prior. Her exam was remarkable for costovertebral angle tenderness, and her lab evaluation was notable for a hemoglobin of 13g/dL, platelet count of 195K/cmm (baseline 384), LDH of 238IU/L, haptoglobin of 80mg/dL, and a serum creatinine of 6.5mg/dL. Peripheral blood smear contained schistocytes and renal biopsy revealed diffuse thrombotic microangiopathy (TMA). She was started on hemodialysis with plasmapheresis. Her ADAMTS-13 level was 67% and stool studies were negative for Shiga toxin and E. coli. Autoimmune workup was negative. She was transferred to our center for evaluation and consideration for eculizumab therapy.

Upon arrival she did not appear toxic nor did she have costovertebral angle tenderness on exam. Her GI PCR was positive for clostridium difficile and adenovirus. Complement levels were normal. Given TMA induced renal failure and stool studies without Shigella or E. coli she was diagnosed with aHUS and initiated on eculizumab.

IMPACT/DISCUSSION: TMA typically consists of thrombocytopenia, acute renal failure, and hemolytic anemia. Classically aHUS is defined as a primary TMA not driven by Shiga toxin (typical HUS) or ADAMTS-13 deficiency <5% (TTP). As much as 50% of aHUS cases are associated with complement pathway mutations. While our patient had a normal complement panel, her patient's risk factors included OCP use and active C. diff and adenovirus infections. Lack of thrombocytopenia and the low level of schistocytes on our patient's smear made her case unconventional, delaying diagnosis and treatment.

When diagnosis is uncertain, patients with suspected aHUS warrant immediate plasmapheresis due to the risk of rapid progression to ESRD. All aHUS patients are trialed on Eculizumab, a monoclonal antibody that targets C5 and membrane attack complex formation, inhibiting cell lysis. In two multicentered, multinational prospective studies, early treatment with Eculizumab was associated with a time-dependent improvement in renal function.

CONCLUSION: General internists frequently treat patients with the constellation of acute illness, anemia, thrombocytopenia and renal failure.

Prompt diagnosis and initiation of treatment for aHUS is critical for early initiation of therapy and subsequent patient recovery.

Confirming the diagnosis should not delay plasmapheresis and consideration of eculizumab therapy.

AN ATYPICAL CASE OF LEGIONELLA MYOCARDITIS

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LEARNING OBJECTIVE #1: Recognize one of the atypical clinical features of legionella infection.

CASE: 42-year-old female, with a history of tobacco use, presented to the Emergency Department (ED) with acute onset shortness of breath. She had been having subjective fever, chills, cough, runny nose, and severe myalgia for about a week before the presentation. A chest x-ray was significant for multifocal airspace opacities, consistent with pneumonia. In the ED, she was found to be in severe respiratory distress, and her ABG revealed a pH of 7.43, pCO_2 of 29, and pO_2 of 49 while on 40 liters of high-flow nasal cannula at 100% FiO_2. She was then intubated and admitted to the Intensive Care Unit. She was started on low tidal volume ventilation protocol for severe Acute Respiratory Distress Syndrome (ARDS). She was started on broad-spectrum antibiotics for likely Community-Acquired Pneumonia (CAP) with Piperacillin-Tazobactam and Azithromycin. Her oxygen saturation continued to be low on the ventilator.

The next morning, a complete echocardiogram showed a severely reduced left ventricular ejection fraction of 30% with diffuse hypokinesis. Her troponin was elevated, and an electrocardiogram showed sinus tachycardia. At this time, decision was made to put the patient on veno-arterial extracorporeal membrane oxygenation (VA-ECMO) for cardiogenic shock. Two days after being placed on ECMO, urine Legionella antigen returned positive. Broad-spectrum antibiotics were stopped, and she was started on a 21-day course of Levofloxacin. Further questioning of the patient's family revealed that she had prolonged exposure to floodwater in her basement before getting ill. Her clinical course eventually improved. She was extubated and came off the VA-ECMO. She was eventually discharged home after being in the hospital for 22 days.

IMPACT/DISCUSSION: Legionella is well-known for causing pneumonia. However, it can have other clinical manifestations, such as osteomyelitis, meningitis, endocarditis, pericarditis, and myocarditis. There have been previous case reports of Legionella causing myocarditis in otherwise healthy patients. These patients usually get really ill with multifocal pneumonia and then usually cardiogenic shock. This case illustrates the importance of Legionella causing other clinical conditions besides pneumonia. This patient initially suspected to have respiratory failure from CAP ended up going into cardiogenic shock likely from Legionella myocarditis. It is particularly important to get a history focusing on prior exposures including standing water when considering atypical infections because they can manifest surreptitiously.

CONCLUSION: Myocarditis is an uncommon entity in the spectrum of diseases caused by Legionella. However, it is very important for all clinicians

to recognize and treat this condition early with appropriate antibacterial to prevent morbidity and mortality. Further studies are needed to better characterize this condition as only case reports are currently available.

AN ATYPICAL ETIOLOGY OF INTENSE ABDOMINAL PAIN: NON-FUNCTIONAL PANCREATIC NEUROENDOCRINE TUMORS

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LEARNING OBJECTIVE #1: Recognize the atypical presentation of pancreatic neuroendocrine tumor (pNET)

CASE: A 48-year-old male with no significant past medical history presented to an outside hospital with recent onset abdominal pain associated with nausea and vomiting. The burning pain began 4 days ago and was reported to be the "worst pain of his life." His exam and initial lab work-up were unrevealing. He subsequently underwent a CT abdomen/pelvis, remarkable for a large heterogeneous mass of the pancreatic body. He then presented to UPMC Presbyterian for further work up. During his hospitalization, the patient continued to experience excruciating pain that was poorly controlled despite a robust opioid-based pain regimen. Given the intractable nature of the pain, the decision was made to perform a celiac plexus block during a diagnostic EUS FNA procedure. This intervention resulted in a massive symptomatic improvement and the patient was discharged pain-free with instructions to follow-up outpatient for continued management of newly diagnosed pNET.

IMPACT/DISCUSSION: Non-functional pNETs account for approximately 2% of all pancreatic malignancies. Given that they are non-functional, the presentation is often vague with signs and symptoms including abdominal pain (35–55%), jaundice (25–40%), weight loss (30–45%) and/or an abdominal mass (10–40%). Rarely, patients with pNETs will present with the lone symptom of acute abdominal pain, usually secondary to sudden neural invasion due to mass effect. This patient did not have typical symptoms or lab findings that clinicians classically associated with a pancreatic mass, including jaundice, weight loss or abnormal liver function tests. Thus, it is worthwhile to consider an invasive process, such as pNET, in the differential diagnosis of acute abdominal pain after other common etiologies have been ruled out. Furthermore, in this case of severe pain with inadequate pain control on an oral opioid regime, it was crucial to involve our pain medicine colleagues for urgent intervention for pain relief.

CONCLUSION: - Although non-functional pNETs are rare causes of abdominal pain, mass effect secondary to invasive processes, such as malignancy, should be considered when evaluating acute abdominal pain, particularly if other common causes of abdominal pain have been ruled out.

Early recognition of severe pain resulting from tumor invasion of the surrounding nerve bundles was difficult to manage with oral and intravenous pain medication. Thus, early intervention with celiac plexus allowed for prompt pain relief.

AN ATYPICAL NEUROLOGIC PRESENTATION OF WEST NILE VIRUS

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LEARNING OBJECTIVE #1: Recognize West Nile Virus as a cause of an ALS-like neuropathy

CASE: An undomiciled 63 year-old man with a history of lyme disease-associated facial palsy and tick exposure presented initially for multiple recent falls with progressive fatigue and weakness over the prior two months. At the time of admission he was noted to be hypophonic with tongue fasciculations, bilateral symmetric weakness, truncal ataxia, and hyperreflexia. EMG demonstrated florid abnormal spontaneous activities in the paraspinous muscles (positive sharp waves) and polyphasic large motor units with reduced recruitment in limb muscles and tongue (neuropathic motor recruitment), most consistent with a diagnosis of Amyotropic Lateral Sclerosis (ALS). Interestingly, MRI brain and spine demonstrated no focal lesions or signs of inflammation or edema in the CNS tissue, but did find diffuse T2 hyperintensity in the paraspinous muscles, consistent with myositis. Lumbar puncture (LP) revealed mild pleocytosis and was negative for other infectious or autoimmune causes but eventually demonstrated IgM and IgG positive for West Nile Virus (WNV). The patient was treated conservatively subsequent LP demonstrated a decrease in WNV IgM and an increase in IgG. The patient's weakness and hypophonia gradually improved and he was ultimately discharged to subacute rehab.

IMPACT/DISCUSSION: West Nile Virus is an arbovirus of the flavivirus family that has established endemicity in the US since a 1999 outbreak that signaled its arrival in North America. Here we present a case of WNV presenting as weakness and multiple falls at home with signs of both upper and lower motor neuron injury. Neuromotor manifestations of WNV are well-described and typically present as an acute flaccid paralysis, but are also known to present in a demyelinating pattern similar to Guillain Barre Syndrome (GBS). This case demonstrated neither flaccid paralysis nor signs of demyelination, and instead presented like ALS with evidence of diffuse neuropathic denervation. Additionally, MRI did not show signs of CNS inflammation or lesions, but instead indicated possible inflammation in the paraspinous muscles. This case demonstrates a potentially new type of neurological manifestation of WNV, with signs of upper and lower motor neuron injury.

CONCLUSION: Neurologic presentations of WNV are known to include both an acute flaccid paralysis and a GBS-like demyelinating presentation, but other presentations such as an ALS-like presentation with both upper and lower motor neuron deficits are possible and WNV should be kept in the differential in patients' with the appropriate exposure history.

AN ATYPICAL PRESENTATION OF AMYLOIDOSIS IN THE DIABETIC PATIENT: THE IMPORTANCE OF RECOGNIZING ANCHORING BIAS

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LEARNING OBJECTIVE #1: Recognize that signs and symptoms of amyloidosis can mimic autonomic dysfunction frequently seen in diabetes.

CASE: A 71-year-old male with a medical history of hypertension, orthostatic hypotension, and insulin-dependent type two diabetes complicated by peripheral neuropathy, retinopathy, a right foot diabetic ulcer with resultant transmetatarsal amputation, and nephropathy with CKD. The patient's orthostatic hypotension had initially been diagnosed three years prior with 20mmHg systolic decreases when standing. These symptoms were evaluated by multiple providers and felt to be a sequalae of poorly controlled diabetes as his A1C was persistently elevated near 10. While recently establishing care with a new PCP, he reported dizziness, a 25-pound weight loss, and new onset stool incontinence over the last 2-3

months. In clinic, blood pressure sitting was 200/90 mmHg and 135/65 mmHg standing. His labs were notable for an improved A1C of 6.3, creatinine of 1.7 (baseline 1.3), and urine protein creatinine of 3,572.82. Initially, this change in kidney function was thought secondary to dehydration due to recent development of loose stools. His worsened dysautonomia was still believed to be diabetic related. However, repeat creatinine showed no improvement at close follow-up. Perplexed, further studies to rule out other causes were performed including: kappa/lambda ratio of 1.47, beta-2-microglobulin 4.31, SPEP with beta one region M spike of 0.36 and beta two region of 0.36, and immunofixation with IgA kappa x2. A fat pad biopsy was performed with Congo red birefringence consistent with amyloid.

IMPACT/DISCUSSION: Diabetes affects more than 30 million people in America and often has complications involving the nervous system, solid organs, and the vascular system (1). These complications may mimic other underlying pathology, such as amyloidosis. Although moderately rare with only 4,000 new cases of AL amyloidosis diagnosed per year in the USA, a patient's health is dynamic, and a thorough differential should always be implemented to avoid misdiagnosis (2). This is reinforced by a study conducted at Mayo Clinic which showed that 21% of their referrals were misdiagnosed (3). This case presents an atypical presentation of amyloidosis resulting in delayed diagnosis. While there are limited reports of orthostatic hypotension with amyloid, autonomic involvement may be present in up to 15% of cases (4). The presenting autonomic dysfunction of postural hypotension, fecal incontinence, and peripheral neuropathy are similar to those exhibited by diabetic neuropathy (5).

CONCLUSION: ● Diabetic patients who present with new nephrotic range proteinuria or worsened autonomic dysfunction despite well-controlled diabetes should be considered for alternative causes.

● Systemic amyloidosis, while uncommon, should be on the radar in this population. Anchoring bias can result in delayed diagnosis and treatment.

AN ATYPICAL PRESENTATION OF CELIAC DISEASE: ATAXIA CAUSED BY VITAMIN E AND COPPER DEFICIENCY IN THE ABSENCE OF GASTROINTESTINAL SYMPTOMS

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LEARNING OBJECTIVE #1: Recognize neurologic symptoms as a potential non-gastrointestinal manifestation of celiac disease.

LEARNING OBJECTIVE #2: Evaluate for nutritional deficiencies associated with celiac disease, which may be present in the absence of gastrointestinal symptoms.

CASE: A 60-year-old man presented with multiple falls over a week. He had a history of remote ischemic stroke and celiac disease, diagnosed 2 years prior when he presented to an outside hospital with ataxia. At that time, MRI brain and spine showed no acute findings; he was found to have copper deficiency and related myelopathy. This admission, he denied abdominal pain and diarrhea but reported weight loss and nonadherence to a gluten-free diet. Exam disclosed temporal wasting, bilateral muscle weakness and hyperreflexia, distal sensory deficits, positive Romberg test, and an ataxic gait. Labs demonstrated tissue transglutaminase IgA >500 CU (normal <20 CU), creatine kinase 8,044 U/L (normal 39-193 U/L), Vitamin A 16 mcg/dL (normal 38-98 mcg/dL), Vitamin E 2.0 mg/L (normal 5.7-19.9 mg/L), Zinc 38 mcg/dL (normal 60-130 mcg/dL), and copper 70 mcg/dL (normal 70-175 mcg/dL). Vitamins B1, B6, B12, and ceruloplasmin were normal. CT head and MRI brain showed no acute changes. Upper endoscopy revealed duodenal mucosal atrophy. Per neurology consultation, symptoms were consistent with myeloneuropathy related to copper and vitamin E deficiency. He was treated with vitamin and trace element supplementation as well as physical therapy and was discharged to an acute rehabilitation facility.

IMPACT/DISCUSSION: This case highlights the importance of recognizing neurologic symptoms as a potential manifestation of celiac disease. In this patient, neurologic symptoms were likely the result of concurrent vitamin E and copper deficiency due to malabsorption. These nutrients are absorbed in the jejunum, an area potentially affected by celiac villous atrophy. Both of these nutrient deficiencies may cause myeloneuropathy with findings such as ataxia and gait instability that can be disabling. Early detection and initiation of supplementation may prevent further neurologic deterioration, but the degree of improvement is variable. Of note, nutritional deficiencies in celiac disease may occur in the absence of gastrointestinal symptoms, and clinicians should have a low threshold to test patients for these abnormalities. This includes fat-soluble vitamins, B12, folate, INR, and micronutrients such as copper, zinc, and iron. Appropriate supplementation should be initiated as soon as these deficiencies are diagnosed.

CONCLUSION: 1. Neurologic symptoms are a potential manifestation of celiac disease and should raise suspicion of nutritional deficiency due to malabsorption

2. Vitamin E and copper deficiency associated with celiac disease can cause a debilitating myeloneuropathy, resulting in muscle weakness and ataxia

3. Nutritional deficiencies in celiac disease may be present in the absence of gastrointestinal symptoms

ANCHORING ON ACETAMINOPHEN – AVOIDING BIAS AND EMPLOYING POCUS IN A CASE OF UNDIFFERENTIATED SHOCK

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LEARNING OBJECTIVE #1: Triage undifferentiated shock using Point of Care Ultrasound (POCUS). **LEARNING OBJECTIVE #2:** Avoid anchoring bias when admitting a patient with a complex past medical history and language barrier.

CASE: A 32-year-old Nepalese female with history of Sjogren's Syndrome and MALT Lymphoma on immunosuppression, who had been taking acetaminophen (1-2 g daily) for recent fever, was transferred to a tertiary care facility for evaluation of hepatocellular liver injury thought to be due to APAP toxicity. She reported one month of sharp chest pain, orthopnea, weight loss of 15 lbs and night sweats. On exam, she was afebrile, tachycardic, hypertensive and saturating 94% on room air. She had an elevated jugular venous pressure, bibasilar crackles and RUQ tenderness with hepatomegaly. Her extremities were cool with 1+ bilateral edema. Labs were notable for leukocytosis of 12.8, AST 415 IU/L, ALT 863 IU/L, ALP 164 IU/L, INR of 2.7 and a negative APAP level. Brain natriuretic peptide was 5000 pg/mL. Creatinine was normal. Lactate rose from 6.2 to 14.7 mMol/L over her first 12 hours of admission. POCUS revealed B-lines in bilateral lung fields, grossly decreased left ventricular function and a dilated IVC without inspiratory collapse. Comprehensive echocardiography confirmed an ejection fraction of 25-35% with global hypokinesis. Right heart catheterization confirmed low output heart failure. No infectious source was found. Given persistent tachycardia, hypertension and fever, a TSH was checked and was 0.16 uIU/mL with a FT4 of 2.78 ng/dL. A cardiac MRI did not show evidence of myocarditis or infiltrative disease. A diagnosis of tachycardia-induced cardiomyopathy due to thyrotoxicosis was made. The patient was treated for cardiogenic shock and thyroid storm before returning home.

IMPACT/DISCUSSION: This case highlights the importance of taking a step back and reframing the differential diagnosis when receiving a patient with a complex history. The team noted several points of

discordant data with her initial diagnosis of APAP toxicity, including non-toxic levels of APAP ingestion (1-2 g/day), AST/ALT only in the hundreds and volume overload with cool extremities. POCUS can play an important role in prioritizing the differential diagnosis in a patient with impending shock. It can answer questions such as, "does this patient have LV dysfunction?" and "does this patient have evidence of pulmonary edema?" In this case, the combination of grossly decreased ventricular function and bilateral B-lines pointed towards the diagnosis and increased the urgency for right heart catheterization, transfer to the cardiac intensive care unit and treatment with inotropes.

CONCLUSION: POCUS is a readily accessible modality to effectively triage undifferentiated shock and pursue appropriate evaluation, especially when resources are limited. Checking our diagnostic reasoning and acknowledging discordant data is fundamental to finding a unifying diagnosis and avoiding anchoring bias, particularly in patients in whom history-taking is challenging.

AND THE RCC SAGA CONTINUES

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LEARNING OBJECTIVE #1: Identify the metastatic complications of renal cell carcinoma (RCC) in those who are high surgical risk

LEARNING OBJECTIVE #2: Recognize the internist's role to provide support to this population of patients

CASE: My 67 year old female patient with a history of CHF, asthma, OSA, was incidentally found to have a 3.2cm renal mass. CT guided biopsy by interventional radiology (IR) showed that she had renal cell carcinoma (RCC), clear cell type, Fuhrman grade 2. Given co-morbidities, it was felt that the risk/benefit ratio of surgery was high for this patient for a likely slow growing tumor. Over the course of the following year, she sequentially had microwave ablation, cryoablation and embolization performed by IR. In the interim, a known left thyroid nodule of previously benign pathology per FNA was enlarging, causing trouble swallowing and change in voice. Thyroid US confirmed a 4.8cm predominantly solid nodule. Given compressive symptoms, she underwent a left hemithyroidectomy, with final pathology showing...metastatic RCC! Extensive imaging then was performed which showed a 2.7cm left renal mass, a 2cm left adrenal nodule, and subcentimeter nodules in both lungs measuring up to 6 mm in the lingula. A Urologist performed a left robotic/laparoscopic radical nephrectomy/radical adrenalectomy and lymph node dissection. Pathology of the adrenal nodule confirmed...metastatic RCC. For the next three years, continued to monitor the lung nodules, but then CT chest showed increase in size of lingular nodule, and PET scan confirmed hypermetabolic nature. A LUL FNA was non-diagnostic, thus a VATS of the LUL was done, with final pathology again showing...metastatic RCC! The patient is being monitored by serial imaging after the metastasectomy.

IMPACT/DISCUSSION: Approximately one-third of those with RCC are found to have metastatic disease, and one-fifth overall lead to death. Yet, monitoring is the primary option offered to patients incidentally found to have RCC < 4cm in diameter who are high surgical risk, because in this sub-group, the tumor is slow growing and likelihood of death or disability from another medical condition is more likely. The case report of my patient gives a face to someone living with metastatic RCC. In hindsight, the patient felt regret that surgery was not deemed to be the best option initially in her case, given that she eventually had to undergo the surgery anyway, as well as a thyroid surgery, and in addition, years of living in constant worry of another metastatic finding. During this time, my role as her primary care physician was to provide support and reassurance that she was receiving the standard of care based on complex medical decision making.

CONCLUSION: Patients with RCC who are deemed to be poor surgical candidates may be troubled when multiple locations of metastases do develop.

The role of the primary care physician for these patients is to provide ongoing support and explanation of the risk/benefit analysis used in medical decision making.

A NEAR MISS

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LEARNING OBJECTIVE #1: Diagnosing Hypertriglyceridemic Induced Pancreatitis

LEARNING OBJECTIVE #2: Understanding the importance of ordering a lipid panel upon admission when suspecting pancreatitis

CASE: A 48 year old man with a history of hypertension and moderate alcohol use presented with acute abdominal pain after binge drinking with associated anorexia, nausea, and clear/watery emesis. He stated that the abdominal pain began the day prior to admission while eating but resolved without any intervention. Admission labs were notable for Lipase >5400 U/L, Glucose 245 mg/dL, Bicarbonate of 19 mmol/L and an anion gap of 20. Urine studies positive for ketones. Ultrasound of the abdomen showed mild hepatosplenomegaly. Patient was admitted and treated for alcohol-induced acute pancreatitis.

Given his anion gap metabolic acidosis associated with hyperglycemia and ketonuria, a triglyceride level was checked and found to be >4500 mg/dL. With this new diagnosis of hypertriglyceridemia-induced pancreatitis (HTGP), he was started on an insulin intravenous drip and transferred to the Intensive Care Unit for closer monitoring. On insulin, his serum lipase and triglycerides down trended and the patient eventually improved and was discharged with a new diagnosis of diabetes (HbA1C of 10.7%).

IMPACT/DISCUSSION: While gallstones and alcohol abuse are two most common causes of acute pancreatitis, HTGP is an uncommon but well-established cause of acute pancreatitis that typically occurs in patients in the presence of a secondary condition, such as uncontrolled DM, excessive alcohol consumption, or as an adverse effect of medications. Although HGTP symptomatically presents similarly to acute pancreatitis due to other etiologies, HTGP is often associated with greater clinical severity and rate of complications. This diagnosis is often missed or appropriate therapy is often delayed if a lipid panel is not checked shortly after admission. It is therefore crucial to identify hypertriglyceridemia and to target therapy accordingly, including specific therapies to lower serum triglyceride levels.

CONCLUSION: While elevated serum lipase is used commonly as a diagnostic tool for pancreatitis, there are currently no formal guidelines for routine lipid panels in all cases of acute pancreatitis. More concrete guidelines need to be formally available when there is a high suspicion for pancreatitis, arguably more so for first episodes of pancreatitis, that includes a thorough workup for all etiologies of pancreatitis.

AN ELDERLY WOMAN WITH A BONE DESTRUCTING INTRACRANIAL EPIDURAL ABSCESS CAUSED BY APICAL PERIODONTITIS

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Infectious Disease Medicine, Teine Keijinkai Hospital, Sapporo, Hokkaido, Japan. (Control ID #3388915)

LEARNING OBJECTIVE #1: Recognize the risk of serious infection in patients with poor oral hygiene

LEARNING OBJECTIVE #2: Recognize the current status and needs for improvement in dental care of the elderly in Japan

CASE: An 80-year-old Japanese woman presented with a 3 day history of left periorbital pain and swelling, dysarthria, and fever followed by right-sided weakness. Her past medical history includes rheumatoid arthritis for which she takes bucillamine. She lives independently.

On physical exam she was febrile, but her vital signs were otherwise normal. She was confused and had slurred speech. There was swelling and redness on the left side of the scalp. Cranial nerves were intact. Barré's sign was positive on the right, and there was reduced muscle strength (4/5) of the right upper and lower limbs.

Blood results showed elevated white blood cell count (1.9x10^4/μL) and CRP (23mg/dL). MRI showed abscess within the temporal bone and epidural and subcutaneous spaces of the left cranium.

Needle aspiration and drainage of the abscess was performed and the patient was started on ceftriaxone and metronidazole. We consulted a maxillofacial surgeon, who discovered apical periodontitis of two left upper molars adjacent to the abscess. *α-Streptococcus* was grown on aspirate, 6 weeks of amoxicillin was prescribed, and the teeth were removed.

On further history, the patient had not seen a dentist for over 20 years and brushed her teeth once daily.

IMPACT/DISCUSSION: This case highlights the risk of cranial epidural abscess due to periodontitis, which can spread into the cranium leading to bone and nerve involvement. More than 90% of epidural abscesses occur in the spine and are considered rare in the cranium but, when seen, are often sub-acute. Previous reports describe that more than 70% of epidural abscesses from oral infection occur due to hematogenous spread in young people under 20 years, with a male to female ratio of 3.6 to 1. In this case, it was unique that there was direct extension from a contiguous focus of ioral nfection to the brain, which we hypothesized to be more common in the elderly, most likely the reason for acute bacterial growth and sudden onset. To date, half of reported epidural abscesses spreading from the oral space were unrelated to dental procedures. A third of them had no prior symptoms. Most of these nonsymptomatic patients, including this case, were immunosuppressed due to diabetes, smoking, or use of immune-modulating medications. This case is a reminder of the importance of oral hygiene, especially in immunocompromised elderly individuals. Finally, our poster will review the evidence of tooth brushing to reduce the risk of dental infection, twice being the average right now, and also summarize the current state of dental care in Japan, where over 30% of the population over 80-year-old have untreated caries.

CONCLUSION: Good oral hygiene is important for elderly patients especially those who have few social supports as deep-seated potentially fatal infections can occur.

ANEMIC 31 YEAR OLD FE-MALE IN A STUDENT-RUN CLINIC: AN IRONIC FINDING

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LEARNING OBJECTIVE #1: Assess persistent iron deficiency anemia in a female

LEARNING OBJECTIVE #2: Recognize dermatitis and iron deficiency anemia as potential signs of celiac disease

CASE: A 31-year-old woman with a 17-year history of iron deficiency anemia without menorrhagia presented to the Weill Cornell Community Clinic (WCCC) for follow-up after an increase in her daily iron (Fe) supplementation from 50 to 150 mg. The patient reported some improvement in her chronic fatigue, but continued to experience an intermittent pruritic rash on her elbows (previously presumed to be eczema), which had been poorly controlled with topical hydrocortisone. She also noted occasional black stool, stomach pain and diarrhea, but denied constipation, fevers, chills, weight loss, shortness of breath, changes in mood, or muscle/joint pain. Patient denied smoking or drug use and reported drinking 1-2 glasses of wine per week.

Her physical exam included normal cardiac and lung exams and a soft, nontender abdomen with normal bowel sounds. A pruritic, papular, non-scaling rash was noted on her bilateral elbow joints. Labs were remarkable for a low hemoglobin and hematocrit (10.4/31.2) with an increased RDW (15.9%). Despite daily Fe supplementation, labs showed a low ferritin (6.8 ng/mL), low Fe (24 ug/dL), elevated Fe binding capacity (413 ug/dL), and a low Fe saturation (6%). Further testing was positive for tissue transglutaminase (>100 U/mL) and endomysial antibody (1:640), highly suggestive of celiac disease.

Following serology results, patient was educated about celiac disease and a volunteer nutritionist provided the patient with in-depth information about a gluten-free diet. Upon follow-up, symptoms of fatigue and rash markedly improved with the restriction of gluten.

IMPACT/DISCUSSION: Iron deficiency is the most common cause of anemia and is prevalent in menstruating women due to blood loss. However, if no improvement of anemia is seen after daily iron supplementation, other sources of iron deficiency anemia must be considered.

Although celiac disease is most often associated with bloating and diarrhea after food consumption (seen in 50% of initial presentations), clinicians should be aware of other nonspecific symptoms. Dermatitis herpetiformis, often misdiagnosed as eczema, affects 10% of patients with celiac disease. Approximately 30% of patients also present with iron deficiency anemia caused by reduced iron absorption in the duodenum, concomitant gastrointestinal bleed, or autoimmune hemolytic anemia. Thus, iron deficiency anemia requires a high index of suspicion for celiac disease. Delayed diagnosis and management can lead to long-term consequences secondary to nutritional deficiencies (iron, folate, vitamin D, vitamin K), which cannot be controlled until the underlying condition is addressed.

CONCLUSION: In patients with chronic intermittent rash and iron-deficiency anemia that is not improving with iron supplementation, clinicians should have a high index of suspicion for celiac disease.

AN EXOTIC CASE OF PROGRESSIVE DYSPNEA

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LEARNING OBJECTIVE #1: Develop a systematic approach to chronic dyspnea

LEARNING OBJECTIVE #2: Understand the pathophysiology of hypersensitivity pneumonitis and its role in the evaluation and management

CASE: A 44-year-old man presented with three months of progressively worsening dyspnea. He also noted cough productive of white sputum and dyspnea on exertion. He had a history of asthma and followed with a pulmonologist regularly; however, his albuterol no longer provided relief

despite increased use. Oxygen therapy was now required to maintain adequate oxygen saturation. He lived with his parents, as he had cerebral palsy and intellectual disability. He did not smoke nor was he exposed to secondhand smoke. His exam revealed bilateral basilar crackles. There were no abnormal heart sounds and JVP was not elevated, however lower extremity edema was present. Small bilateral pleural effusions with hazy bibasilar pulmonary interstitial and airspace opacities on chest X-ray. Diuresis provided no relief. Chest CT revealed diffuse ground-glass opacification throughout the lungs with areas of superimposed normal-appearing lung with multiple additional bilateral upper lobe nodular opacities that had peripheral ground-glass halos. It was discovered that the patient slept in the same room as a pet cockatoo. He found significant relief after initiation of glucocorticoids. More importantly, removal of the cockatoo from the home as well as deep cleaning of carpets, ducts, and air filters was necessary for continued resolution.

IMPACT/DISCUSSION: Dyspnea is an often-encountered complaint by the general internist. The differential for this problem is broad but most commonly stems from pathology of the cardiac or pulmonary systems. A detail-oriented approach is required to identify rarer causes of dyspnea. It is important to consider environmental exposures as they may precipitate a hypersensitivity pneumonitis.

Hypersensitivity pneumonitis is a diffuse inflammation of lung parenchyma and airways that occurs in response to inhalation of antigens that a patient has become sensitized to. Agricultural dusts, bioaerosols, and various reactive chemical species may all be culprits. There are many degrees of the disease, which depends on the offending antigen and duration of exposure.

Bird fancier's lung is one of the more well-known forms of hypersensitivity pneumonitis. Patients become sensitized to avian proteins present in droppings or feathers. These antigens become aerosolized and are inhaled when patients are in close contact with birds. Glucocorticoids can provide early symptomatic relief. The cornerstone of treatment is strict avoidance of the causative antigens. Patients able to accomplish this tend to have total recovery of lung function, although full recovery may take several years.

CONCLUSION: A thorough history when approaching chronic dyspnea may identify unique exposures and aid in diagnosis. When hypersensitivity pneumonitis is identified, removal of the offending antigen is the most critical aspect of long-term recovery.

AN INTERESTING CASE OF KAPOSI SARCOMA (KS) IN A HIGHLY IMMUNOSUPPRESSED PATIENT WITH CROHN'S DISEASE (CD): EPIDEMIC OR IATROGENIC?

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LEARNING OBJECTIVE #1: Diagnose and manage a new presentation of KS in a patient newly diagnosed with HIV in the setting of having started a TNF alpha inhibitor (TI) for CD.

CASE: A 32-year-old man with CD presented to the ED with fever and rash. Painful papules arose on his chest 3 weeks prior and spread to his lower extremities. He had diarrhea and abdominal pain despite Prednisone 20 mg and two doses of Infliximab (a TI), but no other symptoms.

Three months earlier, CD had been diagnosed endoscopically, with no dysplasia or infection. He had no prior surgeries or medical problems, family history, recent travel, exposures, or drug use. He was sexually monogamous with his husband.

Exam showed diffuse violaceous plaques and nodules on his face, trunk, and extremities, and one buccal ulcer. Biopsy showed KS. HIV antibody was positive 1 day after discharge, with CD4 count 248 and viral load 3292. He was started on antiretrovirals (ARV). Further doses of Infliximab were held, although Prednisone was continued.

Three weeks later, sigmoidoscopy was positive for HHV-8, CMV, and EBV without lymphoproliferation. He received valgancyclovir for CMV colitis. For extensive visceral and cutaneous KS, he continued on ARVs and initiated Doxorubicin.

IMPACT/DISCUSSION: When approaching fever and rash, gathering a thorough social history is critical. Dermatologic emergencies must be addressed (such as infections and drug eruptions); opportunistic infections and malignancies should be considered in immunocompromised patients. CD-related dermatologic disorders include Pyoderma Gangrenosum and Erythema Nodosum, whereas psoriasis is a common side effect of Tis (0.6-5.3%). Patients on TI are also at higher risk of non-melanoma skin cancers, but KS has not previously been reported.

KS is divided into 4 categories: classic, endemic, iatrogenic, and AIDS-related. The lower extremities are the most common cutaneous site in all types, whereas visceral involvement and aggressive course are typical of iatrogenic and AIDS-related KS. Prognosis for patients with AIDS-related KS is classified by tumor extent, immune status, and systemic illness. For our patient, his KS worsened despite ARV, Doxorubicin is the chemotherapy of choice.

High-dose steroids have been correlated with worsened and incident KS, and 4 cases of KS in HIV-negative patients with CD have been reported in the setting of steroids. However, there are no reports of KS associated with TI. Given our patient's concomitant CMV colitis at higher CD4 count, we hypothesize that the combination of undiagnosed HIV, high-dose prednisone, and TI contributed to his potentially fatal KS presentation. Some countries recommend screening for HIV prior to initiating TI. Such measures may have prevented harm to this patient.

CONCLUSION: ●For rash and fever in an immunocompromised patient, rule out dermatologic emergencies and consider opportunistic infections and malignancies, including KS.

●In addition to TB and Hepatitis B, consider screening high-risk populations for HIV prior to initiating TI.

ANTIPSYCHOTIC MEDICATION EFFECTS MIMICKING MYXEDEMA COMA AND SEVERE SEPSIS

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LEARNING OBJECTIVE #1: Recognize the adverse reactions of olanzapine confounding clinical picture and mimicking another diagnosis.

CASE: A 64-year-old woman with history of schizophrenia was brought in from jail for bilateral lower extremity edema and hypothermia unrelated to environmental exposure. On arrival to the emergency department, she was agitated, hypotensive (MAP <60), bradycardic (HR in 50s), and hypothermic with a rectal temperature of 90.4°F. Due to the patient's psychotic state, no history could be elicited. Initial differential diagnosis included myxedema coma and severe sepsis. Fluid bolus, antibiotics, intravenous levothyroxine and hydrocortisone were immediately administered. Laboratory findings were significant for neutropenia with an absolute neutrophil count of 984, which was previously normal three weeks earlier. Peripheral smear demonstrated few large granular lymphocytes, which are normal variants. Thyroid studies showed a normal free T4 and mildly elevated TSH with a value of 6.45 mcIU/mL (0.34 – 5.60 mcIU/ml), consistent with subclinical hypothyroidism. Additional laboratory results included a normal lactate, clear urinalysis, unremarkable chest x-ray, and pan-CT non-revealing for an infectious source. Patient had bilateral lower extremity erythema and edema concerning for bilateral lower extremity cellulitis, but this was not significant enough to account for her severe hypothermia, bradycardia, and hemodynamic instability. On further investigation, the

only medication the patient was taking at the time of presentation was olanzapine, a court-ordered medication to be administered for her psychotic symptoms, which was started thirteen days prior to symptoms. During her hospital stay, olanzapine was stopped and switched to aripiprazole (Abilify), which was tolerated well by the patient. Additionally, with active warming and supportive care with fluids and antibiotics, the patient's clinical condition improved. Neutropenia resolved five days after olanzapine was discontinued, and all culture data returned without any sign of infection.

IMPACT/DISCUSSION: Olanzapine (Zyprexa) is an atypical antipsychotic that affects the dopaminergic pathway commonly used in the treatment of schizophrenia and bipolar disorder. Common side effects include extrapyramidal syndrome, akathisia, hyperprolactinemia, weight gain, and transaminitis. Rare adverse effects include hypothermia, bradycardia, and hemodynamic instability, while neutropenia is even more rare. This case illustrates how rare adverse reactions from an antipsychotic medication can confound the clinical picture and mimic another diagnosis, specifically myxedema coma and sepsis. There have been less than a hundred reported cases of antipsychotic-related hypothermia and only two reported cases of olanzapine-related neutropenia in the literature.

CONCLUSION: Awareness of these rare adverse reactions, alongside a thorough investigation and open- minded differential were critical in deciphering this intriguing case.

AN UNCOMMON CAUSE OF CHEST PAIN

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LEARNING OBJECTIVE #1: Broaden the differential diagnosis for acute chest pain to include spontaneous coronary artery dissection (SCAD).

LEARNING OBJECTIVE #2: Recognize SCAD as a cause of myocardial infarction (MI), particularly in women without classic atherosclerotic risk factors.

CASE: 53-year-old woman with hypertension, GERD, and inferior MI 7 years ago caused by a distal PDA lesion unamenable to intervention presented to the ED with chest pain. She reported sudden onset left-sided chest pain preceded by emotional stress. The pain radiated to her jaw and left arm, and was associated with dyspnea. It was unrelieved by sublingual nitroglycerin. She had no smoking history and no family history of cardiovascular disease.

Upon arrival to the ED, patient had BP 171/99, HR 70, RR 16, and was saturating 100% on room air. Exam revealed normal S1S2, and a regular rate and rhythm without murmurs or gallops. Lungs were clear. There was no reproducible chest wall tenderness. ECG showed sinus rhythm with T wave inversions in V5-V6 comparable to prior, and no ST changes. Labs were notable for troponin I of 0.059 which uptrended to 2.718 on repeat.

Patient received full-dose aspirin and was started on a heparin drip and clopidogrel. She underwent cardiac catheterization which showed a spontaneous coronary artery dissection of the left circumflex. Based on this finding, she was managed medically with blood pressure control and one year of dual antiplatelet therapy. She also completed renal and carotid dopplers to assess for fibromuscular dysplasia, both of which were normal.

IMPACT/DISCUSSION: SCAD is a rare cause of MI that disproportionately affects women, often those without atherosclerotic risk factors. While the true incidence is unknown as it is likely underdiagnosed, SCAD is estimated to cause up to 35% of MIs in women under 50. Risk factors include connective tissue disorders and hormonal fluctuations such as those occurring with pregnancy.

Accurately diagnosing SCAD is vital for many reasons. First, as patients with SCAD are often healthy young and middle-aged women, it is important to recognize that they can be having a myocardial infarction despite a lack of cardiac risk factors. Second, management of SCAD differs from that of CAD-related MI. While PCI is a mainstay of management of ACS, it is associated with more complications and worse outcomes in SCAD. Third, diagnosing SCAD helps ensure patients receive appropriate follow-up care including screening for underlying predisposing conditions and counseling regarding future pregnancy and hormone use.

CONCLUSION: SCAD is a rare but underdiagnosed cause of MI, especially in women without classic atherosclerotic risk factors.

Prompt and accurate diagnosis of SCAD can ensure patients get appropriate treatment and follow-up care. Reference: Hayes, SN et al. Spontaneous Coronary Artery Dissection: Current State of the Science: A Scientific Statement From the American Heart Association. Circulation. 2018;137:e523–e557, doi.org/10.1161/CIR.0000000000000564. Accessed January 9, 2020.

AN UNEXPECTED CAUSE OF CUSHING SYNDROME

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LEARNING OBJECTIVE #1: To discuss a rare instance of an ACTH-producing Pheochromocytoma

CASE: A 41-year-old white female with type 2 diabetes and hypertension presented to emergency department with several week history of weakness, hyperglycemia and hypertension. For 2-3 weeks, her primary care physician had an increasingly difficult time managing her hypertension and diabetes. Family history revealed type 2 diabetes in her father. Pertinent medications included metformin, glimeprimide, irbesartan, and indapamide. Initially, she was afebrile with a blood pressure of 217/112 and heart rate of 111. Physical exam revealed a round face, supraclavicular fat deposition, purple striae along abdomen, and bilateral lower extremity edema. Labs showed a leukocytosis of 16,400, hemoglobin of 16.4 g/dL. BMP was normal except for a potassium of 2.8 and glucose of 214. Random cortisol level was very elevated. Patient failed low dose and high dose dexamethasone suppression tests, with persistently elevated Adrenocorticotropic hormone (ACTH), suspicious for an ectopic source of ACTH. MR brain did not reveal pituitary abnormalities. CT abdomen and pelvis showed a complex 4.2 cm right sided adrenal tumor and bilateral adrenal hyperplasia. Plasma metanephrines and normetanephrines were also elevated, consistent with an ACTH producing pheochromocytoma (pheo). Patient was started on ketoconazole, spironolactone, and doxazosin for alpha. At a later admission, the patient underwent a successful right adrenalectomy. Pathology was consistent with adreno-cortical hyperplasia, ACTH staining pheo. At a PCP follow-up appointment, she was doing well with no further symptoms. She is no longer requiring blood pressure or diabetes medications.

IMPACT/DISCUSSION: Cushing syndrome is rarely caused by a pheo. Cushing syndrome may be either ACTH-dependent or independent, with ACTH-dependent causes being much more common. The majority of these ACTH-dependent causes are a result of pituitary hypersecretion, classically defined as "Cushing disease." Ten to fifteen percent of ACTH-dependent Cushing syndrome are due to ectopic ACTH syndromes. Neuroendocrine tumors of the lungs, pancreas and thymus are among the most common causes, which brings to mind the common association between small cell carcinoma of the lung and ectopic ACTH secretion. ACTH-producing pheos are very rare, and a recent literature search in 2018 from Gabi et al. in the Journal of the Endocrine Society cites fifty-eight total case reports. One of the similarities among cases of ACTH-producing pheos is the rapid onset of symptoms compared to the more subtle onset of most Cushing syndromes. Hypokalemia, in addition to suddenly worsening hyperglycemia and hypertension, were usually seen. The increased intensity of symptoms is thought to be due to the excess of cortisol in addition to excess catecholamines.

CONCLUSION: ACTH-producing pheos are a rare cause of Cushing syndrome but should be considered in all cases of ACTH-dependent Cushing syndrome.

AN UNEXPECTED EPIDEMIC IN YOUNG ADULTS

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LEARNING OBJECTIVE #1: Recognize E-cigarette or Vaping Associated Lung Injury (EVALI) as an emerging public health concern

LEARNING OBJECTIVE #2: Assess proposed treatment strategies for EVALI

CASE: A 23-year-old man presented with shortness of breath, nausea, vomiting and epigastric pain following use of illegally sourced tetrahydrocannabinol (THC) electronic vaping cartridges. He had a history of exceedingly heavy THC and had been self-treating anxiety with cannabis. Blood pressure was 126/78 mmHg, pulse 113 bpm, respirations 40 breaths/min and temperature 102.1F. He was anxious, moaning, retching and in respiratory distress. Lab studies were as follows: sodium 147 mmol/L, potassium 3.4 mmol/L, chloride 102, carbon dioxide 18 mm/L, blood urea nitrogen 13 mg/dL, creatinine 0.88 mg/dL white blood cell count 22,400 cells per cubic mm, hemoglobin 14.5 g/dL mL, and platelets 297,000/L, Arterial blood gas demonstrated pH 7.45, CO2 35 mmHg, PaO2 51 mmHg. Chest X-ray revealed patchy interstitial opacities and CT chest revealed bilateral ground glass opacities sparing the apices. Bronchoalveolar lavage had foamy macrophages and lung biopsy pathology returned as acute and organizing lung injury with fibrin exudates. He required high flow oxygen and admission to intensive care. He was unable to be weaned to room air after an extended, complicated hospital stay and treatment included broad-spectrum antibiotics and corticosteroids. No infection was identified, and he was discharged on supplemental oxygen and a steroid taper.

IMPACT/DISCUSSION: EVALI is a serious complication of electronic vaporizer use. In November 2019 the CDC reported 2,172 cases and 42 deaths. 68% were male and 77% were adults younger than 35. Most were associated with informal sources of THC. Vitamin E acetate used in aerosolizing solutions and lipid- laden macrophages have been seen in bronchoalveolar lavage. Respiratory and gastrointestinalsymptoms are most common, a 98% and 90%, respectively. Diffuse ground glass opacities are seen on chest CT. INR elevation can be seen from coagulation pathway disruption from inflammation or vitamin E, which is a vitamin K inhibitor.

Treatment involves high dose steroids with broad coverage antibiotics. Steroid treatment in the inpatient setting is associated with rapid improvement, but a dosing strategy has not been agreed upon. Steroids can increase the chance of an overlying infection and are not recommended in the outpatient setting. Some patients have improved without steroid treatment, but comparative studies have not been done. We recommend broad coverage with antibiotics until infectious sources are ruled out. Counseling on cessation of all inhalants is imperative and prompt reporting of cases to the CDC are essential for further clinical and pathological understanding.

CONCLUSION: With vaping use on the rise, increasing reports of EVALI are noted. Given the advent of this new etiology for lung injury, further investigation is needed to determine appropriate diagnostic and treatment stratgies.

AN UNUSUAL CASE OF A SUPRAGLOTTIC MASS LESION IN A PATIENT WITH AIDS

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LEARNING OBJECTIVE #1: Recognize CMV as a cause of a neck mass in an immunocompromised patient.

LEARNING OBJECTIVE #2: Treat CMV pseudotumor with medical and surgical management.

CASE: Our patient is a 58-year-old male with a past medical history of HIV, not on antiretrovirals, who presented to the ED with a one-month history of hemoptysis, drooling, decreased oral intake, and progressive dyspnea. On exam, patient was afebrile but tachypneic with excessive drooling. Laboratory evaluation was notable for CD4 count of 10. CT scan of the neck and chest revealed a supraglottic mass causing impending airway obstruction. He was taken to the operating room for emergent tracheostomy tube placement and biopsy of the mass.

Direct laryngoscopic evaluation showed a supraglottic mass with extensive necrosis of surrounding tissues, including the trachea. Biopsy revealed ulcerations with granulation tissue and viral cytopathic inclusions consistent with CMV. Due to the high suspicion for malignancy, repeat biopsy was obtained which confirmed the diagnosis. IV gancyclovir was started and foscarnet was later added.

Unfortunately the patient developed an aspiration pneumonia and septic shock requiring transfer to ICU for mechanical ventilation. Following discussions with multiple care teams regarding the limited surgical and medical options to preserve his airway, the patient decided to pursue palliative care and transfer to hospice.

IMPACT/DISCUSSION: Cytomegalovirus is an important pathogen in immunocompromised patients, including patients with HIV/AIDS. The most well-known manifestations of CMV infections include chorioretinitis, enteritis, and pneumonitis. Less commonly, CMV infection can produce mass lesions, and these have been described in various locations throughout the body. There are few case reports of these "pseudotumors" in the head and neck in immunocompromised patients. Our case is the first that reports a mass causing both airway obstruction and significant ulceration with necrosis of the surrounding soft tissue.

The mainstay of treatment for CMV is IV ganciclovir. However ganciclovir is limited by suboptimal efficacy, toxicity and evolution of resistant strains. Other options for treatment include foscarnet and cidofavir, although use is limited by nephrotoxicity. CMV resistance to antivirals is a major clinical problem in patients with T cell depletion, very high viral loads, recurrent CMV disease, and suboptimal antiviral drug concentrations due to reduced absorption or poor compliance. Some case reports have observed that surgical excision of the mass can be effective in those refractory to medical management.

CONCLUSION: - In immunocompromised patients who present with symptoms of airway obstruction, CMV infection should remain on the list of differential diagnoses.

- Biopsy is necessary to confirm the diagnosis and should show classic viral cytopathic inclusions.

- Typically, CMV infections are treated with IV gancyclovir and mass lesions may be amenable to surgical excision.

AN UNUSUAL CASE OF ASYMPTOMATIC PRESENTATION OF CRYPTOCOCCAL MENINGITIS

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LEARNING OBJECTIVE #1: Cryptococcal Meningitis is a common opportunistic infection in HIV-AIDS patients with low CD4 count. It has also been reported in immunocompromised patients, like transplant and neutropenic patients. Classically meningitis presents with headache, fever, photophobia and nuchal rigidity. Asymptomatic presentation of meningitis has rarely been reported. We present a case of subacute

cryptococcal meningitis in a kidney transplant patient displaying no typical signs of the disease process.

CASE: A 58-year-old male with past medical history of type 2 diabetes mellitus, kidney transplant on immunosuppressants mycophenolate, prednisone and tacrolimus, presented with low grade fever, productive cough, malaise and anorexia since last two weeks. Physical exam showed stable vitals, temperature of 99.3 F, normal mental status and equally reactive pupils, but diffuse rhonchi on auscultation. Chest X-ray and CT scan showed left perihilar opacities. The patient was admitted for sepsis secondary to community acquired pneumonia.

Two days later, the patient started developing a moderate headache. No photophobia, nuchal rigidity, nausea or vomiting were present. CT scan head showed no abnormalities. Lumbar puncture showed cell count of 27, Neutrophil 1, Lymphocytes 5 and pressure of 26 cm of H20. Due to high suspicion, a cryptococcal panel was sent. Blood culture started growing yeast. Before final cultures were back, the patient was started empirically on Amphotericin B. Latex Agglutination test reported back as Cryptococcal Ag positive (titer 1:1024) and Flucytosine was added. CSF cultures were positive for *Cryptococcus neoformans*. The patient had one session of therapeutic lumbar puncture. He improved clinically. We regularly monitored serum flucytosine levels, serum urea and creatinine and provided aggressive hydration to avoid renal failure.

IMPACT/DISCUSSION: The global burden of Cryptococcosis was recently estimated about ~1 million cases. Cryptococcus has a special tropism for the nervous system, where it can cross to, by paracellular, transcellular and Trojan Horse pathways. Furthermore, different studies have described that diabetic patients have a decreased phagocytic activity and T cells response, which might favor cryptococcal migration to the CNS.

In the background of immunosuppression, a low threshold for suspicion of cryptococcal meningitis is necessary. This will help to avoid the condition, which can lead to permanent sequalae like cranial nerve palsy, or even lead to death. Cryptococcal meningitis, unlike other forms of meningitis, has low cell count in cerebrospinal fluid analysis. But pressure elevation is often dramatic (>250 mm of H20). If left untreated, brain herniation and death may occur. Serial lumbar puncture is therapeutic in this condition.

CONCLUSION: Hence, we emphasize the health care professional to remain vigilant and consider cryptococcal meningitis even when classic symptoms are absent.

AN UNUSUAL CASE OF ATYPICAL DRESS SYNDROME IN A RARELY DESCRIBED AGENT

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LEARNING OBJECTIVE #1: DRESS can occur in absence of eosinophilia

LEARNING OBJECTIVE #2: Valproic Acid is a rare cause of DRESS

CASE: A 19-year old male presented with 5-10 days of whole-body erythroderma, associated with exfoliative changes, lip swelling, facial edema, and malaise. His past medical history included Intermittent Explosive Disorder, for which he recently had a psychiatric hospitalization 5 weeks prior to admission where he was started on Valproic Acid. He initially presented to his PCP, where he was found to have a leukocytosis of 35 x 10E3/uL WBCs. He presented to the ED for further evaluation, where he was noted to have borderline hypotension. Following fluid resuscitation, he was transferred to the MICU. His labs were significant for a leukocytosis of 34.3 x 10E3/uL WBCs comprised of 33% atypical lymphocytes and no eosinophils, an elevated lactate, and a mixed cholestatic and hepatocellular pattern of liver injury. Over the subsequent days, he developed high-grade fevers, hemodynamic instability, acute liver failure, and acute kidney injury. Further laboratory evaluation revealed hyperuricemia, elevated LDH and D-Dimer, decreased fibrinogen, and notably ferritin >40 000 and IL-2 Receptor Alpha level of 24749 (nl 223-710). Ultimately, peripheral flow cytometry and TCR gene rearrangement studies did not reveal any malignancy, and skin biopsy was significant for erythrodermic drug reaction with lymphomatoid features, consistent with a diagnosis of DRESS syndrome. He was treated with high dose IV steroids, which resulted in improvement of his rash and other symptoms, including his hepatic dysfunction. He was ultimately discharged on an oral steroid taper in stable condition.

IMPACT/DISCUSSION: DRESS is a rare drug reaction that consists of a constellation of symptoms, namely widespread rash, systemic symptoms, and hematologic abnormalities. Eosinophilia classically occurs in DRESS, but in atypical cases, such as ours, atypical lymphocytosis can occur instead. Systemic symptoms most commonly consist of fever, malaise, and lymphadenopathy, and typically multiple organs are involved. Many agents have been associated with DRESS, however Valproic Acid monotherapy has been a very rarely reported cause in the current literature. Furthermore, this case may represent the first case of Valproic Acid induced DRESS syndrome without eosinophilia. DRESS syndrome has a mortality of up to 5-10%, most often due to acute liver failure. Other causes include cardiac, pulmonary, and renal involvement. Hemophagocytic syndrome has also been a reported cause of mortality, which may also have been present in this patient given the very elevated ferritin and IL-2 receptor level.

CONCLUSION: In patients with a new rash 2-8 weeks after initiation of a new medication, DRESS syndrome should be considered as a possible etiology even in the absence of eosinophilia. Although rare, Valproic Acid can cause DRESS syndrome

AN UNUSUAL CASE OF CABG INDUCED MYASTHENIA GRAVIS

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LEARNING OBJECTIVE #1: Recognize new onset myasthenia gravis (MG) in patients who are post coronary artery bypass graft (CABG).

LEARNING OBJECTIVE #2: Assess, treat, and manage post CABG myasthenic patients alongside neurology colleagues.

CASE: A 79-year-old male with three vessel CABG performed three weeks prior presented to the hospital with a 2 day history of diplopia, dysarthria, and dysphagia. Physical exam was relevant for bilateral ptosis, bilateral abduction paresis with horizontal nystagmus, and significant dysarthria. MRI of the brain was negative for acute changes. Tensilon test, performed for suspicion of MG, was positive. IV pyridostigmine was initiated, and diagnosis was confirmed with positive acetylcholine receptor (AchR) binding, blocking, and modulating antibodies. High dose steroids were initiated, and CT of the chest ruled out presence of thymoma. With no clinical improvement, a continuous infusion of pyridostigmine and a 5 day course of IVIG were begun. Four days after completing treatment, the patient's diplopia and abduction palsy had improved, but his dysarthria and dysphagia persisted. Over the next week, he underwent 5 sessions of plasmapheresis, resulting in improvement in his dysphagia and dysarthria.

IMPACT/DISCUSSION: Post-CABG myasthenia gravis is an exceedingly rare occurrence. It was first described in a 2003 case series outlining three males with no known autoimmune disorders and no immediate postoperative complications, thereby ruling out previously unidentified MG, who were diagnosed with MG approximately 3-10 weeks after CABG. Though the exact pathophysiology is unclear, it is hypothesized that surgical manipulation of the anterior mediastinum, an area occupied by atrophic thymic tissue, causes release of acetylcholinesterase receptor (AchR) molecules which in turn trigger formation of AchR antibodies.

Treatment modalities are similar to those used in acute crises of idiopathic MG, including acetylcholinesterase (CHE) inhibitors, typically pyridostigmine, followed by glucocorticoids, and, if needed, IVIG and/or plasmapheresis. Long term therapy includes pyridostigmine with possible adjunctive azathioprine or mycophenolate.

In the original case series, one patient responded well to CHE inhibitor, another required adjunctive steroids, and the last required plasmapheresis. All three recovered from acute crisis but continued to have positive antibody titers and chronic disease requiring long-term immunosuppressive medications. Our patient's ultimate clinical course has yet to be determined; however, based on the aforementioned case series and the patient's history of limited response to multiple treatments, he is expected to have ongoing response to therapy followed by chronic MG.

CONCLUSION: New onset MG following CABG is a rare occurrence theoretically due to release of thymic acetylcholinesterase receptors after manipulation of the anterior mediastinum.

Early recognition of the disease and initiation of appropriate treatment is essential to prevent respiratory decompensation.

AN UNUSUAL CASE OF DIPLOPIA: HIDDEN IN THE PLAIN SIGHT

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LEARNING OBJECTIVE #1: 1. Recognize type 1- diabetes mellitus as an unusual cause of sixth nerve palsy in a young woman

LEARNING OBJECTIVE #2: 2. Evaluate and manage a case of sixth nerve palsy when seen in the clinic.

CASE: A 29-year-old woman was seen in the clinic for sudden onset of diplopia and blurry vision of 10-day duration. Symptoms increased in severity as her gaze turned to the left with both eyes open. There was no associated eye pain, headache, nausea, vomiting, or focal neurological symptoms. Past medical history was notable for type-1 diabetes mellitus (DM), peripheral neuropathy, retinopathy, hypertension, and nephropathy with an eGFR of 25ml/min/1.73^2. She reported quitting intravenous methamphetamine one year ago. On exam, vital signs were stable with BMI 21 kg/m^2. Left 6th cranial nerve palsy was noted. The remainder of the exam was unremarkable. We entertained the possibility of demyelinating or vascular causes. She was hospitalized for further workup. Lab data showed HbA1c 8.1%, LDL 131 mg/dL, HDL 25 mg/dl, and Triglycerides 285 mg/dl, normal thyroid panel. MRI of the brain without contrast showed no acute intracranial pathology. The ophthalmologic evaluation showed bilateral diabetic macular edema. Her symptoms were felt to be from the microvascular complications of type-1DM. On a 3 month follow-up, with strict glycemic control, she had a complete resolution of symptoms reaffirming the diagnosis.

IMPACT/DISCUSSION: Isolated 6th nerve palsy is rare, with an annual incidence of 11.3/100,000. In adults, it is due to microvascular complications noted in 8– 36% of cases. Risk factors include type 2 DM, male sex, age ≧ 50 years, dyslipidemia, and obesity. In this population, expectant management is recommended for 6 months. If symptoms persist MRI brain with gadolinium is performed. Our patient had several interesting features that make the case unique. First, isolated 6th nerve palsy is uncommon in type-1 compared to type 2 DM. Second, atypical demographics (female gender and young age) prompted us to consider demyelinating disorder higher in our differential than vascular causes. Therefore, we performed an MRI of the brain. In a prospective study of isolated 6th nerve palsy, an alternative diagnosis to microvascular palsy was discovered in 17 %- neoplasm, brainstem infarction, demyelinating disease, and pituitary apoplexy. Missing such diagnoses can cause catastrophic outcomes. Third, though the imaging of choice is MRI with gadolinium, the presence of the kidney disease precluded the use of contrast. A standard MRI brain may miss orbital apex lesions or thyroid eye disease. Lastly, we hypothesize that her prior amphetamine abuse could have contributed to vasculopathy.

CONCLUSION: We report an unusual case of isolated 6th nerve palsy in a young type-1 diabetic woman Internists should be aware of this entity giving a growing burden of DM

The decision-approach to perform an MRI for isolated 6th nerve palsy should be individualized. Caution should be taken to avoid missing the many mimics of abducens palsy.

AN UNUSUAL CASE OF HYPOXIA IN AN HIV+ PATIENT

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LEARNING OBJECTIVE #1: Diagnose methemoglobinemia

LEARNING OBJECTIVE #2: Treat methemoglobinemia

CASE: A 57-year-old white male with history of HIV presented to the ED with a week of worsening non- productive cough, wheezing, exertional dyspnea. He denied shortness of breath, fever, chills, hemoptysis, recent travel. One month prior, he had an undetectable viral load and a CD4$^+$ count of 210. He was compliant on anti-retroviral therapy (ART) with dapsone Pneumocystis jiroveci pneumonia prophylaxis. Upon arrival, he was afebrile, tachycardic, tachypneic, hypertensive at 170/81, with SpO_2 ranging from 88-90% on 4L nasal cannula. Physical exam with mild respiratory distress, anterior ronchi, subtle bibasilar inspiratory rales. Admission labs with elevated LDH 303, hemoglobin (Hgb) of 11.6, ABG pH 7.47, PCO_2 33, PO_2 79 with an increased A-a gradient, CBC notable for neutrophil predominant leukocytosis. Lactic acid, procalcitonin, and brain natriuretic peptide were within normal limits. Rapid flu was negative. Non-contrast CT chest without consolidation or effusions but with centrilobular nodules on the right lung. He was empirically started on ceftriaxone and azithromycin for community acquired pneumonia coverage and clindamycin, primaquine, and steroids for PJP treatment given elevated LDH, A-a gradient, and his HIV status. One day after admission, he was noted to have SpO_2 in the 80's on 4L nasal cannula with fingernail cyanosis. Labs demonstrated discordance between ABG pulse oximetry, acute on chronic anemia with a decrease in Hgb to 8.1, low haptoglobin (<30), uptrending LDH. Methemoglobin (MetHgb) level was ordered due to discordance between pulse oximetry and ABG with resultant value of 16%. Primaquine was discontinued. He had significant clinical improvement within two days with resolution of his methemoglobinemia. His initial hypoxia was likely due to atypical pneumonia with further exacerbation by methemoglobinemia presumed to be due to addition of primaquine while on chronic dapsone.

IMPACT/DISCUSSION: MetHgb is Hgb with iron in the oxidized state. MetHgb causes a leftward shift in the oxygen-hemoglobin dissociation curve resulting in a reduced ability of the red blood cell to release the oxygen and tissue hypoxia. Iatrogenic causes are most common and include drugs such as dapsone, primaquine, nitrates, and sulfonamides. Several hallmarks of the clinical presentation of methemoglobinemia include: peripheral cyanosis, a low SpO_2 measured by pulse oximetry but a normal PO_2 on arterial blood gas, poor response in the SpO2 to supplemental oxygen, mild hemolysis, and "chocolate-colored" blood that does not change upon exposure to oxygen.

CONCLUSION: Methemoglobinemia should be on the differential in the setting of hypoxia with signs of cyanosis and a drug exposure known to trigger MetHgb formation. Diagnosis is confirmed with co-oximetry

panel. Treatment consists of withdrawing the offending agent and, based on severity of MetHgb levels, administration of IV methylene blue or ascorbic acid.

AN UNUSUAL CAUSE OF ABDOMINAL PAIN: LUPUS ENTERITIS AS THE SOLE PRESENTING FEATURE OF SYSTEMIC LUPUS ERYTHEMATOSUS

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LEARNING OBJECTIVE #1: Recognize the nonspecific clinical features of lupus enteritis as a rare but serious manifestation of SLE

CASE: A 32 year old Asian female presented to clinic complaining of three days of abdominal pain and nausea. Her past medical history was notable for arthritis, H. pylori gastritis, chronic GERD, nephrolithiasis and migraine headaches. She was instructed to continue Nexium for presumptive dyspepsia management. She presented eight days later to the Emergency Room complaining of intractable epigastric abdominal pain. Vital signs were unremarkable. Exam was remarkable for significant lower abdominal tenderness without guarding or rigidity. CT abdomen/pelvis revealed mild right hydronephrosis and hydroureter with surrounding inflammatory changes. A pain regimen was initiated and patient was discharged with a presumptive diagnosis of passed ureteral stone. In the following three weeks she received multiple courses of amoxicillin for positive urine cultures thought to be contributing to abdominal pain without significant response. One month later she began experiencing daily, loose, non-bloody bowel movements. Outpatient EGD was notable only for gastritis. Symptomology persisted and a unifying diagnosis was not retained. Patient re-presented with similar pain three months later and was again admitted. Repeat CT imaging revealed a long segment of small bowel wall thickening not previously present. Infectious work up was unrevealing, however patient improved on a prolonged course of empiric ciprofloxacin/metronidazole. Patient was re-admitted two months later with recurrence of abdominal pain. CT imaging re-demonstrated proximal small bowel wall thickening. Push enteroscopy with biopsy was performed and unremarkable. Index of suspicion at that point prompted rheumatology work up. ANA was positive (>640, speckled). Serum C3 and C4 were low (48; 11 mg/dL), dsDNA and RNP were elevated (12 IU/mL; 1.8 AI). She was started on plaquenil and prednisone as an outpatient with improvement in her symptoms.

IMPACT/DISCUSSION: Lupus enteritis is a rare manifestation of SLE. Few reports describe enteritis as the sole presentation in relapse or active disease, and rarely has it been reported as the initial presentation. This case highlights the challenge in a young, complex female with chronic, intermittent non-specific complaints 20 months after initial symptom onset.

This case also highlights the importance of avoiding anchoring bias. The absence of pathognomonic imaging findings and unremarkable endoscopic biopsy findings led to multiple misdiagnoses and a delayed diagnosis. In this case, nonresolution of symptoms led to additional history and diagnostic evaluation that ultimately led to an accurate assessment.

CONCLUSION: Diagnosis of lupus enteritis requires a high index of suspicion given the low incidence and nonspecific clinical findings

The treatment of lupus enteritis relies on complete bowel rest and steroid treatment, usually with complete remission

AN UNUSUAL CAUSE OF BACTEREMIA AND VERTEBRAL OSTEOMYELITIS WITH CORYNEBACTERIUM DIPHTHERIAE

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LEARNING OBJECTIVE #1: Become familiar with the differential diagnosis of high grade bacteremia with Gram positive rods (GPRs) and prescribe appropriate empric therapy

LEARNING OBJECTIVE #2: Review *C. diphtheria* as an invasive organism

CASE: A 31 year old male presented to our ED with acute onset back pain. He was well until the night prior when he was awoken by low back pain that was 10/10 in intensity, non-radiating, and worse with movement. He denied recent trauma, lower extremity weakness, numbness, or tingling. He has a chronic non-pruritic rash on his arms and chest. He denied fevers, any new rash, night sweats, weight loss, cough, and sore throat.

His PMH includes a sickle cell variant. He takes no medicines. He is MSM, consumes marijuana, and works in shipping. He recently camped in Massachusetts and has a kitten that scratches but does not bite.

On initial evaluation he was afebrile, non-toxic appearing, and with significant back pain. WBC was 12.5 and 6.5% of the RBCs were nucleated, which prompted a blood smear showing nucleated RBCs, marked acanthocytes, and Pappenheimer bodies. CT abdomen showed an atrophic spleen. The patient was admitted for further workup. MRI of the lumbar spine without contrast was unremarkable. On day 2 of admission he developed a fever to 102.7. WBC at that time was up to 28.6 with 79.3% neutrophils. Blood cultures were drawn and the patient was started on clindamycin and levofloxacin. By 18 hours there was growth of GPRs in 4/4 bottles. The gram stain resembled Chinese letters which is a classic description for *Corynebacteria*. Clindamycin and levofloxacin were switched to vancomycin and zosyn, and there was no further fever. Repeat MRI with contrast the next day showed osteomyelitis in the T12 and L1 vertebral bodies. TTE was negative. The organisms were identified by MALDI-TOF as *C. diptheriae* with high certainty.

IMPACT/DISCUSSION: Bacteremia with GPRs can be *Nocardia, Actinomyces, Listeria*, *Clostridium*, *Corynebacterium*, *Bacillus,* and *Bifidobacterium* species. Gram stain morphology is helpful as *Nocardia* and *Actinomyces* form string-like structures while *Corynebacterium* attach to one another at acute angles in a "Chinese letter" appearance.

Empiric therapy should include penicillin and vancomycin because some GPRs are sensitive to only one of the two. *Clostridium* species can progress rapidly and penicillin is the drug of choice. Most *C. diptheriae* isolates are susceptible to penicillin, but some are resistant.

This case highlighted that *C. diphtheriae* can exist in a non-toxigenic form that does not require the same public health precautions as the classic toxigenic strain that causes life threatening respiratory diphtheria. There are only a few case reports of invasive infections such as endocarditis and osteomyelitis, mostly in immunocompromised patients but there are rare incidents in immunocompetent patients.

CONCLUSION: Clinicians should be vigilant about non-toxigenic but pathogenic *Corynebacterium diphtheriae* as a source of invasive infections and institute appropriate empiric therapy.

AN UNUSUAL CAUSE OF CHEST WALL MASS

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LEARNING OBJECTIVE #1: Recognize odontogenic infection as a cause of chest wall abscess

CASE: A 54-year-old male with hypertension and a history of throat cancer treated with chemotherapy and radiation in 2013, presented to the ER with 3 days of painful and rapidly expanding left-sided chest lump, for 2 weeks he had noticed dull sensation across the left chest. He had extensive dental caries with recurrent infection and abscess. He reported no history of trauma or injury. He also denied fever, cough, and dyspnea. Upon admission, vital signs were stable, a 5 cm rounded left infraclavicular lump was identified, the lump was tender and fluctuant without overlying erythema. Labs showed WBC 13.9, neutrophil 11.7. CT of his thorax showed 6.5 x 5.8 x 5.5 cm pleural-based mass-like area in the left upper chest communicating through the left anterior chest with the pectoralis major and minor muscles. There was also a large multiloculated soft tissue mid-neck abscess on the left, extending from thyroid cartilage through the superior submandibular mediastinum. IR needle drainage performed with removal of 80 cc of pus, a drain was placed. Cultures from both blood and fluid grew streptococcus viridans. The patient was started on ceftriaxone 2 g daily for 4 weeks.

IMPACT/DISCUSSION: Odontogenic infections are common in the oral and maxillofacial region which can lead to serious morbidity and mortality if left untreated or delayed diagnosis. It can lead to necrotizing fasciitis, Lemierre's syndrome or cerebral abscess. These Infections can spread by lymphatic, hematogenous dissemination or locally through the fascial planes down to the neck to the mediastinum, axilla or very rarely, as in our patient, to the chest wall. Only a handful number of cases has been reported to extend to the chest wall.

Management of severe odontogenic infections involves early protection of the airway, surgical drainage, early removal of source of infection and microbiological guided antibiotic. Our patient received chemo-radiation for throat cancer which has destroyed his teeth combined with poor dental hygiene causing root canal infection. It descended to involve the soft tissue of the neck and chest and left pectoral region. The growth of *Streptococcus viridans,* an oral pathogen, further supported tooth infection as the primary source. Repeat CT one month after presentation showed minimal residual inflammatory changes. The patient later underwent full mouth extractions.

CONCLUSION: We present an extremely rare case of a chest wall abscess resulting from odontologic *S. viridans* infection tracking across the fascial plane of the neck. It is not clear whether his previous exposure to neck radiotherapy may have predisposed to such dissemination. Early identification and elimination of the source allows for resolution and prevention of recurrence. Clinicians should be aware of such association.

AN UNUSUAL CAUSE OF GASTROINTESTINAL BLEEDING: ACUTE ESOPHAGEAL NECROSIS

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LEARNING OBJECTIVE #1: Identify acute esophageal necrosis as a rare, but potentially important cause of GI bleeding with high associated mortality.

LEARNING OBJECTIVE #2: Recognize the potential harm associated with the use of NG tubes in undifferentiated suspected upper gastrointestinal bleeding.

CASE: The patient is a 72-year-old male with a 60 pack year smoking history, GERD, BPH, PVD, and HTN. He presented with 5 days of dysphagia, odynophagia, severe epigastric abdominal pain, coffee-ground emesis, and melena. The emesis and melena were each occurring up to 6 times per day. Objectively, he was tachycardic and afebrile. His labs were significant for a hemoglobin decrease from a baseline of 12 to 10g/dL and a leukocytosis of 24k. A CT scan of the abdomen and pelvis showed a moderate sized hiatal hernia, gallstones, nonspecific dilation of the small bowel, and moderate distention of the colon suggestive of possible colitis. An NG tube was considered for management of this suspected upper GI bleed, but deferred. EGD revealed circumferential necrotic mucosa of the distal two thirds of the esophagus (images 1-2). He was made NPO and given IV fluids, a PPI, a H2 blocker, and continued on antibiotics. Further questioning revealed no previous GI bleeding. He had been taking daily naproxen for back pain over the last 6 months and denied any alcohol or drug use. A colonoscopy one-year prior was normal. A repeat CT scan showed colitis, dilated small bowel without obstruction, and circumferential distal esophageal thickening. A repeat EGD two weeks later showed healing esophageal mucosa with ulceration and mild duodenitis (images 3-4). His diet was advanced and he was discharged home.

IMPACT/DISCUSSION: Acute esophageal necrosis is a rare but important cause of gastrointestinal bleeding with less than 100 cases reported and an overall mortality near 30 percent in two studies (1-2). The average age at time of diagnosis is 67 with greater than 80 percent being male (1). The etiology is typically multifactorial and often triggered by hemodynamic compromise (2). Implicated risk factors include: ischemia, gastric outlet obstruction, alcohol, malnutrition, diabetes, infection, and recent surgery among others (1). Patients can experience recovery as soon as one week with 47 percent having full recovery by two months (2). These patients are at high risk of complications including esophageal rupture which occurs in nearly 7 percent and strictures which occur in over 40 percent of cases (2).

CONCLUSION: -Treatment of esophageal necrosis should be directed at the underlying illness, addition of IV fluids even if hemodynamically stable, bowel rest, antacids, and antibiotics if infection is present.

Esophageal necrosis should be considered in upper GI bleeds as management with the use of NG/OG tubes should be avoided due to the increased risk of perforation.

AN UNUSUAL CAUSE OF HYPOXIA: EBSTEIN ANOMALY WITH SECUNDUM ATRIAL SEPTAL DEFECT

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LEARNING OBJECTIVE #1: Recognize the clinical manifestations of Ebstein anomaly and manage based on defect severity

CASE: A 36-year-old female presented to the emergency room with 3 months of progressive chest pain, palpitations, and hypoxia with a 4 liter oxygen requirement. She denied heart failure symptoms. She has no significant medical, social or family history. Physical exam notable for oxygen saturation of 88% on 4 liters, 10 liters with exertion. Neck veins were flat. Cardiac auscultation revealed a fixed split S2 and a holosystolic murmur loudest over the left sternal border. Clubbing was seen in both hands with trace lower extremity edema. Labs significant for hemoglobin of 17 g/dL and BNP of 28 ng/L. ECG showed right atrial enlargement. Transthoracic echocardiogram (TTE) showed severely enlarged right atrium and right ventricle (RV) size with hyperdynamic systolic function,

15mm diameter ostium secundum atrial septal defect (ASD), severe tricuspid valve regurgitation (TR) with 19mm apical displacement, and a small patent ductus arteriosus (PDA). Right heart catheterization (RHC) revealed normal pulmonary artery and right and left sided filling pressures. Oximetry run confirmed left-to-right shunt. Electrophysiology study (EPS) revealed inducible tricuspid annular atrial tachycardia. Successful catheter ablation was performed. The patient's symptoms improved to baseline with diuresis. She was scheduled for outpatient surgical correction.

IMPACT/DISCUSSION: Ebstein anomaly is a rare congenital heart defect involving the tricuspid valve and right ventricle with a prevalence of 1 in 20,000 live births. Clinical presentation varies ranging from symptomatic neonates to asymptomatic adults depending on severity of anatomic defect. Genetic predisposition has been described and neonatal exposure to lithium is an established risk factor. The most common morphologic feature is apical displacement and dysplasia of the tricuspid valve resulting in "atrialization" of the RV producing a small functional RV and varying degrees of TR. Associated anomalies are patent foramen ovale or ASD, accessory conduction pathways, ventricular septal defect and PDA.

Symptoms result from RV volume overload, cyanosis due to right-to-left shunting, arrhythmia, and paradoxical embolus. Diagnosis involves TTE, cardiac CT or MR, RHC and EPS. Treatment is focused on right heart failure. Surgical repair is indicated with development of heart failure or symptomatic decline. In the case herein, the patient presented with new onset hypoxia. Workup confirmed long-standing disease requiring multidisciplinary management with catheter based and surgical intervention. In patients presenting with new onset hypoxia, it is important to keep a broad differential, including congenital heart disease presenting in adulthood.

CONCLUSION: Ebstein anomaly can have a wide range of clinical presentations.

Treatment involves both pharmacotherapy and appropriately timed surgical and transcatheter intervention.

AN UNUSUAL COMPLICATION OF BENIGN PROSTATIC HYPERPLASIA - PULMONARY EMBOLISM SECONDARY TO AN ENLARGED PROSTATE

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LEARNING OBJECTIVE #1:

Recognize potentially rare direct causes of DVT/PE.

CASE: We present a 72 year old man, former smoker, with significant past medical history of hypertension and hyperlipidemia, who presented to the emergency department due to bilateral lower extremity swelling for 1 month, initially starting in the right leg, then slowly progressing to the left leg, associated with some dull, continuous, achy pain of both extremities. On review of systems he also complained of gradually increasing abdominal girth, exertional shortness of breath, urinary frequency and feelings of incomplete voiding for the past month. Physical examination was significant for normal vital signs, distended abdomen with a large, firm, palpable mass at the suprapubic area, and + 2 bipedal pitting edema up to the groin with associated lower extremity erythema, right more than left. He had mildly elevated creatinine of 1.840 mg/dL, mild microcytic anemia of 10 mg/dL and PSA of 41.8 ng/ml. Duplex studies of the lower extremities showed thrombus in the left common femoral vein, deep femoral vein, superficial femoral vein, popliteal vein, and right common femoral vein. CT Abdomen without contrast was significant for a massively distended bladder measuring 27 x 17 x 17 cm with mild symmetrical hydronephrosis causing severe compression of the Inferior vena cava and common iliac veins bilaterally, and prostatomegaly. Due to complaints of shortness of breath, a V/Q scan was also done reporting a high probability of acute pulmonary embolism. A foley catheter was placed in the emergency department draining approximately 9 L of urine on the first day and he received Tamsulosin as well. He was started on heparin drip and eventually transitioned to Rivaroxaban. He was discharged with a foley catheter and was instructed to follow up with urology as an outpatient for further management of his BPH. Patient was not found to have any other risk factors for hypercoagulability. This case represents a rare and unusual complication of Benign Prostatic Hyperplasia and Hydronephrosis.

IMPACT/DISCUSSION: Our patient presented with combined DVT and Pulmonary Embolism secondary to massive bladder distention as a rare complication of BPH. A typical healthy adult human bladder can hold about 300-500mL fluids at a given time [2]. Despite this, there have been cases reported of extreme bladder capacities, with bladder volumes reaching up to 6000mL [3]. Bladder outlet obstruction from BPH causing bladder enlargement and subsequent compression of the venous system followed by formation of DVTs have been reported in the past, [4][5][6][7], with at least one other case reporting subsequent PE related to bladder distention [8]. In one report, increased venous pressure from BPH alone was enough to cause DVT [7]. Despite such evidence, BPH is still not recognized as a risk factor for DVT and PEs.

CONCLUSION: We believe it is important for clinicians to recognize the relationship of BPH and DVT/PE as these can have fatal consequences for our patients.

AN UNUSUAL PRESENTATION OF DISSEMINATED CRYPTOCOCCUS IN AN AIDS PATIENT

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LEARNING OBJECTIVE #1: Recognize the clinical features of thyroid cryptococcal infection

CASE: A 30 year-old female with AIDS presented with three weeks of headache, dry cough, odynophagia, emesis, fatigue and weight loss. She had a history of cryptococcal meningitis requiring lumbo-peritoneal drain four years prior but was lost to follow up, with non-adherence to maintenance and antiretroviral therapy. She appeared cachectic with oropharyngeal candidiasis and a tender, palpable left thyroid nodule. Laboratory evaluation revealed CD4 count < 20 cells/mm3 and HIV viral load of 33,600 copies/mL, serum cryptococcus antigen titer of 1:65500 and TSH of 4.0. Lumbar puncture revealed positive cryptococcus cerebrospinal fluid titer of 1:32768 with equivocal culture. CT of the chest showed miliary pattern micronodularity of the lungs with positive culture for cryptococcus made by bronchoscopy. To evaluate the odynophagia, a CT of the soft tissue neck and esophagram revealed a para-esophageal 0.9cm rim-enhancing fluid collection with adjacent walled-off lumen, an enlarged thyroid gland and a left thyroid nodule. An endoscopy ruled out an esophageal perforation but incidentally revealed a 12mm cratered ulcer in the gastric body with fundus biopsy revealing cryptococcus. A thyroid ultrasound revealed a heterogeneous nodule measuring 3.8 x 2.4 x 1.6cm with hyperemia and calcifications. Fine needle aspiration (FNA) biopsy revealed thyroid cryptococcus. We initiated induction therapy with amphotericin B and flucytosine. Amoxicillin- clavulonic acid treated the para-esophageal abscess with resolution confirmed by CT of the neck.

IMPACT/DISCUSSION: Disseminated C. neoformans infection commonly involves the CNS and lungs as an AIDS-defining condition with a CD4 count <200 cells/mm3. Gastric and notably, the thyroid gland are rarely described. Gastric cryptococcus has been found in postmortem autopsies and clinically as abdominal distension, melena, and odynophagia with diagnosis made by endoscopy. The few reported cases of thyroid cryptococcal infection

have presented in postmortem autopsies and patients with subacute thyroiditis, goiter, abscess and enlarged thyroid. We report an unusual case of disseminated cryptococcal infection in an AIDS patient with odynophagia and vomiting found to have a para-esophageal abscess, infectious thyroiditis with normal thyroid function tests and gastric cryptococcus. In this case, endoscopy confirmed the presence of cryptococcus in the gastric fundus and FNA biopsy uncovered cryptococcal organisms in the thyroid. The diagnosis of disseminated cryptococcus with gastric and thyroid involvement led to treatment with amphotericin B and flucytosine.

CONCLUSION: We conclude that gastric and thyroid involvement is an under-recognized phenomenon of disseminated cryptococcus and may be overlooked if infectious etiologies are not considered. Suspicion must be high in an AIDS patient with odynophagia and a thyroid nodule and warrants further investigation by endoscopy and fine needle aspiration biopsy.

AN UNUSUAL PRESENTATION OF HODGKIN LYMPHOMA

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LEARNING OBJECTIVE #1: Recognize febrile cholestatic jaundice as an uncommon presentation of Hodgkin lymphoma.

CASE: : A 47-year-old woman with no significant past history presented with fever, nightsweats, abdominal pain, nausea, vomiting, and dark urine for 4 days. She also reported one episode of non-bloody diarrhea. Review of systems was otherwise negative. On admission, vitals were: T 39.9 C, HR 142/min, RR 28/min, BP 126/58 mmHg. Physical exam showed hepatomegaly and tenderness in the RUQ, LUQ, and epigastric regions without palpable masses. Labs: WBC 2.5 $x10^3/\mu L$ with lymphopenia (100 cells/μL), hemoglobin 9.3 gm/dL, platelet count 130 $x10^3/\mu L$, Na 128 mmol/L, HCO3 18 mmol/L, albumin 3.1 gm/dL, total bilirubin 1.8 gm/dL, direct bilirubin 1.2 gm/dL, ALT 51 units/L, AST 138 units/L, alkaline phosphatase 578 Units/L, PT 14.8 sec, and LDH 578 units/L. Peripheral blood smear showed pancytopenia, normocytic anemia with teardrop cells and circulating nucleated red cells, and granulocytic left shift. Nasopharyngeal and stool PCR, viral hepatitis panel, and HIV test were negative. Abdominal ultrasound showed gallstones, gall bladder thickening, negative Murphy's sign, and no biliary ductal dilation. Abdominal CT additionally showed hepatosplenomegaly and enlarged (1.2 cm) para-aortic lymph nodes. HIDA scan showed slightly delayed biliary to bowel transit time but no scintigraphic evidence of acute cholecystitis. The patient underwent endoscopic ultrasound, in which no biliary dilation, masses, or gallbladder thickening were seen; however, the liver parenchyma was diffusely hyperechoic, and biopsies were taken. Pathology revealed necrotizing granulomatous hepatitis. Empiric antibiotics were discontinued, as all cultures were negative. However, the patient continued to spike high-grade fevers and remained pancytopenic. Bone marrow biopsy was performed and showed 70% cellular marrow involvement with nodular foci of intermediate to large cells with lobulated nucleoli and peri-nucleolar clearing, consistent with Reed-Sternberg cells. Immunohistochemical (IHC) studies were positive for CD30, PAX5, MUM1, CD15 and negative for CD20. IHC studies were subsequently performed on the liver biopsy specimens, which confirmed hepatic parenchymal involvement with classic Hodgkin lymphoma.

IMPACT/DISCUSSION: Febrile cholestatic jaundice is an uncommon initial presentation of HL, reported in only 1.4% of HL cases. Jaundice in HL can be due to intrahepatic cholestasis, extrahepatic biliary tract compression, paraneoplastic effect, or the rare vanishing bile-duct syndrome. Our patient had a non-dilated biliary tree and EUS suggesting intrahepatic cholestasis. Liver biopsy confirmed the diagnosis of hepatic HL.

CONCLUSION: Our case illustrates a rare presentation of Hodgkin lymphoma with febrile cholestasis and unexplained pancytopenia.

AN UNUSUAL SOURCE FOR A PYOGENIC LIVER ABSCESS

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LEARNING OBJECTIVE #1: Recognize asymptomatic sigmoid diverticulitis as a source for pyogenic liver abscess

CASE: A 56-year-old male with a medical history significant for diverticulitis presented with fever of unknown origin. Four weeks prior to presentation, he saw his PCP for symptoms of fatigue and malaise without localizing symptoms. He was prescribed a course of oral steroids for "pulmonary wheezing" but subsequently developed daily fevers to 104 F with chills and night sweats. He was prescribed azithromycin and then levofloxacin for presumed CAP but continued to be febrile every 6-8 hours. Studies were notable for persistent leukocytosis but his infectious evaluation was unrevealing, including urinalysis, blood cultures, throat culture, Lyme disease EIA, and CXR. CT imaging revealed a multilocular rim-enhancing fluid collection replacing hepatic segments 7 and 8 most compatible with pyogenic abscess and diverticulosis of the sigmoid colon without inflammation. No other intraabdominal infectious sources were identified. He underwent US guided drainage, and cultures grew *Prevotella oris* and *Streptococcus intermedius.* Blood cultures and TTE were unremarkable. Repeat imaging during his hospitalization revealed acute diverticulitis with a 5.2 x 4.8 cm pericolonic abscess near the rectosigmoid junction and decreasing size of the hepatic abscess. He underwent CT guided drainage of the pericolonic abscess, but cultures were negative likely due to prolonged antibiotic exposure. He completed an eight-week course of IV ceftriaxone and oral metronidazole. Interval CT imaging revealed residual hepatic microabscesses and resolution of the pericolonic abscess.

IMPACT/DISCUSSION: Pyogenic liver abscess (PLA) is the most common type of intraabdominal abscess. The pathogenesis of PLA is due to one of three mechanisms. The most common source of PLA is direct spread from an infectious biliary source; underlying biliary tract disease is present in 40-60% of cases. PLA may also develop following hematogenous seeding from systemic bacteremia, such as in endocarditis. Many PLAs, such as this one, result from portal vein pyemia – infectious spread through the portal venous system from any tributary of the portal venous system. Sigmoid diverticulitis is an uncommon cause of PLA, with less than 100 cases reported in the literature. A nationwide cohort study in Taiwan[1] found that the incidence of PLA was 2.44-fold higher in patients with diverticular diseases with an adjusted hazard ratio of 2.11 (95% CI, 1.81-2.44). Patients should be evaluated for asymptomatic diverticulitis when the evaluation for other infectious sources is unrevealing, or if there is no interval resolution after appropriate antimicrobial treatment.

[1]M. Tsai *et al., Medicine* 94 (2015), doi:10.1097/MD.0000000000002210

CONCLUSION: Asymptomatic sigmoid diverticulitis is a rare source for pyogenic liver abscess and thus important to consider in patients without localizing symptoms and an otherwise unremarkable infectious evaluation.

AORTOENTERIC FISTULA: A PERIAORTIC MASS-QUERADE

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LEARNING OBJECTIVE #1: Diagnose Secondary Aortoenteric Fistula (AEF) with atypical features on CT imaging.

LEARNING OBJECTIVE #2: Manage AEFs using a multi-modal diagnostic and multi-disciplinary approach.

CASE: A 59-year-old woman presented with two days of hematochezia, fevers and chills. She reported a month of worsening back pain, weight loss, and poor appetite. She has a PMHx of HTN, COPD, CAD, and aortoiliac vascular disease with aortobifemoral bypass graft surgery, complicated by pseudoaneurysms. On presentation, she was hemodynamically stable with lower abdominal tenderness, WBC of 18, Hgb of 14, CRP of 23, and heme positive stool test. CT abdomen revealed a new periaortic mass. The patient reported spontaneous resolution of her symptoms within 48 hours, was discharged, and scheduled for outpatient endoscopy. Within 3 days, she returned with fevers, chills, and hematochezia. Repeat abdominal CT showed no change. EGD revealed an ulcerated area in the third part of the duodenum, with white exudate and visible aortic graft confirming secondary AEF. Urgent graft excision, duodenal resection and repair was performed. Graft cultures were positive for anaerobes and Streptococcus anginosus. She was discharged on six weeks of ceftriaxone and metronidazole without complication.

IMPACT/DISCUSSION: Secondary AEFs are a rare condition resulting from inflammation of an aortic graft near a section of bowel, and are fatal if untreated. This case is an informative teaching example of several classic signs of AEF, while also highlighting how atypical imaging findings can create diagnostic ambiguity. While CT and EGD have now emerged as first line diagnostic tests, sensitivities vary. Specifically, the stable "mass" in this case lacked common CT features associated with secondary AEF, including contrast extravasation, ectopic gas, focal bowel wall thickening, or mass progression. Thus, clinicians must remember to rule out AEF in any patient with prior aortic surgery and suggestive symptoms, which include GI bleeding, abdominal pulsatile mass, sepsis, and abdominal pain. In regard to management, this case emphasizes that early surgical and gastroenterological (GI) consultation with intervention is imperative, as mortality increases in patients that require more emergent surgery. Polymicrobial infection and sepsis is not uncommon. If present, antibiotics to cover gram positive, gram negative and anaerobes should be started, and generally continued for 4-6 weeks. Ultimately antibiotics were tailored based on culture data in this case. The pathogens grown in culture were consistent with organisms identified in prior studies and case reports.

CONCLUSION: Secondary AEFs are rare, life threatening, and require prompt diagnosis. CT and EGD are first line, though negative results do not rule out AEF. Suspicion for secondary AEFs must remain high in any patient with a history of aortic surgery and GI bleeding. Early consultation with surgery and GI is critical for diagnosis, intervention, and patient survival.

A PAINFUL JAW: UNUSUAL DISEASE AT AN UNUSUAL SITE

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LEARNING OBJECTIVE #1: To explore the differentials for jaw pain

LEARNING OBJECTIVE #2: To review treatment for Paget's

CASE: An 84 years old female with hypertension and depression presented to primary care for left ear and jaw pain of a few weeks. She was seen by ENT prior; suspected for temporomandibular joint (TMJ) dysfunction and treated with naproxen and muscle relaxants. She reported worse pain, impaired mastication, without headache or vision changes. Exam showed left TMJ tenderness and lack of dentition. Recent labs were normal for calcium, alkaline phosphatase, and vitamin D. X-ray showed lytic lesions of Paget's disease in the mandibula. The skeletal bone survey showed thickening of the skull from the sclerotic phase of osteitis deformans. DEXA scan showed mild osteopenia. She started treatment - alendronate with vitamin D and calcium. After initial improvement, she developed severe dyspepsia and switched to Zoledronic acid, which she tolerated and improved her pain.

IMPACT/DISCUSSION: The most common causes of acute jaw pain are dental related (caries, abscess, wisdom teeth) followed by TMJ or masticatory muscle disorders. The differential for chronic jaw pain should include neuropathy (trigeminal, hypoglossus, post-herpetic, burning mouth syndrome, cluster headache), giant cell arteritis, post-stroke, osteonecrosis, osteosarcomas, metastasis, chronic osteomyelitis, and fibrous dysplasia.

Paget's disease, or osteitis deformans, is the most common metabolic bone disorder after osteoporosis. The prevalence in the United States is 1-2%, higher in the northeast. It is caused by accelerated bone remodeling, resulting in bone overgrowth at single or multiple sites, most commonly in the lumbar spine, proximal femur, skull, or pelvis. Progression can cause fractures, nerve entrapment, deafness, malignant conversion to osteosarcoma.

Most patients are asymptomatic and diagnosed incidentally on imaging. Monostotic Paget's disease of the jaw is rare. Disease activity can be measured by bone turnover markers: total alkaline phosphatase, serum procollagen type 1 N terminal propeptide (PINP) and bone-specific alkaline phosphatase. However, these can be normal when skeletal involvement is limited.

Treatment goals for Paget's are to ease pain and normalize the rate of bone remodeling. Oral nitrogen-based bisphosphonates are first-line; they suppress biomarkers and heal lesions on X rays and should be started with Vitamin D and Calcium to prevent hypocalcemia and impaired bone mineralization. Zoledronic acid is suggested for those with more extensive disease or older as even a single infusion has improved quality of life scores. If intolerant to both, calcitonin can be an alternative and Denosumab has been anecdotally reported.

CONCLUSION: Consider a broad differential for patients presenting with jaw pain. Patients with Paget's should be treated with bisphosphonates and monitored for clinical and biomarker improvements.

A PAIN IN MY SIDE: FIBROMUSCULAR DYSPLASIA PRESENTING AS FLANK PAIN WITH RENAL INFARCTION

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LEARNING OBJECTIVE #1: Distinguish renal infarct as a presenting feature of fibromuscular dysplasia.

LEARNING OBJECTIVE #2: Recognize the workup and treatment for fibromuscular dysplasia.

CASE: A 44 year old female with a past medical history of Graves' disease presented to the emergency department with a chief complaint of six days of epigastric pain radiating to her right flank. She was treated with famotidine and sucralfate without relief. She was mildly hypertensive but hemodynamically stable. Physical exam was positive for mild tenderness to epigastric palpation and negative for costovertebral angle tenderness. Renal function was within normal limits.

CT angiography of the abdomen unexpectedly showed multiple wedge-shaped areas of right renal infarct and small splenic artery aneurysms. No atrial fibrillation was noted on telemetry during admission and transesophageal echocardiography showed no intracardiac thrombus. Hypercoagulability workup was unrevealing. MRA of the head and neck ultimately showed diffuse beading of the bilateral vertebral arteries with mild stenosis and subtle beading of the right and left cervical internal carotid arteries consistent with fibromuscular dysplasia (FMD).

The patient was treated on a heparin drip and transitioned to rivaroxaban. Renal function remained stable. One year imaging follow up was recommended with continued anticoagulation as an outpatient.

IMPACT/DISCUSSION: Fibromuscular dysplasia (FMD) is a non-inflammatory process largely affecting medium-sized arteries. The classic presentation typically involves renal artery stenosis leading to hypertension; however, renal infarct without renal arterial stenosis is an unusual presentation. It is unclear if this patient's infarct was a local thrombotic event from small, non-visualized aneurysm or dissection versus an embolic event. Once FMD is suspected, workup includes imaging of head, neck, chest and abdominal vessels with CTA or MRA to examine for arterial anomalies in other vascular beds. Medical therapy typically focuses on antiplatelet versus anticoagulation therapy for secondary prevention of thromboembolic events, especially in patients with cerebrovascular FMD. However, more severe, symptomatic stenotic lesions may require percutaneous angioplasty or stent and large aneurysms may require endovascular or surgical repair. This unusual presentation of multifocal FMD presenting as flank pain with renal infarction highlights the need for a high index of suspicion to avoid delay in appropriate care.

CONCLUSION: Fibromuscular dysplasia can present in unusual ways, such as renal infarction. Workup involves cross sectional arterial imaging to examine vascular bed anomalies. Medical treatment includes antiplatelet versus anticoagulation therapy followed by annual reimaging.

A PAIN IN THE NECK: BACTEREMIA AND NATIVE CERVICAL OSTEOMYELITIS DUE TO CORYNEBACTERIUM STRIATUM

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LEARNING OBJECTIVE #1: Recognize that indolent gram positive bacteremia with Corynebacterium may be confused with contamination.

CASE: Positive blood cultures are often encountered in the hospital setting. The clinical significance depends on the syndrome, host and organism identified. The implications of positive cultures range from life- threatening to a simple contaminant. It is critical to maintain a degree of suspicion, particularly in certain clinical settings. Here we present a case of bacteremia and invasive disease with *Corynebacterium striatum*, initially considered a contaminant.

An 80-year-old man with a past medical history of type 2 diabetes mellitus presented to the Emergency Department with two days of left subscapular pain. He reported engaging in extensive gardening the day prior to presentation and feeling like he "pulled a muscle."

He was initially treated with analegsics for muscle sprain, but did not improve as expected. After administration of one dose of cefepime, blood cultures performed in the emergency department returned positive in two of two bottles from one set for gram-positive bacilli at 57 hours and was reported as a possible contaminant. Despite this, empiric broad-spectrum antibiotics were started and repeat blood cultures obtained. The gram-positive bacilli from the initial blood cultures was identified as *Corynebacterium striatum*. His CRP returned elevated at 135.2 mg/L (reference range < 8.0 mg/L). Repeat blood cultures remained positive for *Corynebacterium striatum* and the patient developed pain in his cervical spine near the C6-C7 level. MRI demonstrated mild enhancement within the C6-C7 vertebral bodies with adjacent edema, consistent with developing osteomyelitis-discitis. Aspiration was recommended, but could not initially be obtained given the patient had been taking Apixaban.

The patient remained persistently bacteremic with *Corynebacterium striatum* for seven days. Positron emission tomography was obtained to rule-out alternative causes of infection and demonstrated increased FDG activity in the C6-C7 interspace, further raising suspicion for osteomyelitis. He was treated with vancomycin for a planned 6 week duration. His pain and inflammatory markers were improving at his most recent follow-up.

IMPACT/DISCUSSION: While positive blood cultures due to contamination can occur, it can also represent true bacteremia causing invasive disease. In this case, a patient developed bacteremia with *Corynebacterium striatum*, an organism which is a known skin colonizer and common contaminant. *Corynebacterium striatum* is increasingly being recognized as an emerging, multidrug-resistant pathogen and has been reported to cause vertebral osteomyelitis/discitis. Due to persistent growth of this organism in the absence of growth of others, *Corynebacterium striatum* was felt to be pathogenic in this case. More broadly, this case highlights the importance of maintaining suspicion in the face of low-grade bacteremia with a gram positive bacillus.

CONCLUSION: See discussion above.

A PANCREATIC NEUROENDOCRINE TUMOR PRESENTING WITH SECONDARY HYPERTENSION

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LEARNING OBJECTIVE #1: Recognizing clues to secondary hypertension while evaluating patients with resistant hypertension.

CASE: A 54-year-old Caucasian male with a history of poorly controlled hypertension, presented to the emergency room with abdominal distension and epigastric pain radiating to the back and leg swelling of eight weeks duration. A review of systems was positive for intermittent bouts of watery diarrhea, easy bruising and a significant 40 lbs. weight gain over the past six months. Physical examination was significant for elevated blood pressure, facial and supraclavicular fullness with central adiposity. The hospital course was complicated by resistant hypertension and hypokalemia. A thorough hormonal workup was done for evaluation of resistant hypertension, with increased suspicion for hypercortisolism given the examination findings. The patient had elevated ACTH, cortisol, and chromogranin A (CgA), confirming ACTH dependent hypercortisolism. To evaluate abdominal pain, a CT scan of the abdomen and pelvis was performed which showed a 4.6x3.8 cm hyper-enhancing mass arising from the head of the pancreas, with features suggestive of neuroendocrine tumor (NET). At this point, ectopic ACTH production from the pancreatic tumor was suspected. An endoscopic ultrasound-guided aspiration of the pancreatic mass confirmed a well-differentiated NET. One month later, he underwent a Whipple's procedure and multiple liver masses were discovered on intraoperative ultrasound, confirmed to be NET on the frozen section, without any lymph node metastasis. Post-operative follow-up showed a decrease in CgA and ACTH levels and a decrease in the need for antihypertensive medications. Subsequently, the patient was started on a somatostatin analog, Lanreotide with normalization of ACTH levels and no evidence of recurrence at eight months follow-up.

IMPACT/DISCUSSION: Endocrine etiology of secondary hypertension should be considered in patients with resistant hypertension associated with unexplained hypokalemia or features of Cushing's syndrome (CS). Ectopic ACTH secretion from a pancreatic NET (PNET) is very rare with few cases reported in the literature. Most are diagnosed at an advanced stage and guidelines regarding management are lacking. Complete resection is the only curative treatment, but it's often complicated by the presence of liver metastasis. In advanced cases, resection of the primary tumor is done for symptom control as demonstrated in our case with a significant drop in ACTH level immediately after resection. Medical treatment with Lanreotide has shown to have an important role in

achieving and maintaining symptom control and increasing progression-free survival in patients with PNET.

CONCLUSION: Treatment of the cause of secondary hypertension can result in normalization of blood pressure. This report highlights the importance of appropriate evaluation of secondary hypertension and presents a rare case of ectopic ACTH secretion by a metastatic PNET with good disease control post- resection.

A PATIENT WITH A SILVER COLORED STOOL

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LEARNING OBJECTIVE #1: Recognize silver stool sign and looking for underlying pathology.

CASE: A 69-year-old female patient with a medical history significant for hypertension, diabetes and paroxysmal atrial fibrillation presented to our hospital with silver colored stool.

Upon arrival to the hospital, her vitals showed blood pressure 95/69 and heart rate of 105 beats per minute. Her labs were remarkable for hemoglobin 7.5 g/dl (normal 11-14.5 g/dl). Liver panel showed cholestatic pattern with elevated aspartate transaminase, alanine transaminase, alkaline phosphatase and conjugated hyperbilirubinemia. Her rectal exam showed silver colored stool that was positive for occult blood.

She was given volume resuscitation with improvement in her hemodynamics. Chest X ray, urinalysis and blood cultures were not suspicious of any infection. A computerized tomography of abdomen/pelvis with contrast showed evidence of cecal neoplasm with multiple metastases scattered throughout the liver, largest measuring 5.4 cm.

The patient underwent ultrasound guided core biopsy of the liver which confirmed the presence of metastatic colorectal adenocarcinoma. Given multiple liver metastasis, she was not a candidate for transhepatic biliary drain placement. Her source of bleeding was expected to be from the cecal neoplasm. After a discussion of treatment options with the patient and her family, the decision was made not to pursue surgery. Goals of care were transitioned to focus on the patient's comfort.

IMPACT/DISCUSSION: Dr. A. M. Thomas, a British pathologist, has pointed out in 1955 that in cancer involving the ampulla of vater the patient sometimes passes silver stools. She explained the silver colored stool as a combination of the white stool of obstructive jaundice and the black stool of melena. This silver stool sign was named as Thomas's sign.

Here we are reporting a case of a patient with Thomas's sign which is the third reported case in the literature up to our knowledge.

It is highly important to keep in mind that any cause of biliary obstruction will result in pale colored stool. Such a stool may contain a blood from many sources. If that stool was black tarry stool, then a silver colored stool will be noticed.

CONCLUSION: Silver stool sign might reflect a serious underlying pathology such as cancer. Such sign needs further investigations and workup to look for underlying pathology.

A PECULIAR CASE OF DRY BERIBERI IN THE CONTINENTAL UNITED STATES

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LEARNING OBJECTIVE #1: Recognizing the risk factors and clinical situations that put patients at increased risk for developing thiamine deficiency.

CASE: Beriberi is an ancient disease spanning as far back as 300 A.D. The name itself is a Sinhalese phrase meaning "weak, weak", an adept description of the devastating natural history of this disease. In the 21st century, Beriberi is rarely encountered in developed countries. However, in certain patient populations and clinical presentations the diagnosis should be considered and treatment initiated immediately as misdiagnosis can have grave consequences.

Our case describes a 32-year-old male with a past medical history of alcohol abuse who presented with a 10 day history of leg weakness and falls. History revealed recurrent falls and a sensation of bilateral lower extremity weakness that was progressively worsening. He denied any acute focal weakness, facial droop, or dysarthria. The falls were described as mechanical in nature. Other review of systems was negative. Social history was significant for 5-6 alcoholic beverages daily. Physical exam revealed diffuse weakness of the bilateral lower extremities, along with mild deficits in light touch and proprioception primarily in the distal aspects of the lower extremities. His exam was otherwise unremarkable including a normal cardiovascular and pulmonary exam. He had an MRI of his spine which showed chronic degenerative changes and mild cord compression. Neurosurgery was consulted and determined his exam findings were inconsistent with imaging findings and other etiologies should be considered. Further labs were ordered and a B12 was normal. As the patient's clinical condition was not improving, a blood thiamine level was ordered. However given his progressively worsening ataxia, heavy alcohol use, and poor nutritional intake, high-dose thiamine was started empirically. Blood thiamine levels eventually came back markedly decreased and the diagnosis of dry Beriberi was confirmed. The patient was continued on high dose IV thiamine. His clinical condition showed slow but steady improvement and he was eventually discharged to an acute rehabilitation facility.

IMPACT/DISCUSSION: The diagnosis of dry beriberi is rare in the United States, as many foods are fortified with thiamine. In developed countries, patients with anorexia, severe alcoholism, or a history of bariatric surgery are at highest risk for developing thiamine deficiency. Thiamine is absorbed into the small intestines, and phosphorylated into its active compound thiamine pyrophosphate. Its deficiency can cause decreased ATP production due to its integral role in dehydrogenase catalyzed reactions involved in energy production. Neuronal cells are initially uniquely susceptible to this, but deficiencies that go undiagnosed can cause degeneration into multi-organ involvement and failure.

CONCLUSION: In patients with specific risk factors and a constellation of signs and symptoms, Beriberi should be strongly considered and treatment initiated immediately.

A POSSIBLE CASE OF T-CELL LARGE GRANULAR LYMPHOCYTE LEUKEMIA WITH LYMPHOPENIA

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LEARNING OBJECTIVE #1: Recognize a broad differential diagnosis and workup of diffuse lymphadenopathy, T-cell lymphopenia, neutropenia and recurrent infections

CASE: A 40-year-old woman with a history of chronic pancreatitis, Crohn's, T-cell lymphopenia, diffuse lymphadenopathy, and recurrent infections presented with a 4-day history of fever, chills, sore throat, abdominal pain and diarrhea. Prior workup included hypermetabolic

lymph nodes seen on a PET scan and reactive changes noted on a left cervical lymph node core needle biopsy. There was no evidence by either flow cytometry or immunohistochemistry of a hematologic malignancy. Immunologic workup was also negative.

Laboratory findings were notable for neutropenia, thrombocytopenia, normal quantitative immunoglobulins, normal triglycerides, normal fibrinogen, normal ferritin, mildly elevated LDH, elevated ESR/CRP, low CD3, and low CD4. Infectious workup, including CMV, EBV, HIV, Legionella, Mycoplasma, GI stool pathogen, ova & parasytes, blood/stool/sputum/urine cultures, was negative. CT of the chest, abdomen and pelvis showed no evidence of Crohn's flare, but revealed diffuse lymphadenopathy in the axillary, supraclavicular, and lower neck regions. A bone marrow aspirate and biopsy was performed which showed a depressed CD4:CD8 ratio and a mild relative increase in CD57(+) gamma-delta T lymphocytes, raising a concern for T-cell large granular lymphocyte leukemia (T-LGL).

IMPACT/DISCUSSION: The differential of diffuse lymphadenopathy, T-cell lymphopenia, neutropenia and recurrent infections is broad. Though suspicion for T-LGL was initially raised based on neutropenia and recurrent infections, other etiologies were favored given the absence of peripheral blood lymphocytosis which is a common characteristic of T-LGL. IgG4-related disease was ruled out by the absence of an increase in IgG4+ cells in the lymph node biopsy. There was no evidence by either flow cytometry or immunohistochemistry of a T or B cell lymphoma. Histiocytic disorders including Rosai-Dorfman, Kikuchi, and hemophagocytic lymphohistiocytosis (HLH) were also considered. However, the lymph node biopsy neither showed extensive necrosis typically found in Kikuchi, nor granuloma and abnormal histiocytic proliferation typically noted in Rosai-Dorfman. HLH was unlikely given no splenomegaly, normal triglycerides, normal fibrinogen, normal ferritin and no hemophagocytosis on the bone marrow biopsy. Normal level of immunoglobulins was not consistent with common variable immunodeficiency. While PCR studies for T-cell clonality are still in process, a diagnosis of T-LGL should not be excluded because of lymphopenia.

CONCLUSION: We report an interesting case of a middle-aged woman with diffuse lymphadenopathy, T-cell lymphopenia, neutropenia and recurrent infections with the bone marrow biopsy findings concerning for T-LGL. This case emphasizes the importance of maintaining a broad differential diagnosis and a high clinical suspicion for T-LGL even in the absence of peripheral blood lymphocytosis.

A POTENTIALLY FATAL DISEASE IN A REFUGEE PATIENT WITH HIV

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LEARNING OBJECTIVE #1: Recognize the presentation of systemic histoplasmosis in an immunocompromised patient.

LEARNING OBJECTIVE #2: Identify social determinants that impact prevention of opportunistic infection (OI) in patients with human immunodeficiency virus (HIV).

CASE: A 42-year-old Honduran refugee with HIV presented to the emergency room with headache and fever (38.1 C). The patient had been off anti-retroviral therapy for 4 months after fleeing from domestic violence. Physical examination and other vitals were unremarkable. Labs were notable for pancytopenia (WBC 2.3 k/ul, HGB 9.9 g/dL, PLT 70 k/ul), CD4 count of 18 cells/μL, AST of 219 U/L, ALT of 109 U/L, and ferritin 1542 ng/mL. Computed tomography (CT) of the brain and cerebrospinal fluid analysis were unrevealing. Chest CT demonstrated subtle, diffuse, upper lobe predominant interstitial opacities while abdominal CT demonstrated hepatosplenomegaly and para-aortic lymph node enlargement. Sputum was negative for acid- fast bacilli. She was initiated on vancomycin, cefepime, acyclovir, and metronidazole. On day two of hospitalization, she developed signs of hypotension and fevers to 40 C. Empiric amphotericin B was initiated, after which, her hemodynamics stabilized. Histoplasma urine antigen was positive on day 7. She completed 14 days of intravenous amphotericin B, transitioned to oral itraconazole. She was discharged to stay with family in-state; however, she has not followed up in clinic nor has she responded to outreach.

IMPACT/DISCUSSION: Histoplasmosis is a fungal infection that presents asymptomatically in immunocompetent hosts. When infecting a patient with advanced HIV, histoplasmosis can cause life- threatening disseminated disease with 100% mortality if left untreated. Little is known about the epidemiology of Histoplasmosis, in immigrants or refugees in the United States (US) as it may be under- diagnosed and confused with other illnesses such as tuberculosis.

Beyond the diagnostic challenges around histoplasmosis in the immunocompromised are the dilemmas that arise with HIV care in refugee patients. In this case, the patient's priority was safety amidst an acute crisis. Discrimination, religion, family responsibility, social isolation, mental health, and financial insecurity are among reasons cited for not receiving HIV care in Latino immigrants[1]. Social determinants including limited access to care and prior trauma compound the burden of disease in patients with chronic conditions such as HIV.

1. Levison, et al. "Where It Falls Apart": Barriers to Retention in HIV Care in Latino Immigrants and Migrants. AIDS Patient Care STDS. 2017;31(9):394–405.

CONCLUSION: Disseminated histoplasmosis must be considered in a patient with CD4 <100 cells/μL, fevers, and weight loss when pancytopenia, acute hepatocellular injury, and significantly elevated ferritin are present.

Social risk assessments of non-US citizens with a new diagnosis of HIV is paramount and can facilitate safe transitions of care in order to help prevent the development of other life-threatening illnesses.

A PRECOCIOUS DIAGNOSIS

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LEARNING OBJECTIVE #1: Understand the most recent colon cancer screening guidelines for average- risk patients

LEARNING OBJECTIVE #2: Consider causes for the rise in incidence of colon cancer in young adults and its impact

CASE: A 34 year-old woman presented with ongoing epigastric fullness and discomfort. Her symptoms were associated with a several week history of decreased appetite and mild weight loss. She also reported smaller, more infrequent bowel movements over the same time period. She had no known chronic medical conditions and an insignificant social history. Her physical exam was notable for a palpable liver slightly below the costal margin. She had slightly abnormal liver function tests and suspicious appearing liver masses on ultrasound. The abdominal CT showed a large colonic mass with widespread lesions concerning for metastasis. She underwent a colonoscopy with biopsy of the near-obstructing left-sided mass. Serum CEA was greatly elevated at >10,000 ng/mL. Pathology confirmed the diagnosis of colon adenocarcinoma. Further testing on tissue samples was negative for BRAF mutations which is associated with poorer prognosis in colorectal cancers. Immunohistochemical stains also indicated intact DNA mismatch repair within the tumor cells. She had no significant personal or family history to suggest a hereditary syndrome or increased risk for colon cancer.

IMPACT/DISCUSSION: Colorectal cancer (CRC) remains amongst one of the most common and lethal cancers despite an overall decline in incidence and mortality presumably due to improved colon cancer screening and awareness. Unfortunately, over the past decade, there has been a

significant rise in CRC in young adults. In recent years, a review of existing data and the Microsimulation Screening Analysis-Colon (MISCAN-Colon) model were used to determine whether earlier screening for average-risk patients would be more of a burden or a benefit over their lifetime. The data suggested that the due to an increase of CRC incidence in younger adults, it may be more of a benefit to initiate cancer screening earlier than the age of 50. This led to the American Cancer Society updating its recommendation to start colon cancer screening at the age of 45 for average-risk groups, though the US Preventative Task Force has not. Research suggests that low physical activity, obesity and poor dietary choices may be driving the increased incidence, though the data is still lacking. Regardless of environmental factors, certain hereditary syndromes put younger patients at a higher risk for CRC, the most common being Lynch Syndrome (hereditary non-polyposis colon cancer) and familial adenomatous polyposis.

CONCLUSION: Over the past decade, there has been an increasing incidence of colon cancer in young adults, often at a late stage. Current colon cancer screening guidelines for average-risk patients vary amongst expert groups, so it is essential that the general internist understand the data in order to help patients make informed decisions.

A PRESSURED SYSTEM: HOW LACK OF ACCESS TO ANTI-HYPERTENSIVES CAUSED A PERINEPHRIC HEMATOMA

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LEARNING OBJECTIVE #1: Identify perinephric hematoma as a rare complication of uncontrolled hypertension

LEARNING OBJECTIVE #2: Cite social determinants of health as a cause of morbidity and mortality in underserved populations

CASE: A 53-year-old woman with a past medical history of hypertension and type 2 diabetes presented with a two-day history of sharp, severe, LLQ abdominal pain radiating to the back. On arrival to the ED, she was hypertensive to 200/106, appeared diaphoretic, and exhibited abdominal guarding. Her UA showed large blood. A CT abdomen and pelvis revealed a large perinephric hematoma, measuring 15 cm and compressing the left kidney. She denied any trauma, recent anticoagulation use, or history of renal cancers. She denied any other changes to her health, but noted she had run out of all of her medications, including her anti- hypertensives, for the past two weeks because she could not afford them. Given the uncertainty of catastrophic rupture, the patient remained hospitalized for four days for monitoring of her hemodynamics and titration of blood pressure medications. Repeat scans looking for anatomic abnormalities or malignancy were negative. The hematoma was deemed to be spontaneous and attributed to uncontrolled hypertension. Upon discharge, she was given a voucher for medication payment, and connected to a free clinic for continued care.

IMPACT/DISCUSSION: Spontaneous perinephric hematomas typically occur in the setting of underlying anatomic abnormalities or renal cell carcinoma. However, they have been described as a rare consequence of uncontrolled hypertension. This case represents the downstream and often severe effects of inability to afford medical care. The patient had multiple social barriers to appropriate care including lack of insurance, inability to afford medications, residing in an underserved area, and overall low socioeconomic status. Once a diagnosis was made, her team shifted the focus of her care to fully address her social determinants of health and facilitate a safe discharge. Ensuring access to healthcare should be a priority for safe hospital discharges in underserved communities, as doing so can prevent harmful and rare consequences of common medical conditions.

CONCLUSION: Uncontrolled hypertension is a widespread problem in underserved communities, contributing to significant morbidity and mortality. Prioritizing social determinants of health ensures that care teams provide more effective treatment, while preventing devastating complications of easily controllable medical conditions.

A PROLONGED DIAGNOSIS

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LEARNING OBJECTIVE #1: Recognize a focused differential diagnosis for isolated PTT elevation

LEARNING OBJECTIVE #2: Manage acute blood loss from acquired coagulopathies

CASE: An 80-year-old man with prostate cancer requiring an indwelling Foley catheter presented with three days of hematuria and a hemoglobin of 5.2 mg/dL.

Exam was significant for normal vital signs, pink urine, melena, and no abdominal pain. A repeat hemoglobin was 3.8 mg/dL. INR was 1.5 and PTT was 70.5 seconds. Bilirubin, reticulocyte count, and fibrinogen were normal, and no schistocytes were seen on blood smear.

Hematology-recommended evaluation revealed low factor VIII activity and a mixing study positive for an inhibitor. Factor II, IX, X, and XI activities were normal. A Russell's Viper Venom Test was negative for lupus anticoagulant. The patient was diagnosed with an acquired factor VIII inhibitor, and initial assessment for hematologic malignancies and autoimmune disorders was negative.

He was treated with prednisone and factor VIII inhibitor bypass activity. The hemoglobin stabilized with red blood cell transfusions; the hematuria and melena resolved. An upper endoscopy and colonoscopy revealed no bleeding source. Over two weeks, the PTT decreased to 44 seconds and factor VIII inhibitor titers declined.

On chart review, the INR elevation had been present for a year and attributed to malnutrition. The PTT elevation manifested five months prior to admission but was never evaluated despite presentations for hematuria and a retroperitoneal hematoma. The failure to further evaluate led to preventable adverse events.

IMPACT/DISCUSSION: General internists frequently encounter laboratory abnormalities that can be easily overlooked. This patient's unexplained elevated PTT persisted until it manifested as a life-threatening bleeding episode. The failure to assess the elevated PTT was an error, possibly due to lack of knowledge, distraction by other acute medical issues, and/or cognitive bias (i.e. attribution to malnutrition).

PT and PTT elevations each have limited differential diagnoses. An isolated PTT elevation poses the most concerning diagnoses, including acquired factor VIII deficiency, acquired von Willebrand disease, and antiphospholipid antibody syndrome. The first two have serious bleeding consequences, but antiphospholipid antibodies are associated with thrombosis. While PT elevations proportionally increase bleeding risk, PTT elevations can cause bleeding at any level. Treatment with coagulation factors alone is ineffective with an acquired inhibitor. Mainstay therapies include glucocorticoids and factor bypass agents. In rare cases, inhibitors can spontaneously resolve.

CONCLUSION: A new isolated or disproportionate PTT elevation without a clear medication culprit is a potential medical emergency. While lupus anticoagulant is the most common explanation, an acquired factor VIII or von Willebrand factor inhibitor must be entertained. Catastrophic bleeds can happen at any level of PTT elevation and require immediate diagnostic and therapeutic intervention.

A RARE CASE OF ACQUIRED FACTOR VIII DEFICIENCY IN PATIENT WITH HEPATITIS C

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LEARNING OBJECTIVE #1: Recognize association of acquired factor VIII inhibitor with hepatitis C infection

CASE: 65 years old male with history of hepatitis C presented with severe symptomatic anemia. He had sudden onset back pain with dizziness and generalized weakness. He was tachycardic and hypotensive in the ER. CBC was significant for Hb 5.8gm/dl, normal MCV and platelet count. CT showed diffuse anasarca and hematoma formation in multiple muscles including right paraspinal muscles, left psoas muscle and posterior chest wall. No history of bleeding disorder. The coagulation panel showed normal PT/INR, fibrinogen levels with prolonged PTT 92sec and high d-dimer. A month ago, he had spontaneous iliopsoas hemorrhage, for which unsuccessful embolization was performed leading to complications at right femoral access site including pseudoaneurysm formation, infection and thrombosis of right femoral vein. Patient was discharged on apixaban for the DVT in femoral vein. Apixaban was stopped 3 weeks before the he developed spontaneous bleeding. The mixing study showed no correction with addition of normal plasma. Factor VIII(FVIII)activity was found to be low <1% and FVIII inhibitor titer 239.3 Bethesda units was significantly elevated. The diagnosis of acquired hemophilia A(AHA) was made. He was treated for hemorrhagic shock with blood transfusion and FFPs. He was then started on steroids and steady improvement was noted. He was discharged with stable Hb and was asked to follow-up with gastroenterologist for treatment of Hepatitis C and with hematologist.

IMPACT/DISCUSSION: Hepatitis C(Hep C) infection is associated with a variety of autoantibody formation but its association with anti-FVIII autoantibodies(AHA) is rare and only been reported in a handful of cases. The first reported case was in 63 year Japanese male by Sugishita et al. Similar case is reported by Shredi et al, in a 61 year old woman with chronic untreated Hep C. Another case was reported, where development of AHA was seen in 81 year old women with acute Hep C infection. In all these cases the final outcome was fatal. The diagnosis of AHA is made with combination of isolated prolongation of APTT which cannot be corrected by mixing it with normal plasma(mixing study) and subsequent identification of a reduced FVIII level with evidence of FVIII inhibitor activity; as was made in our patient. The management is primarily based on controlling and preventing bleeding, eradicating the inhibitor and treatment of underlying disease. The resolution of AHA was seen with treatment of Hep C with direct antiviral agent in a patient with co-infection with HIV; in a case reported by Maugi et al.

CONCLUSION: The bleeding in AHA mostly is severe and fatal, hence it is important to recognize its association with Hep C early as prompt diagnosis with early treatment can be life saving in theses patients. Treatment of Hep C has been noted to resolve the inhibitor previously and should be done in a timely manner.

A RARE CASE OF ACUTE PANCREATITIS DUE TO VERY SEVERE HYPERTRIGLYCERIDEMIA SUCCESSFULLY TREATED BY LONG-ACTING INSULIN

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LEARNING OBJECTIVE #1: Management of HTG induced Acute pancreatitis with long-acting insulin (Lantus) alone

CASE: A 35-year-old obese male with no past medical history presented to the hospital with upper epigastric pain of one-day duration. He denied any history of diabetes or prediabetes, obesity, binge drinking, abdominal trauma, any offending drugs, and any procedures including endoscopic retrograde cholangiopancreatography. Family history was not significant for coronary artery disease, cerebrovascular accident, diabetes, dyslipidemia, pancreatitis, or gallstone. His lab work revealed Lipase 1174 U/dl (13-60), Triglyceride >4425 mg/dl (0-190), non-ketotic hyperglycemia with HbA1C-10. USG showed acute pancreatitis, confirmed on MRCP with the edematous pancreas and peripancreatic fluid without evidence of necrosis/duct dilation/ gall stones. Based on the laboratory findings and imaging, we diagnosed acute pancreatitis (AP) secondary to hypertriglyceridemia. The patient was initiated on intravenous fluids and long- acting insulin to help decrease the triglyceride level with the plan to initiate apheresis if needed. However, the patient improved on sc insulin therapy alone with triglyceride level < 500 mg/dl by Day 3, which negated the need for apheresis, and the patient was discharged within a week with fenofibrate, metformin with no further complications.

IMPACT/DISCUSSION: HTG, although rare, is the third leading cause of AP after gallstones and alcohol use, and it can cause up to 7% AP cases. HTG induced AP commonly occurs in patients with prior lipid disorders or abnormalities precipitated by a secondary factor such as the use of alcohol, medication, or poorly controlled diabetes. The pathogenesis of HTG-induced pancreatitis is thought to result from the hydrolysis of TGs by pancreatic lipase and the release of free fatty acids inducing free radical damage. It is essential to bring the TG level down aggressively to 500 mg/dl in the initial stage with either IV insulin or plasmapheresis. Plasmapheresis may be particularly important for the treatment of hypertriglyceridemic necrotizing pancreatitis immediately after its onset. The goal of insulin therapy here is to reverse the stress- associated release of fatty acids from adipocytes, to promote intracellular TG generation within adipocytes, and to promote fatty acid metabolism in insulin-sensitive cells. We follow IV insulin with DKA protocol usually, but sc insulin can be tried to the same effect as it provides sustained insulin supply to the body.

CONCLUSION: There are no current established guidelines for the treatment of very severe HTG-induced AP, although insulin, heparin, and plasmapheresis have all been used in the literature. The unique feature of our case can be emphasized with a quick and effective response to long-acting insulin therapy alone. Additionally, the cost-effectiveness of plasmapheresis remains uncertain, and further investigations are warranted to establish best care practices.

A RARE CASE OF ANEMIA FROM AZATHIOPRINE-INDUCED RED BLOOD CELL APLASIA

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LEARNING OBJECTIVE #1: Recognize the presentation of pure red cell aplasia caused from Azathioprine

LEARNING OBJECTIVE #2: Distinguish key parts of history and lab findings that help diagnose pure red cell aplasia

CASE: A 42-year-old female with a medical history of Crohn's disease, mixed connective tissue disease (MCTD), hypertension, and stage 3 chronic kidney disease, presented to the hospital with a complaint of fatigue and weakness for the previous two weeks. She was taking azathioprine, vedolizumab, and prednisone 5 mg for her Crohn's disease and MCTD. In addition, allopurinol was added 1.5 months prior. Initial lab workup revealed a macrocytic anemia with a hemoglobin of 7.5 mg/dl and a mean corpuscular volume of 100.9 fl. Previous CBCs showed a

hemoglobin around 14 mg/dl with normal mean corpuscular volume. She reported no history concerning for bleed. She had normal ESR and CRP levels and an unremarkable CT abdomen. Folate and B12 levels were normal. She had a haptoglobin of 152 mg/dl, an LDH of 218 units/liter, and total bilirubin of .3 mg/dL, inconsistent with hemolysis. A peripheral smear did not reveal hypersegmented neutrophils. Her reticulocyte count was 0.58%, and absolute count of 0.013, which suggested bone marrow suppression. Her white blood cell count and platelets were both normal. A 6-thioguanine nucleotides RBC level was elevated at 559 pmol/8x10(8)RBC (normal 235-400). Her azathioprine was subsequently discontinued, and her symptoms improved. A CBC on follow up visit approximately 3.5 months after discharge showed a hemoglobin of 13 mg/dl.

IMPACT/DISCUSSION: Azathioprine is a purine analogue that interferes with DNA synthesis and inhibits proliferation of rapidly growing cells. 6-mercaptopurine (6-MP) is a drug metabolite of azathioprine that is used in the treatment of autoimmune diseases such as Crohn's disease. This occurs in part by the active metabolite, 6-Thioguanine nucleotide (6-TGN). Bone marrow suppression has been documented as a possible adverse effect of azathioprine, which is thought to occur via 6-TGN. Rarely, the suppression can be specific for erythrocyte generation and lead to a pure red cell aplasia (PRCA).

Of note, our patient recently began allopurinol treatment to attempt to increase efficacy of the azathioprine. This occurs in part due to the inhibition of one of the metabolic pathways of 6-MP via Xanthine oxidase which will lead to increased therapeutically active 6-TGN. This simultaneous use likely contributed to the elevated 6-TGN metabolites and myelosuppression. This occurs more commonly in patients with low levels of Thiopurine methyl transferase (TPMT), however, aplastic anemia secondary to azathioprine can occur in patients with normal TPMT activity.

CONCLUSION: Allopurinol is often added in combination with azathioprine in the treatment for Crohn's disease. If these patients present with fatigue and macrocytic anemia, drug induced pure red cell anemia must be considered.

A RARE CASE OF APICAL HYPERTROPHIC OBSTRUCTIVE CARDIOMYOPATHY

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LEARNING OBJECTIVE #1: Recognize clinical presentation, ECG, echocardiogram, and cardiac catheterization results of Apical Hypertrophic Cardiomyopathy

LEARNING OBJECTIVE #2: Review management of Apical Hypertrophic Cardiomyopathy compared to typical HOCM

2**CASE:** T.M. is a 60 year old Caucasian male with a past medical history of hypertension, hyperlipidemia, and COPD who presented to our outpatient office with a chief complaint of chest pain. The pain started about 6 months ago, and is located substernally. Episodes are reproduced upon moderate exertion, last a few minutes at a time, and are relieved by rest. He described this chest pain as an ache with radiation to the right side of his neck. Episodes occur daily, and are associated with dyspnea and diaphoresis. He is a former smoker, and denies current alcohol use. His medications include atorvastatin 40mg, metoprolol tartrate 25mg, and albuterol sulfate. He had a cardiac catheterization in 2014 that was reportedly normal.

His examination revealed a BMI of 30.7, pulse of 48, and blood pressure of 135/75. There was laterally displaced point of maximal impulse. Cardiac, pulmonary, and all remaining systems upon examination were otherwise within normal limits.

ECG revealed sinus bradycardia, ST segment depression in leads V3-V6, "giant" T-wave inversions in leads V3-V6, and criteria for left ventricular hypertrophy by the Cornell criteria. Echocardiogram demonstrated apical left ventricular hypertrophy, normal ejection fraction, and no significant valvular abnormalities. Coronary angiography revealed mild coronary disease with a large left dominant circulation system, and the left ventricle was described as "spade-like."

The combination of history, physical examination, ECG, echocardiogram, and cardiac catheterization led to the diagnosis of a rare apical variant of hypertrophic cardiomyopathy (HOCM), also known as Yamaguchi Syndrome.

IMPACT/DISCUSSION: This case highlights a rare variant of the typical HOCM. The hypertrophy is typically localized to the left ventricular apex with or without midsegment involvement. A study from the Journal of American College of Cardiology in 2017 demonstrated the prevalence of Apical HOCM in Japanese and Caucasian populations as 0.21% and 0.05%, respectively. Typically, HOCM patients are treated medically and advised to receive an implantable cardiac defibrillator (ICD) to prevent sudden cardiac death. Additional genetic testing and cardiac MRI are recommended. Patients with the apical variant have a 15 year survival of 95% with medical therapy alone. Therefore, management only requires medical therapy without extensive genetic family testing or the need for ICD.

CONCLUSION: - Not all HOCM patients are created equal, and not all variants have the same prognosis or require genetic screening or advanced therapies.

Apical HOCM has characteristic ECG, echocardiogram, and catheterization findings that are important to recognize.

A RARE CASE OF CEREBRAL VENOUS SINUS THROMBOSIS IN A PATIENT WITH AMPHETAMINE ABUSE

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LEARNING OBJECTIVE #1: Amphetamine abuse can have an association with Cerebral Venous Sinus Thrombosis

LEARNING OBJECTIVE #2: Physician should be aware of such association

CASE: A 20 year old female with no past medical history presented to the emergency department with severe right sided throbbing, constant headache of sudden onset for one hour before arrival. She was nauseated and vomiting. Medication history was negative for contraceptive use. Family history was negative for coagulation disorders. On exam, vital signs were normal except bradycardia. She was fully conscious, neck soft, pupils were equal and reactive, normal extra ocular eye movement, fundus was unremarkable. Motor, sensory exams were within normal limits. Lab workup was unremarkable except for Urine toxicology that was positive for methamphetamine. CT head showed a hyperdense lesion adjacent to the right tentorium with a suspicion of right transverse sinus thrombosis. Magnetic resonance venography confirmed the presence of right transverse sinus thrombosis and possible sagittal sinus thrombosis. She was started on anticoagulation. Workup for lupus anticoagulant, anticardiolipin antibodies, factor V Leiden and antithrombin III deficiency were negative. Patient's headache improved and she was discharged on apixaban.

IMPACT/DISCUSSION: Amphetamine abuse can cause convulsions and sudden cardiac death, hyperpyrexia, acute renal failure, psychosis and cerebral hemorrhage. Although disseminated intravascular coagulation is recognized in amphetamine toxicity, cerebral venous sinus thrombosis (CVT) is not well known to be associated with amphetamine abuse.

To our knowledge there are only 2 cases in the literature were documented association between amphetamine abuse and CVT. However the mechanism that predisposes to CVT is not known. Amphetamines cause increased heat production and sweating and this leads to dehydration which is a recognized. The combination of volume depletion and thermogenic effect of amphetamines could result in hypercoagulability state leading to CVT.

CONCLUSION: As cerebral venous sinus thrombosis is rare, it is not feasible to conduct larger studies to find causations with Amphetamines. But we propose that more case reports and case series should be reported as a starting point to find common patterns.

A RARE CASE OF CHRONIC ABDOMINAL PAIN

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LEARNING OBJECTIVE #1: Chronic abdominal pain can be a challenging complaint for every clinician. We present a patient with nonspecific abdominal pain in whom the etiology was determined to be median arcuate ligament syndrome (MALS). This case helps clinicians to recognize this rare syndrome which is usually low on the differential diagnosis.

CASE: A 65-year-old man with past medical history of hypertension presented with intermittent, non- radiating, postprandial epigastric pain for 3 weeks. Fasting and leaning forward relieved the pain to a certain degree. He also had symptom of nausea. Weight loss of 18 pounds was documented within 3 weeks. There was no history of fever, vomiting, diarrhea, constipation and melena. He had the similar episode 3 months ago and was admitted to the hospital with the suspicion of cardiac cause. Cardiac work-up including left heart catheterization was normal. He denied any smoking, alcohol or drug use. His physical examination was insignificant except mild epigastric tenderness to palpation. His laboratory studies including liver function tests and serum lipase were normal. Electrocardiogram, Chest X-ray, Ultrasound and computed tomography (CT) of abdomen were negative. Esophagogastroduodenoscopy and colonoscopy failed to reveal any abnormality. CT angiography of abdominal aorta revealed severe stenosis of the proximal celiac axis, near its origin, and post-stenotic dilatation. These findings were consistent with MALS. He was presented the options of surgical treatment. After the detailed discussion, he opted for conservative management through small frequent meals and weight gain approach. There was no recurrence of symptoms after two years elapse.

IMPACT/DISCUSSION: MALS, known as celiac axis compression syndrome is a rare condition with the incidence of 2 per 100,000 populations. It is more common in young females with a thin body habitus between the ages of 40 and 60 years. Patients report symptoms of postprandial abdominal pain, weight loss and occasional abdominal bruit. The diagnosis is one of exclusion. The mechanism of chronic abdominal pain is not fully understood. It may be related to compression of the celiac artery by the median arcuate ligament or mediated by the celiac plexus. Various surgical approaches have been reported in the literature, however, outcomes are varied. Contrarily, there were two cases from Japan whose symptoms were relieved through conservative management with weight gain approach and pharmacological therapy to facilitate gastrointestinal motility respectively.

CONCLUSION: The diagnosis of MALS is challenging and easy to miss because of its rarity and lack of specificity of symptoms. Hence, clinicians should always be aware of the possibility of MALS in patients with postprandial pain and weight loss. More studies are required to better define the pathophysiology and explore further into various management approaches including conservative vs. surgery that can lead to the definite algorithm.

A RARE CASE OF CLADOPHIALOPHORA BANTIANA INTRACEREBRAL ABSCESS IN AN IMMUNOCOMPETENT PATIENT

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LEARNING OBJECTIVE #1: Cerebral phaeohyphomycosis is a very rare infection of the central nervous system (CNS) caused by dematiaceous fungi. It is commonly a disease of immunocompromised patients.

LEARNING OBJECTIVE #2: Cladophialophora bantiana is the most common agent identified with this disease, which has found to have a predilection for the CNS in immunocompetent individuals.

CASE: A 65-year-old patient with poorly controlled diabetes, hypertension presented to the hospital with a chief complaint of blurry vision for 3 weeks, worsening left frontal headache for 2 weeks and difficulty with learned motor skills such as walking and driving. He denied seizures, focal weakness, weight loss, night sweats, recent travel history. He has a past history of significant for Nocardia asteroides gluteal abscess 7 years ago which was treated with trimethoprim-sulfamethoxazole. On examination, he was afebrile and his vital signs were normal. Neurological exam was unremarkable except for right visual field defects and gross confrontation abnormalities bilaterally despite corrective lenses. Laboratory studies were negative for leukocytosis. Liver function and renal function were normal. CT head followed by MRI brain showed multiple irregular thin-walled ring-enhancing lesions in bilateral occipital lobes and left frontal lobe, the largest lesion measuring 3.2 x 2.2 cm, with vasogenic edema and 3 mm midline shift concerning for abscess or solid tumor. Treatment was initiated with vancomycin, ceftriaxone, metronidazole, and dexamethasone.

HIV test and blood cultures were negative. Beta-glucan was elevated to 100 pg/ml. Histoplasma and Blastomyces urine antigens were negative. Neurosurgery performed drainage of occipital abscess and the smear from the fluid showed fungal hyphae on direct smear. As the MRI showed bilateral maxillary sinusitis, endoscopic sinus surgery was performed which was negative for invasive fungal sinusitis. The patient was started on liposomal amphotericin B; which was continued as monotherapy. Fungal cultures from surgery grew a black mold, which was identified as Cladophialophora bantiana. Antifungals were changed to voriconazole based on sensitivities. Patient had resolution of his visual field defects after surgery. He was discharged and currently being treated with voriconazole for 10 months.

IMPACT/DISCUSSION: The treatment is not standardized for cerebral phaeohyphomycosis and it has very high mortality even in immunocompetent patients. Amphotericin B is the most commonly used agent for treatment. Itraconazole and voriconazole have broad activity against dematiaceous fungi and are often used for these infections. Voriconazole has good CNS penetration and has been used in several case reports; however, failures have been reported.

CONCLUSION: Complete surgical resection appears to be necessary for an optimal outcome. Prolonged follow up is also necessary as relapses are also not uncommon.

A RARE CASE OF DIFFUSE ALVEOLAR HEMORRHAGE AS THE PRESENTING PHENOMENON OF SYSTEMIC LUPUS ERYTHEMATOSUS

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LEARNING OBJECTIVE #1: To recognize and treat DAH as a complication of SLE

CASE: Ms. K is a 24-year-old woman with no past medical history who presented with three months of progressive fatigue, loss of appetite, and pain on ambulation rendering her bedbound. One month prior, she had developed fevers and sore throat. On outpatient visits, she was prescribed antibiotics for bronchitis without improvement.

On presentation to the referring hospital, vital signs were: temperature 38.3 degrees Celsius, heart rate 102, blood pressure 82/50, respiratory rate 16, oxygen saturation 97% on room air. Physical exam was remarkable for cachectic appearance and a gluteal pressure ulcer. Laboratory evaluation was notable for white blood cell count 9700/uL with 6% lymphocytes, hemoglobin 9 g/dL, platelet 211/uL, sodium 139 mmol/L, potassium 4.1 mmol/L, chloride 109 mmol/L, BUN 65 mg/dL, creatinine 2.2 mg/dL, bicarbonate 15 mmol/L, AST 105 IU/L, ALT 53 IU/L, and alkaline phosphatase of 120 IU/L. She was treated for sepsis with intravenous fluids, vancomycin, and cefepime.

Her course was complicated by an aspiration event leading to cardiopulmonary arrest, with return of spontaneous circulation after five minutes of ACLS, during which she was intubated. She was then transferred to our institution, where she was noted to have worsening hypoxia and progressive bilateral hazy opacities on chest radiograph. She underwent bronchoscopy with sequential bronchoalveolar lavage (BAL) with return of increasingly hemorrhagic lavage aliquots.

Evaluation for infectious etiologies was negative. Rheumatologic evaluation was notable for ANA with a titer of greater than 1:1280, with positive dsDNA, SS-A, and SS-B antibodies. Based on her serologies and clinical manifestations, the patient was diagnosed with systemic lupus erythematosus (SLE) complicated by diffuse alveolar hemorrhage (DAH) and suspected lupus nephritis. She was treated with pulse dose methylprednisolone for three days, underwent five rounds of plasmapheresis, and given cyclophosphamide. Her bloody secretions resolved and oxygenation improved, her kidney function improved, and she was successfully extubated.

IMPACT/DISCUSSION: This case illustrates a rare but severe clinical presentation of SLE. DAH occurs in 4% of SLE patients who are hospitalized and presents with fever, cough, dyspnea, hemoptysis, anemia, and diffuse radiographic opacities. Mortality may be as high as 50%, though reduced with treatment. The return of increasingly bloody fluid on sequential BAL is diagnostic. SLE patients with DAH have a higher incidence of nephritis compared to SLE patients without DAH. Treatment includes supportive ventilation, antibiotics for possible infectious triggers, high-dose glucocorticoids, and additional immunosuppression if indicated. Cyclophosphamide is often started in conjunction with steroids.

CONCLUSION: If the DAH is not responsive, azathioprine, intravenous gamma globulin, and plasmapheresis are next steps to consider. The clinical course is often paved with recurrences.

A RARE CASE OF EVANS SYNDROME AFTER MALIGNANT THYMOMA TREATMENT

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LEARNING OBJECTIVE #1: Demonstrate the evaluation for severe anemia

LEARNING OBJECTIVE #2: Review the diagnostic criteria for Evans syndrome

CASE: A 39-year-old man with a history of thymoma presented with syncope, fatigue and exertional dyspnea for 3 days. Eight months prior, he presented similarly and the thymoma was diagnosed at that time. He completed chemotherapy and radiation and symptoms resolved at that time.

Hemoglobin level returned at 2.9 mg/dL and platelet count of 166,000/microL which later dropped to 89,000/microL. The reticulocyte count was low (0.01), elevated lactate dehydrogenase (LDH) of 497 IU/L, and low haptoglobin of less than 30 mg/dL. He also had a positive direct antiglobulin test (DAT) for IgG. HIV and hepatitis panel were negative. Peripheral blood smear revealed spherocytes and normal platelets.

A bone marrow biopsy revealed erythroid hyperplasia and had a negative stain for parvovirus B19. He was treated with packed RBCs and IV solumedrol 250mg daily for 4 days. His hemoglobin rose appropriately following transfusion and continued to rise until discharge.

IMPACT/DISCUSSION: In this patient with severe anemia, work-up begins with a reticulocyte count and examination of the peripheral blood smear. The low reticulocyte count indicates insufficient erythropoiesis in the bone marrow. However, the peripheral blood smear revealed spherocytes, consistent with intravascular hemolysis. With high LDH, low haptoglobin, and positive IgG direct antiglobulin test (DAT) a diagnosis of warm agglutinin autoimmune hemolytic anemia (AIHA) was made. However, hemolytic anemia is generally associated with reticulocytosis. This discrepancy raised our concern for a separate process in the bone marrow causing the decreased reticulocytes, such as aplastic crisis and prompted further investigation with a bone marrow biopsy, which did not indicate aplastic crisis. Low reticulocyte counts can occur in severe AIHA cases when the bone marrow does not have time to respond appropriately, which is most likely what happened in this case.

General guidelines for AIHA with adequate bone marrow response do not typically involve a bone marrow biopsy or transfusion of packed RBCs. A bone marrow biopsy was done in this case to rule out a concurrent aplastic crisis. RBC transfusion is warranted in AIHA with severe anemia and a low reticulocyte count, which can be life-threatening due to insufficient bone marrow response.

Our patient had a concurrent thrombocytopenia without abnormality on the smear and bone marrow biopsy revealed adequate megakaryocytes, indicating adequate platelet production. This biopsy was consistent with idiopathic thrombocytopenic purpura (ITP). The combination of AIHA and ITP in this patient therefore led us to the diagnosis of Evans syndrome. The subsequent improvement in with steroids further solidified this diagnosis.

CONCLUSION: This case demonstrates the use of systematic approaches to anemia and thrombocytopenia, leading to discovery of AIHA and ITP and underlying accurate diagnosis of Evans syndrome.

A RARE CASE OF INTRACARDIAC RECURRENCE OF NON-HODGKIN LYMPHOMA.

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LEARNING OBJECTIVE #1: Incidence, manifestations, diagnosis and management of cardiac lymphoma.

CASE: 59 yr old with medical history of Chronic Lymphocytic Lymphoma (CLL) diagnosed 20 years ago and received chemotherapy and allogeneic stem cell transplant, presented with complaints of shortness of breath, burning non-radiating substernal chest pain for the past 1 month. Mentioned she had “no signs of lymphoma” for 16 years. Initial EKG showed sinus tachycardia without acute ST or T wave abnormalities. CTA chest revealed subsegmental right pulmonary embolism, moderate pericardial effusion, large right ventricular (RV) masslike filling defect and enlarged mediastinal and supra-clavicular lymphadenopathy. Transthoracic echocardiogram showed large complex echogenic mass 8.1x2.9 cm

extending from distal aspect of right atrium extending through the tricuspid valve into the right ventricle and its outflow tract (RVOT)with EF of 48%, medium sized pericardial effusion without tamponade. Cardiac MR showed bulky tumor burdern along RV and RVOT. Right heart catheterization with ultrasound guided pericardial drainage was done with 400 cc of bloody fluid removed, right atrial pressure dropped from 21 to 14 mm of Hg. No effusion was noted on repeat echocardiogram. Left supraclavicluar lymph node and pericardial cell block biopsy revealed transformed low to high grade agressive B cell lymphoma with positive CD 19,20,22,23 markers. Surgical intervention was declined due to high risk. She was started on salvage RICE which consists of rituxan, ifosfamide(with Mesna), carboplatinum, and etoposide. She developed worsening dypnea with frequent arrhythmias and was made comfort measures only by family.

IMPACT/DISCUSSION: Cardiac malignancies are rare with secondary tumors more common than the primary ranging from 0.05 % to 0.48% in prevalence. Lung, breast and hematological malignancies in this order are the most common causes of secondary malignancies. Non-Hodgkin lymphomas (NHL) are one of the common hematological malignancies and present as heart failure, pericardial effusion, arrhythmias, cardiac arrest. Intracardiac involvement in NHL is extremely rare and usually is an autopsy finding. We reported a cardiac recurrence of NHL after 16 years of remission.

Imaging modalities like echocardiogram, cardiac CT, MRI, PET CT help in characterizing mass size, location, extent, valvular involvement, flow obstruction, regional contractility, pericardial metastasis and effusion. Definitive diagnosis is by histopathological and immunohistochemical staining of pericardial fluid or tissue biopsy. Treatment modalities for cardiac secondaries is still debatable with no clear data. It includes isolated radiation, chemotherapy. Based on retrospective study of 94 cases of primary and secondary cardiac lymphomas, median survival is 3 months.

CONCLUSION: Highlight the rare delayed recurrence of NHL as transformed high grade B cell lymphoma in heart.

A RARE CASE OF LEUKOPENIA IN ADULT STILL'S DISEASE

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LEARNING OBJECTIVE #1: Recognize that leukopenia does not exclude Adult Still's Disease

CASE: A 44-year-old male with a history of treated hepatitis C infection presented with a 3-week history of quotidian high grade fevers (103 F), chills, night sweats, nonproductive cough, malaise, 25-lb weight loss, and erythematous rashes on face, chest and bilateral shins. There was no recent travel, sick contacts, animal exposure, outdoor activities or recent dental procedure.

Laboratory findings were notable for pancytopenia (WBC 1.9 10^3/uL, HGB 9.7 g/dL and PLT 148 10^3/uL), mild transaminitis, mild coagulopathy, elevated LDH, markedly elevated ferritin (9770 ng/mL), elevated d-dimer, elevated ESR/CRP, normal triglycerides, normal fibrinogen, normal haptoglobin, and normal soluble CD25. A rheumatologic workup including ANA, anti-dsDNA antibody, anti-Smith antibody, C3 and C4 was unrevealing. Infectious workup, including blood cultures, AFB culture, Histoplasma, Syphilis, Legionella, Ehrlichia chaffeensis, Anaplasma phagocytophilum, Leptospira, Rickettsia rickettsii, Rocky Mountain spotted fever, CMV, EBV, HIV, Hepatitis, Adenovirus, Coronavirus, Human metapneumovirus, Rhinovirus, Influenza, Parainfluenza, Respiratory syncytial virus, Bordetella pertussis, Chlamydophila pneumoniae, and Mycoplasma pneumoniae, was negative. Transthoracic echocardiogram showed no valvular vegetations. CT of the chest, abdomen and pelvis showed mediastinal lymphadenopathy and splenomegaly. A bone marrow aspirate and biopsy showed no evidence of leukemia, lymphoma, or hemophagocytosis. With no other alternative unifying diagnosis, the patient met the Yamaguchi criteria for Adult Still's Disease (ASD).

IMPACT/DISCUSSION: To date, there are only two published case reports of ASD with leukopenia, both were men in their 20's [1,2]. This is an exceptionally rare case of a middle-aged man with ASD who presented with leukopenia rather than leukocytosis. Although suspicion for ASD was initially raised based on the patient meeting the Yamaguchi criteria with quotidian fevers, maculopapular rash, splenomegaly, lymphadenopathy, and transaminitis, other infectious and hematologic etiologies were favored given the marked pancytopenia but eventually ruled out. While different diagnostic criteria have been proposed for ASD, the Yamaguchi criteria was found to be the most sensitive (96.2% sensitivity, 92.1% specificity) [3]. Although leukocytosis is a major criteria and a hallmark characteristic of ASD, a diagnosis of ASD should not be excluded because of leukopenia.

CONCLUSION: We report an exceptionally rare case of a middle-aged man who underwent a negative rheumatologic, hematologic, and infectious workup, and met the Yamaguchi criteria for ASD despite the presence of pancytopenia. This case emphasizes the importance of maintaining a high clinical suspicion for ASD even in the absence of leukocytosis.

1. Scopelitis E, et al. *JAMA*. 1984;252:2450-52.

2. Lee H, et al. *J Korean Rheum Assoc*. 2003;10:176-180.

3. Yamaguchi M, et al. *J Rheumatol*. 1992;19:424-30.

A RARE CASE OF PELVIC LEIOMYOSARCOMA AFTER 4 YEARS OF TOTAL ABDOMINAL HYSTERECTOMY WITH BILATERAL SALPINGECTOMY

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LEARNING OBJECTIVE #1: Recognize that although rare and unexpected years after a hysterectomy with no characteristics for malignancy, a leiomyosarcoma has to be considered in case of a tumor in the lower abdomen.

CASE: We present a 47-year-old female with a history of benign uterine fibroids and menometrorrhagia. She failed conservative management so she underwent a total abdominal hysterectomy with bilateral salpingectomy (TAH-BSO). She has been following up with her gynecologist that involves yearly mammograms starting before the age of 40 as her mother died of breast cancer at the age of 35.

Four years later, her yearly mammogram revealed asymmetric foci of her left breast. PET scan showed multiple FDG-PET positive lymph nodes and abnormal increased activity within the pelvis with CT revealing a heterogeneous mass. Surgical removal of the pelvic mass revealed a cellular, mitotically active smooth muscle neoplasm of 9 cm involving the ovarian parenchyma and pathology confirmed leiomyosarcoma.

The patient underwent left lumpectomy with axillary lymph node dissection which confirmed a 1.9 cm invasive ductal carcinoma, poorly differentiated grade 3, ER+ 70%, PR+ 70%, HER-2/neu negative, with 3/9 lymph nodes positive. The leiomyosarcoma was also surgically excised. She did undergo genetic testing for a multi gene panel which showed a variant of unknown significance involving MSH2 and PALB2.

IMPACT/DISCUSSION: We present a woman diagnosed with leiomyosarcoma concurrently with invasive ductal carcinoma of the breast years after an uncomplicated TAH-BSO through a vertical midline incision with no characteristics for malignancy in previous histological analysis. In literature review, cases were recognized that the use of power morcellation during a laparoscopic hysterectomy caused an increased risk

of dissemination even if the specimen tissue initially was benign. However, power morcellation was not performed in this case. Alternative options and considering the risk of dissemination and occult malignancy should be taken into consideration in every hysterectomy performed. Minimally invasive surgery has dramatically improved in recent years; however, complications are still occurring. The way of specimen retrieval should be discussed after complete investigation, appropriate patient selection, and informed consent. Although minimally invasive surgery is used more frequently rather than an abdominal incision, it still poses a risk of spreading malignant tissue that may worsen patients' long-term survival.

CONCLUSION: We encountered a case of leiomyosarcoma that occurred after TAH-BSO. Although unexpected after a hysterectomy, a leiomyosarcoma has to be considered in a pelvic mass. In addition to the startling diagnosis, these rare tumors only account for about 2-5% of all uterine malignancies. We need to be aware that minimally invasive surgery may not prevent dissemination of specimens into the abdominal cavity and other modalities may need to be discovered.

A RARE CAUSE OF LIVER LESIONS; A CASE OF PRIMARY HEPATIC CHORIOCARCINOMA IN A 37 YEAR OLD MALE

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LEARNING OBJECTIVE #1: Recognize liver tumors as a rare but important presentation of non- gestational primary choriocarcinoma.

CASE: A 37-year old previously healthy male with no family history of cancer underwent an outpatient biopsy of a liver mass found on work-up of his progressive abdominal pain and nausea. The biopsy revealed poorly differentiated adenocarcinoma. The patient was uninsured and presented to the emergency department for care. Imaging showed the mass had doubled in size since his initial scan. CA 19-9, AFP, CEA, MRI, and EGD were negative. The tumor was diagnosed as primary cholangiocarcinoma and the patient was started on Gemcitabine-Cisplatin therapy. Further testing revealed a markedly elevated B-hCG. As this is rare in cholangiocarcinoma, the liver biopsy was re-evaluated. On re-evaluation, the working diagnosis changed to primary choriocarcinoma. Scrotal ultrasound was negative. The patient completed two rounds Bleomycin, Etoposide and Platinum (BEP) therapy with a downtrending Beta HCG initially suggestive of a positive therapeutic response. Unfortunately, the patient's poor clinical condition necessitated suspension of chemotherapy. A later interval check found the bhCG re-elevated and a subsequent CT-scan revealed continued enlargement in liver tumors. The patient passed away five weeks after his second BEP round.

IMPACT/DISCUSSION: Choriocarcinoma (CC) is a germ-cell tumor characterized by an abnormal proliferation of trophoblastic cells. Gestational choriocarcinomas originate from fetal trophoblasts. Non- gestational choriocarcinomas (NGCC) are very rare but have been reported in various tissues, primarily in pelvic and abdominal organs. The pathogenesis of NGCC remains controversial. Some hypothesize they arise from ectopic cells, while others argue they metastasize from unidentified germ cell tumors. Some NGCC cases have been considered examples of retrodifferentiation from a pre-existing adenocarcinoma. Primary Hepatic Choriocarcinoma (PHC) is particularly rare, with only 11 cases reported in the literature to date. Clinical diagnosis of PHC is difficult. There are no specific cell markers for choriocarcinoma. Although elevated serum hCG levels have been found in all patients with PHC, hCG levels are not routinely measured when working up liver tumors unless choriocarcinoma is suspected. Lastly, choriocarcinoma shares histopathological features with several other cancer types. These factors can contribute to missed or delayed diagnoses. Outcomes could potentially be improved by avoiding delays in diagnosis. Consequently, screening of serum hCG is reasonable in liver tumor cases with an unusual clinical presentation or indeterminate histopathological analysis.

CONCLUSION: This case illustrates a rare presentation of choriocarcinoma as primary hepatic tumors. Clinicians should consider checking a quantitative B-hCG in clinically atypical or histopathologically uncertain tumors. This may prevent delayed diagnosis of an atypical choriocarcinoma.

A RARE CAUSE OF STROKE IN IMMUNOCOMPROMISED PATIENT

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LEARNING OBJECTIVE #1: To recognize cryptococcal vasculitis as a potential cause of stroke in immunocompromised patients.

CASE: A 47-year-old male patient with a medical history significant for multiple sclerosis for which he has been on fingolimod. He presented to our hospital with a one-month history of fever, confusion and generalized weakness.

Upon arrival to the hospital, vitals were unremarkable except for temperature of 38.9 Celsius. Laboratory investigations were significant for a white blood count of 10.2 K/microL (normal 4 -10.8 k/microL). Human immunodeficiency virus (HIV) test was negative. Chest X ray and urinalysis were unremarkable. Blood cultures and cerebrospinal fluid cultures were positive for Cryptococcus neoformans. Patient was started on intravenous amphotericin and flucytosine.

While in the hospital, he developed a new left upper extremity weakness that was highly concerning for a stroke. Brain magnetic resonance imaging revealed a focus of early subacute ischemia within the posterior limb of the right internal capsule along with subacute infarcts in bilateral cerebelli.

Head and neck computed tomography angiography didn't show any evidence of carotid artery disease. An echocardiogram was performed and showed normal left ventricular function without left ventricular thrombus or evidence of valvular disease. Lipid profile and hemoglobin A1c were within normal. Etiology of multiple strokes was attributed to cryptococcal small vessel vasculitis.

The patient improved and was transferred to a rehabilitation facility after 4 weeks of induction therapy with amphotericin and flucytosine.

IMPACT/DISCUSSION: Cryptococcus neoformans is an opportunistic yeast that causes life-threatening meningoencephalitis in patients with advanced HIV infection with CD4 counts usually below 200/μL. It can also be seen in other immunocompromised states such as in patients on immunosuppressive medications. Our patient has multiple sclerosis and was on Fingolimod which is an immunosuppressive medication that was FDA approved in 2010 for the treatment of multiple sclerosis. In the years following approval of this medication, several cases of cryptococcal meningitis in patients undergoing treatment with Fingolimod have been reported in the literature.

Vascular involvement in cryptococcal meningitis is rare and only few reports have described this association.

It primarily causes infarcts in the basal ganglia, internal capsule and cerebellum. Interestingly, some reports showed that patients with Cryptococcus vasculitis and cerebral infarcts have worse prognosis than those without cerebral infarcts.

CONCLUSION: Cryptococcus meningitis is common in immunocompromised individuals including patients with multiple sclerosis who are on Fingolimod. Small vessel vasculitis is an exceedingly rare complication that

can be seen in patients with Cryptococcus meningitis and almost always manifests as a stroke involving basal ganglia, internal capsule and cerebellum.

A RARE DIAGNOSIS PRESENTING AS PERICARDIAL EFFUSION

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LEARNING OBJECTIVE #1: To recognize primary cardiac malignancies as potential cause of pericardial effusion.

CASE: A 44-year-old male patient without significant medical history presented to our hospital with progressive shortness of breath of 3 days duration. He also reported subjective fevers, night sweats and weight loss over the prior several months.

Upon arrival to the hospital, his vitals were unremarkable. His labs showed normal white blood count. Two assays of troponin were performed 6 hours apart and were negative. His electrocardiogram (ECG) had no ST-T wave changes suggestive of ischemia. Chest X ray was unremarkable and had no signs of infection. A computed tomography pulmonary angiography was negative for pulmonary embolism but showed moderate to large pericardial effusion with mass-like lesion surrounding the heart.

Transthoracic echocardiogram (TTE) subsequently revealed a large pericardial effusion with evidence of right ventricular diastolic collapse. The patient underwent pericardiocentesis with successful removal of 1350 ml of bloody fluid. Pericardial fluid studies were negative for bacterial cultures, acid-fast bacilli or fungi and no malignant cells were seen on cytology. Rheumatological work-up including anti-nuclear antibodies and rheumatoid factor was negative. His human immunodeficiency virus (HIV) test was also negative.

Cardiac magnetic resonance imaging (MRI) was obtained and revealed an intrapericardial mass measuring 55 x 31mm located within the right atrioventricular groove. Patient underwent excisional biopsy of the intrapericardial mass. Pathology was consistent with high grade pericardial angiosarcoma. He was started on doxorubicin and ifosfamide and was monitored closely for improvement in right heart function.

IMPACT/DISCUSSION: Angiosarcoma of the heart is an uncommon malignancy with a very poor prognosis. It most commonly presents as a blood-stained pericardial effusion, fever, weight loss and night sweats. This type of malignancy tends to occur in the 3rd to 5th decade of life and is more common in males. To date, no risk factors have been linked to the development of this malignancy.

Primary cardiac tumors are often first detected by TTE. Computed tomography (CT) and cardiac MRI have excellent diagnostic advantages in that they can provide information regarding tumor delineation, tissue characterization and degree of spread. In general, the information obtained from noninvasive imaging is enough to determine the need for surgery/transvenous biopsy, where a definitive histologic diagnosis can be established.

The median survival time following diagnosis is typically 6 to 12 months, although long-term survival has been reported with complete resection.

CONCLUSION: Cardiac malignancies represent 13-38 % of cases of patients presenting with moderate to large pericardial effusions. Initial evaluation should include an echocardiogram, followed by cardiac CT and cardiac MRI to further characterize the tumor and then tissue sampling by biopsy for definitive pathologic diagnosis.

A RARE PRESENTATION OF CALCIPHYLAXIS

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LEARNING OBJECTIVE #1: Recognize rare causes of calciphylaxis and its management

LEARNING OBJECTIVE #2: Diagnose Antiphospholipid Syndrome and assess when to begin treatment

CASE: A 34-year-old Caucasian woman with no chronic medical conditions presented with a painful rash over her abdomen, flanks, and thighs. The rash began as an urticarial eruption, which quickly progressed to firm, ecchymotic and retiform plaques. Punch biopsy was consistent with small vessel vasculitis. Two weeks prior, the patient was diagnosed with ischemic heart failure and unprovoked DVT. She was treated with enoxaparin, and briefly bridged to warfarin, but only received two doses due to hematuria. Workup was positive for lupus anticoagulant, along with elevated inflammatory markers (ESR >120 mm/hr and CRP 37 mg/dL). Infectious and autoimmune vasculitis workups were non-revealing. The small vessel vasculitis was attributed to thrombotic events in the microvasculature.

One month later, she was admitted with expanded skin lesions now with central necrosis and black eschar. Repeat punch biopsy showed focal calcium deposits in the subcutaneous fat with vascular wall involvement, consistent with calciphylaxis. Relevant labs included serum creatinine of 0.81 mg/dL, calcium 9.4 mg/dL, and parathyroid hormone 46 pg/mL. She was treated with solumedrol 1g for 3 days followed by a steroid taper, Intravenous Immune Globulin (IVIG) for 4 days, and sodium thiosulfate 25 g 3 times weekly. She received complicated wound debridement of her eschars, requiring wound vacuum-assisted closures and subsequent skin resections to fascial depth. During her hospital stay, she was treated with IV heparin and transitioned to fondaparinux following surgery for presumed antiphospholipid syndrome (APLS).

IMPACT/DISCUSSION: Calciphylaxis has a survival rate of 57% at six months with sepsis being the most frequent cause of death. ESRD patients are most commonly affected, but rare non-uremic causes include primary hyperparathyroidism, malignancy, alcoholic liver disease, connective tissue disease, and warfarin. Relevant workup was negative for these causes in our case with the exception of warfarin use, although less likely as our patient only received two doses. Mainstays of treatment focus on wound care, management of secondary infections, pain, and identifiable inciting factors. Additionally, a trial of sodium thiosulfate is recommended.

Autoimmune disorders in non-uremic patients have been associated with calciphylaxis. APLS is characterized by antibodies formed against phospholipid-binding proteins, such as lupus anticoagulant. Laboratory criteria include detection of lupus anticoagulant on two occasions, 12 or more weeks apart, although some reports suggest a 6-week interval is more feasible and may be as equally clinically useful. Although our patient did not technically meet criteria for APLS, given the rapid progression of her disease, it was imperative that we met a diagnosis quickly and began treatment.

CONCLUSION: APLS is a rare cause of calciphylaxis.

A RETAINED INTRAUTERINE DEVICE IN AN ELDERLY WOMAN CAUSING MULTIPLE HEPATIC ABSCESSES

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LEARNING OBJECTIVE #1: 1. Identify uncommon sources of liver abscess.

CASE: An 86-year old woman with chronic kidney disease and type 2 diabetes mellitus was brought in after her family found her lethargic and vomiting.

In the emergency department, she was febrile, tachypneic, and had diffuse abdominal tenderness. Labs revealed a mild leukocytosis, elevated lactate, and mild transaminitis. Computed tomography (CT) noted multiple lobulated hypodensities in the liver concerning for abscesses, as well as a retained intrauterine device (IUD). She was admitted to the medical intensive care unit for septic shock where she was started on broad-spectrum antibiotics and vasopressors.

Her course was complicated by respiratory failure requiring intubation and acute renal failure requiring continuous hemofiltration. Blood cultures grew *K. oxytoca*, *S. constellatus*, and *B. fragilis*. The liver abscesses were aspirated and cultures grew *K. oxytoca, S. constellatus, E. coli*, *O. splanchnicus,* and *A. turicensis*. Given their multifocality, the liver abscesses were presumed to be secondary infections. The IUD was removed and cultured *B. cenocepacia*.

After removal of the IUD, the patient's clinical status improved significantly. She was extubated and transitioned to intermittent hemodialysis. She continued an extended course of antibiotics with the plan to continue until radiologic resolution.

IMPACT/DISCUSSION: In the U.S. there are 2.3 cases of hepatic abscesses per 100,000 admissions. They are often caused by direct extension of neighboring infected tissue or by hematogenous spread from intra-abdominal sources, such as inflammatory bowel disease, diverticulitis, and appendicitis. Up to this point, there have only been 2 case reports of infected IUD as the source of a hepatic abscess. In one case, a 20-year old IUD caused a tubo-ovarian abscess with *S. milleri* bacteremia and hepatic abscesses. The other reported a newly-placed IUD that led to septic pelvic thrombophlebitis resulting in *F. necrophorum* bacteremia and multiple liver abscesses.

In our case, the IUD culture grew different species than were found in the hepatic abscesses. However, the species found in the hepatic abscesses, such as *Actinomyces, Streptococcus, Bacteroides* and *E. coli* are commonly found in reproductive tract infections. *Actinomyces* is classically associated with IUDs, and though her IUD did not grow the organism, she had received cephalosporins prior to its removal, which likely altered its culture yield. Sputum cultures grew *Burkholderia*, matching the speciation found on the IUD, suggesting its hematogenous spread from the reproductive tract. As no other acute abdominal process was identified, and given her clinical improvement following its removal, the IUD was the suspected source of her hepatic abscesses.

CONCLUSION: 1. Regardless of age, in women with hepatic abscesses without a source, consider the presence of a retained IUD.

2. Long-term IUDs increase risk for infection and should likely be removed unless indicated.

A SILENT WOLF IN THE ROOM

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LEARNING OBJECTIVE #1: Assess a fever of unknown origin

LEARNING OBJECTIVE #2: Recognize the utility of the SLICC criteria

CASE: A 59-year-old white male presented to the emergency department for one week of confusion, weakness, weight loss, fevers, cough, and dyspnea. On admission, his vital signs were T 38.7C, HR 120, BP 109/91. Initial labs notable for WBC 4.3 (4.0-10.4 K/μL), Hg 11.0 (13.0-17.0 g/dL), PLT 250 (150-350 K/μL). A respiratory virus panel was positive for coronavirus. A chest X-ray showed bilateral pleural effusions and a left lower lobe consolidation. A lumbar puncture resulted as follows: cell count 1, glucose 52 (40-70 mmol/L), protein 64 (15-45 g/L). Urinalysis revealed proteinuria. Blood cultures and viral studies (HSV, EBV, CMV) were negative. Brain MRI showed bifrontal subdural hygromas with mild reactive dural enhancement. Despite various broad spectrum antibiotics for 8 days, he continued to be encephalopathic with fevers. On day 9, he was intubated for progressive respiratory failure. That same day, an ANA titer resulted at 1:2560. Rheumatology was consulted and were concerned for systemic lupus erythematosus (SLE) as he met SLICC criteria: ANA 1:2560, lymphopenia (WBC 2.87, lymphocytes 0.07), urine protein/Cr 0.62, and serositis (CRP 12.2, ESR 62, ferritin 984). Solumedrol 1000mg daily was administered for 3 days. He was extubated on day 10. He was started on a prednisone taper and hydroxychloroquine and was discharged on day 15.

IMPACT/DISCUSSION: The routine thought process for a presentation of fever, encephalopathy, and unstable vital signs is to find an infectious source. In our patient, we had evidence of a pneumonia that did not improve with antibiotics. As no alternative infection was apparent, we found ourselves dealing with a fever of unknown origin (FUO). FUO is defined as an illness of more than three weeks' duration, fever higher than 38.3C on several occasions, and diagnosis uncertain after one week of investigation in the hospital. The causes of FUO are typically familiar diseases with uncommon presentations. Due to encephalopathy, a thorough history was unattainable. However, on exam we were able to elicit diffuse joint pain. This, along with an elevated ANA, led us to consider a rheumatologic etiology.

The SLICC criteria is used to diagnose SLE. Requirements for diagnosis are > 4 criteria met (at least 1 clinical, 1 immunologic) OR biopsy-proven lupus nephritis with positive ANA or Anti-DNA. The SLICC criteria is more sensitive but as specific as the American College of Rheumatology SLE classification criteria. Our patient met the criteria with a history of arthritis, serositis, neurologic symptoms, lymphopenia, and positive ANA and Anti-DNA antibody testing. Here, we initiated steroids which ultimately helped the patient recover.

CONCLUSION: This case reinforces the concept that if a treatment regimen is not improving the patient's clinical status, it is beneficial to broaden your differential and implore the aid of consultants to help guide the management of a complex patient.

A SPOONFUL OF THYROID HELPS THE SUGAR STAY UP

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LEARNING OBJECTIVE #1: Recognize that hypothyroidism can be a potential etiology in cases of nonresponsive hypoglycemia in Insulin-dependent Diabetics.

CASE: A 41 y/o AAF with H/O HTN, Insulin-dependent DM, CKD, Post-Surgical hypothyroidism admitted for workup of atypical chest pain that was deemed muscular after workup. She was on 350 mcg of Synthroid for her hypothyroidism. Her diabetes was well managed on insulin glargine 65 units and Insulin Lispro 15 units with meals. She had a history of hypoglycemic episodes at home. Her hypoglycemic episodes were initially considered secondary to a higher dosage of insulin regimen. During hospitalization, she was started on Insulin Lantus 45 units and insulin lispro 10 units with meals. She had an episode of hypoglycemia with a glucose level of 46mg/dl, her insulin regimen was decreased to insulin lantus 20 units and sliding scale correctional insulin with meals. Despite changing the insulin regimen, she continued to have episodes of hypoglycemia with episodes ~50. She was taken off insulin and observed. Despite being off insulin she continued to have episodes of hypoglycemia as low as 42. Hypoglycemia workup was started, there was no use of oral

hypoglycemic agents per history, renal functions were stable at baseline during these episodes.

Her lab work showed normal values of insulin, c peptide, proinsulin, beta-hydroxybutyrate. Her AM cortisol was borderline at 6.79 (6.02-18.4) with an ACTH level of 75.1 (7.2-63.3). She had a TSH level of 86.31 mcU/ml (0.27-4.2) and a free T4 of 0.2 ng/dl (0.9-1.8). Based on hypoglycemic episodes, significant hypothyroidism and concern for depression of pituitary, hypothalamic adrenal axis due to hypothyroidism and some element of suboptimal absorption of levothyroxine she was stated on a higher dose of IV Levothyroxine. After the start of IV Levothyroxine, episodes of hypoglycemia subsided. Her repeated thyroid profile at that point showed a free T4 of 1.1 ng/dl (0.9-1.8) and a free T3 level of 2.3 pg/ml (2.3-4.2). There were no more episodes of hypoglycemia.

IMPACT/DISCUSSION: The resolution of hypoglycemic episodes along with improvement in thyroid function correlates that hypoglycemia was secondary to hypothyroidism. it has also been reported in couple of other case reports before. Hypoglycemia in Hypothyroidism is due to multiple mechanisms proposed blunted growth hormone and cortisol to insulin-related hypoglycemia, reduced glucagon, glycogenolysis as well as gluconeogenesis. Blunting of the hypothalamic-pituitary-adrenal axis also leads to hypoglycemia in hypothyroid patients and treating hypothyroidism, improves hypoglycemia and axis as well. As an internist, while dealing with hypoglycemia above pathophysiology should be taken into account.

CONCLUSION: Hypothyroidism can be a potential cause of hypoglycemia in insulin-dependent diabetics and treating it can result in quick correction of hypoglycemia.

Thyroid Profile should be a part of work up in nonresponsive hypoglycemia in insulin-dependent diabetics.

ASSOCIATION OF PULMONARY LYMPHOMATOID GRANULOMATOSIS WITH NEWLY- DIAGNOSED HIV INFECTION

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LEARNING OBJECTIVE #1: Diagnose and treat Pulmonary Lymphomatoid Granulomatosis, a rare B-cell lymphoproliferative disorder associated with Epstein-Barr virus (EBV) infection

CASE: 49-year-old male presented to our hospital with a two-day history of fever, chills, cough, respiratory distress, and 20-pound unintentional weight loss over the past two months. PMH includes multiple bilateral pulmonary nodules up to 2.5cm. A transbronchial biopsy two months ago only showed nonspecific inflammation. Prior to admission, he denied any respiratory complaints. On evaluation, the patient was found to be profoundly neutropenic and thrombocytopenic. A CT chest showed a notable progression of diffuse micro-nodularity. His physical exam was unremarkable.

A transbronchial biopsy on the right lobes was repeated because of his worsening respiratory status. The biopsy result was again non-diagnostic, and testing for mycobacterium and a rheumatological workup was also unremarkable. Given his nonspecific symptoms and negative workup, he was screened for HIV and was consistent with AIDS. Meanwhile, the patient developed recurrent neutropenia despite GCS-F support. Thus, a bone marrow biopsy was ordered to further investigate potential etiologies.

VATS was then performed for surgical biopsies, which established the diagnosis of PLG. Interestingly, EBV in situ hybridization was negative, and the prior bone marrow biopsy showed no evidence of hematologic malignancies. A staging CT abdomen revealed prominent bilateral inguinal lymph nodes.

Once the diagnosis was established, R-CHOP was initiated as an inpatient due to his immunosuppressed status. ART was started simultaneously, and a course of broad-spectrum antibiotics was completed. After discharge, he completed 4 cycles of chemotherapy without significant side effects. A 6 month follow-up CT scan showed a marked improvement of diffuse lung pathology and resolution of prior lymphadenopathy.

IMPACT/DISCUSSION: Though rare, PLG should be considered in the differential diagnosis of pulmonary lesions with nonspecific presentations in immunocompromised populations. Common chest radiographic findings include diffuse ill-defined nodules. As untreated PLG has a high mortality rate (40-70%), early open lung biopsy should be done to establish the diagnosis. Histological findings typically consist of angiitis, polymorphic lymphoid infiltrates, and focal necrosis. The clinical course varies, but PLG often progresses to large B-cell lymphoma. A three-tiered system, according to the number of EBV-positive B-cells, guides the treatment strategy: grade I-II-III. It is debatable whether truly EBV-negative PLG exists. Grade I lesions are often EBV-negative. Sampling error may account for EBV-negative cases, or HIV itself may have caused cellular transformation as recent literature and this case illustrates.

CONCLUSION: In practice, the treatment strategy depends on the clinical status and the extent of extrapulmonary involvement and is similar to treating aggressive lymphoma with R-CHOP.

ASSOCIATION OF RECURRENT THROMBOEMBOLISM FROM MARANTIC ENDOCARDITIS IN A PATIENT WITH METASTATIC PROSTATE CANCER

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LEARNING OBJECTIVE #1: Diagnose marantic endocarditis, a rare nonbacterial bacterial thrombotic endocarditis associated with advanced malignancy

CASE: 61-year-old male presented to our hospital with a sudden onset right-sided weakness and slurred speech. He also endorsed chronic headaches with varying locations. PMH includes paroxysmal AF, recurrent TIA, PFO, acute ischemic colitis, and prostate cancer. His brain MRI/MRA 2 years ago for TIA was unremarkable. TTE at that time demonstrated a large PFO without evidence of intracardiac thrombus. Given his history of paroxysmal AF, he has been treated with apixaban and aspirin since the diagnosis.

On neurological examination, his right-sided weakness resolved, but his facial numbness and headache were persistent. Radiographic evaluation again demonstrated no evidence of acute stroke or vascular stenosis. However, it showed disease in the clivus that was consistent with metastatic disease. Regarding his prostate cancer, he received radiotherapy 6 years ago and Lupron for 2 years following the diagnosis. His previous PSA was undetectable. Concerned for recurring disease, PSA was obtained with a level of 364ng/mL. A bone scan confirmed metastasis.

A repeated TTE showed no evidence of intracardiac thrombus. TEE was then ordered, which demonstrated a small, highly mobile echodensity on the aortic and mitral valve. Subsequent evaluation for bacterial endocarditis was negative, including four sterile blood cultures. Rheumatological and hypercoagulable studies were also unremarkable. Based on the clinical presentation, metastatic prostate cancer, and TEE findings, marantic endocarditis was diagnosed. On discharge, he was continued on both apixaban and aspirin. GnRH-analogue was given to treat his metastatic prostate cancer.

IMPACT/DISCUSSION: Marantic endocarditis is defined as the deposition of sterile platelet aggregates commonly on the aortic and mitral

valve. Though uncommon, it should be considered in the differential diagnosis of CVA with a background of advanced malignancy. Evaluation should also consider SLE, as it is another highly associated condition. Antiphospholipid syndrome and rheumatoid arthritis also show an association, however less commonly. It is mostly associated with the lungs, colon, and ovarian malignancies. Our case is unique, as marantic endocarditis is uncommon with advanced prostate cancer. It is almost certain that his recurrent TIA and acute ischemic colitis were secondary to previously undiagnosed marantic endocarditis, as a consequence of his prostate cancer, and that he may be in chronic DIC.

CONCLUSION: Vegetations on marantic endocarditis tend to more easily embolize then infective endocarditis due to less severe inflammation at the site of attachment. These conditions together significantly increase the risk of extensive infarction; that the patient here has been on both apixaban and aspirin worked favorably. As our case demonstrates, treatment options consist of indefinite anticoagulation and the treatment of the underlying malignancy.

ASYMMETRIC WEAKNESS SECONDARY TO GUILLAIN-BARRE SYNDROME – AN UNUSUAL CASE.

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LEARNING OBJECTIVE #1: Recognize that a negative cerebrospinal fluid (CSF) analysis does not rule out Guillain-Barre Syndrome (GBS) in a patient with asymmetric weakness.

CASE: A 37-year old female with a history of depression presented to the hospital with complaints of six-day history of weakness and numbness in the bilateral lower extremities associated with numbness and tingling of her left hand. She denied facial weakness, trouble swallowing, visual symptoms, numbness or weakness of right arm. There was no bladder or bowel incontinence. She had sore throat two months ago. She denied fever, rash or tick bite. She drank 3-4 bottles of alcohol every day. Physical exam revealed normal vital signs and cranial nerve exam. Muscle power grade was 4/5 for proximal muscles of left leg and right leg, 2/5 for dorsal and plantar flexion of the left foot, 4/5 for right foot and 5/5 for bilateral upper extremities. Sensory exam showed decreased pinprick on the dorsum of left foot medially, decreased vibration in toes bilaterally. Reflexes were absent throughout and her plantar reflex was normal. CT scan of brain was negative for acute stroke. Blood work showed normal serum TSH, aldolase, B12. Her AST was 57 u/L. RPR and Lyme's serology were negative. MRI of thoracic, cervical and lumbar spine were unremarkable. Her CSF analysis showed normal protein, glucose and WBC. Her Nerve Conduction Study (NCS) showed sensory motor demyelinating peripheral polyneuropathy with axonal changes in bilateral lower extremities left more than right. Based on the NCS, she was treated for Guillain-Barre syndrome (GBS) with I.V immunoglobulin; she improved and was transferred to acute rehabilitation unit.

IMPACT/DISCUSSION: GBS is an autoimmune monophasic acquired poly radiculoneuropathy, often provoked by a preceding viral infection. The most common variants are acute inflammatory demyelinating polyneuropathy (AIDP 60-80%) and acute motor axonal neuropathy (AMAN 7-30%). GBS has an incidence of 1-2 cases per 100,000 people. Usually, the patient presents with an acute onset of rapidly progressing symmetrical ascending flaccid paralysis with absent or diminished reflexes, often associated with sensory symptoms as well as cranial nerve involvement. This progressive symmetrical paralysis in the legs and arms occurs over hours to days and often plateaus in 1-4 weeks. Asymmetric weakness is secondary to CNS involvement. Cerebrospinal fluid (CSF) analysis is done to support the clinical diagnosis of GBS and reveals elevated CSF proteins with normal white blood cell counts. This is known as albuminocytologic dissociation, seen in up to 75% of patients within the first 3 weeks, but normal CSF profile can be found in 10 % of GBS patients throughout the disease as seen in our patient. The mainstay of treatment consists of plasma exchange versus I.V immunoglobulin, which is mostly of equal efficacy.

CONCLUSION: This is an unusual case of GBS and emphasizes that GBS should be considered in patients presenting with asymmetric weakness with a normal CSF.

A TALE OF COMPETING PATHOLOGIES: FINDING OPTIMAL BALANCE IN VENOUS THROMBOEMBOLISM PREVENTION IN THE SURGICAL PATIENT

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LEARNING OBJECTIVE #1: Review current guidelines for perioperative deep venous thrombosis prophylaxis in the orthopedic patient

LEARNING OBJECTIVE #2: Discuss management of retroperitoneal hematoma

CASE: A 68-year-old man presented after a mechanical fall. Imaging revealed a left distal femur and left scapular fracture. He required PRBC transfusion on arrival for a hemoglobin of 5.9, down from baseline of 8-10. He underwent open reduction internal fixation surgery for the femur fracture. Post-operatively, he developed hypotension and respiratory failure requiring bilevel positive airway pressure. Electrocardiogram demonstrated an S1Q3T3 pattern and transthoracic echocardiogram showed right sided heart failure suspicious for pulmonary embolus (PE). CT of the chest with contrast could not be performed due to acute kidney injury. Heparin infusion was initiated. Hemoglobin level again declined requiring repeat transfusion. With improvement of creatinine, CT was obtained and revealed a right pulmonary artery filling deficit suspicious for PE as well as left retroperitoneal and adductor compartment hematomas. After initial stabilization, he again became hypotensive with development of a new left thigh firmness and ecchymosis. The left leg was also cool to palpation. Point of care ultrasound was concerning for an expanding hematoma. Both interventional radiology and surgery evaluated patient for embolization vs evacuation though risk was deemed too high. Shortly thereafter, bleeding into hematoma had ceased. An inferior vena cava filter was placed for prevention of further PE.

IMPACT/DISCUSSION: Anticoagulation in the perioperative orthopedic patient is needed to reduce risk of venous thromboembolim (VTE) and PE. In our patient, rivaroxaban was held postoperatively which led to potential development of VTE. VTE risk is higher in Total Hip Replacement [THR], Total Knee Replacement [TKR] and Hip Fracture Repair [HFR]. Anticoagulation is typically held 12 hours pre and post operatively per ACCP guidelines. Duration of therapy depends on procedure: TKR 10-14 days, THR/HFR 30 days. Low Molecular Weight Heparin has traditionally been the agent of choice though recent meta-analyses have shown that direct oral anticoagulants have been more effective with improved safety profile and reduced bleeding risk. Intermittent Pneumatic Compression devices can be used in patients with high bleeding risk.

Signs of a retroperitoneal hematoma are represented by Lenk's triad: acute flank pain, symptoms of internal bleeding such as hemodynamic instability and abdominal tenderness. Treatment involves halting anticoagulation, pRBC and either surgical or interventional radiology intervention. If hematoma is small with mild symptoms, it can be treated conservatively although surgery would be indicated in hemodynamic instability or acute nerve damage.

CONCLUSION: Anticoagulation in the post-operative setting is often a delicate balance. Internists will need to consider the patient's injury, comorbidities, and acute illnesses to determine the best course of action.

A TALE OF TWO STENTS : REFLECTING ON COGNITIVE AND IMPLICIT BIAS

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LEARNING OBJECTIVE #1: To recognize the cognitive biases present while evaluating a patient's symptoms in a compressed setting

LEARNING OBJECTIVE #2: To reflect on how diagnostic errors can be made in women with coronary artery disease

CASE: We are vulnerable to cognitive biases. These can walk in tandem with implicit bias that inexorably shapes our thinking. Add compressed time and the clinician may fail to appreciate important diagnostic possibilities.

First vignette - I was seeing my last patient in a morning session and was very behind. I noticed an e mail and phone message from the same patient, thought it odd, and decided to respond then. The patient was a 72 year old man with mild hyperlipidemia, bronchiectasis and reflux. He reported anorexia that morning, with left neck pressure and sweatiness three hours prior, now resolved. He was most concerned with his appetite.

When asked to go to the emergency room to evaluate, he balked at first, then relented. In the ER, he was hemodynamically stable, but had ST wave elevations inferiorly and very high troponins. In the catheterization lab, he required an RCA stent to halt any further infarct.

Second vignette - I was again behind seeing morning patients; there was a knock on the door. Our nurses were triaging, answering a call from a 62 year old retired RN with HTN, dyslipidemia, and active tobacco use. She was having severe gastric upset. She was on d14 of doxycycline for Lyme disease. I spoke to our nurses in the hallway and thought quickly. The doxycycline must be turning her stomach upside down. "Have her take some ranitidine and TUMS, and take her next dose of doxycycline with a large meal". After we hung up, the patient's gastric pain became intolerable even with these interventions. She went to the ER. There she had inferior wall ST elevations and very high troponins. In the catheterization lab, she required the same RCA stent.

IMPACT/DISCUSSION: Reflecting on these cases, the man, with less risk factors and a less convincing story, was diagnosed correctly. The woman with clear risk factors was not - with her, I anchored on her Lyme disease and the doxycycline. The same humility and respect for gastric symptoms experienced with inferior wall ischemia did not surface. She fortunately had a crescendo in her pain and went to the ER.

With these cases, one should recognize availability bias, the 'within case' momentum bias, a bit of overconfidence bias and the type 1 thinking I engaged in with fast self confirmatory dialogue. My heuristics helped the patient in one case, but almost hurt the other. The larger concern, however, is that an implicit bias toward women who experience coronary disease differently was also at play. Somewhere in my rushed metacognition, I believe it contributed to my premature closure.

CONCLUSION: The tale of these two stents underscores that as we evaluate patients we should:

- Take time outs, ask what doesn't fit
- Name the cognitive biases out loud and ask which may be at play
- Customize illness scripts to women who may have coronary disease

ATRIAL FIBRILLATION IN DURHAM VA HOME BASED PRIMARY CARE PATIENTS AND IMPLEMENTATION OF ANTICOAGULATION THERAPY GUIDELINES

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LEARNING OBJECTIVE #1: Recognize the importance of anticoagulation therapy among those with nonvalvular atrial fibrillation (AF) with prior stroke, TIA, or a CHA2DS2-VASc score of > 2, given that anticoagulation among elders reduces stroke risk.

LEARNING OBJECTIVE #2: Identify elements of home-based patient support that may improve the implementation of anticoagulation therapy

CASE: HPI: 69 yo male Veteran with HTN, HF with EF 45%, joint pain, lymphedema, obesity, AF, with CHA2DS2-VASc score 4 on rivaroxaban. The patient was referred to the Durham VA HBPC in 2/2017 due to his debility, poor mobility, wheelchair-bound status and numerous missed appointments.

ROS notable for weakness, chronic low back, hip and bilateral knee pain.

PE pertinent for BP 130/78, obesity, irregularly irregular rhythm, normal S1/S2 and pedal edema.

Pill boxes were filled by the PA making monthly home visits, resulting in compliance. The patient continued to receive home-based care and received oral anticoagulants until Nov 2019 when he moved away.

IMPACT/DISCUSSION: There are three steps to anticoagulation prescribing: identification of the appropriate patient, risk vs benefit discussion in which the patient /family agrees to the medication, and patient adherence to the medication. This discussion pertains to implementation of anticoagulation therapy once the appropriate patient is identified and once the patient agrees. Since questionable medication adherence is the reason for many referrals to Home Based Primary Care (HBPC), the implementation of anticoagulation therapy was assessed among HBPC patients with AF. To determine if chronically-ill Veteran patients with AF receiving HBPC are receiving guideline-consistent anticoagulation therapy, a chart review of all HBPC patients was undertaken in 2019. Of these 210 patients, 46 had AF (22%). Among the 46 patients with AF, 70% were prescribed anticoagulation therapy, including 13% of those on warfarin and 57% on direct oral anticoagulants. Explanations of failure to receive anticoagulation therapy included palliative care status, a history of hemorrhagic complications, and patient/ family refusal. Hernandez I, et al. identified patients newly diagnosed with AF in 2014–2015 using Medicare claims data, and collected prescriptions filled for anticoagulants in the 12 months after AF diagnosis, finding that only 35% of Medicare recipients received anticoagulation therapy. Our sample of complex, elderly patients receiving HBPC support achieved 70%. This is likely related to the close follow-up and medication management by the clinical team in the home. Elements of HPBC care that could be provided in a less resource- intensive manner include tools such as medication boxes (either simple pill boxes or second-generation electronic pill boxes with audible reminders) which family can fill.

CONCLUSION: In order to improve the implementation of anticoagulation therapy in veteran patients with AF, consider patient enhanced support in the form of a home-based team. Hernandez I, et al. Am J Cardiovasc Drugs. 2019

ATTENTION TO PREVENTION: WE CAN'T AFFORD TO CHICKEN OUT

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LEARNING OBJECTIVE #1: Recognize that vaccine preventable diseases (VPDs) should remain on the differential diagnosis, even in immunocompetent patients.

LEARNING OBJECTIVE #2: Recognize the societal factors associated with VPDs, including social inequities and costs of care.

CASE: A 51-year-old man with no past medical history presented with a painful and pruritic rash. His symptoms began six days prior with sore throat, odynophagia, fever, nausea, and poor oral intake. The rash began on his scalp and spread to his entire body. He denied sick contacts and travel since moving from El Salvador to the U.S. nine years ago and reported to be in a monogamous relationship.

On physical exam, he had a temperature of 103.9°F, blood pressure of 99/57, and heart rate of 139 beats/min. He had a diffuse vesicular rash with an erythematous base on his head and neck, oral cavity, trunk, and extremities including the palms and soles.

Labs were significant for thrombocytopenia, transaminitis, acute kidney injury, and lactic acidosis. A punch biopsy revealed a highly positive Tzanck smear. He was admitted to the ICU for complicated primary varicella zoster virus (VZV) infection with possible superimposed bacterial infection and septic shock given multiorgan involvement. He was given IV fluids, IV acyclovir, vancomycin and cefepime. Additional testing for HIV, syphilis, and HSV was negative. The patient's family members were vaccinated. He was discharged home on day six with valacyclovir.

IMPACT/DISCUSSION: There are few recently documented adult cases of primary VZV, particularly complicated VZV infection in immunocompetent adults. Involvement of the palms and soles, as in our patient, is exceedingly rare. To our knowledge, only four cases involving palms and soles have been reported outside of regions with endemic monkey pox. Three of these were in children.

For several reasons, there has been a resurgence of VPDs in the U.S. According to the Texas Department of State Health Services, varicella was the second highest cause of reported VPDs in 2019.

There is a significant societal impact of VPDs, including the cost that our patients and healthcare system bear.

One estimate of the direct costs of VPDs annually is $9 billion. Moreover, a large burden of disease falls on vulnerable populations such as immigrant and incarcerated/detained patients. Although neighboring Latin American countries have high vaccination rates, those most likely to seek refuge in the U.S. tend to be from rural areas with lower vaccination rates.

CONCLUSION: 1. VPDs, which can present both typically and atypically in immunocompetent adults, should remain on the differential diagnosis.

2. The societal impact of VPDs, including costs of care, is high.

3. Understanding the inequities leading to VPDs allows us to evaluate and implement opportunities for prevention.

ATYPICAL PRESENTATION OF AORTIC DISSECTION AND DIAGNOSTIC DILEMMA

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LEARNING OBJECTIVE #1: Recognize atypical presentations of aortic dissection

LEARNING OBJECTIVE #2: Diagnose aortic dissection when AKI precludes CT angiography

CASE: 38-year-old morbidly obese male with history of uncontrolled hypertension and a known thoracic aortic aneurysm presented with diffuse upper abdominal pain associated with diarrhea and an episode of vomiting. He was slightly hypertensive on admission with BP of 168/91 in both arms and labs showed leukocytosis and elevated creatinine. CT abdomen showed mild thickening of the wall of the ascending and proximal transverse colon. However, his pain progressively worsened overnight and abdomen became tense, prompting a repeat CT scan (without contrast due to AKI) that showed air in mesenteric veins and intrahepatic portal veins. Surgery was consulted and patient underwent open exploratory laparotomy with resection of small bowel due to infarcted small bowel from mid jejunum until the beginning of terminal ileum. Post operatively, the patient remained hypertensive despite nicardipine drip and had worsening renal failure. In view of persistent hypertension and worsening renal failure, possibility of dissection was discussed. Patient underwent an IVUS interrogation of the aorta since CT angiography could not be done due to renal failure. The results revealed a large Type B aortic dissection. The right renal artery was not visualized but the left renal artery was seen coming off the true lumen. The right iliac segment was patent and the dissection flap appeared to end in the common iliac. To confirm the anatomic extent of the lesion, CTA with arrangement for emergent dialysis was done which showed type A dissection of the entire aorta with slightly poor opacification of left subclavian artery, hypoperfusion of entire right kidney and acute infarct of anterior half of the lower two thirds of the left kidney. Complete blockage of the left external iliac artery from its origin for a length of about 7.5 cm, with normal opacification of the distal left external iliac artery, left common femoral artery and its bifurcation was also seen. Patient was taken to OR for aortic dissection repair.

IMPACT/DISCUSSION: Acute mesenteric ischemia is an ominous but rare complication with reported incidence of 3-4% in association with acute aortic dissection. Diagnostic techniques include CTA, aortography, TTE and TEE. In our patient, CTA could not be done initially due to AKI, and TTE was unremarkable. IVUS was used to diagnose aortic dissection as other imaging was contraindicated. This is an expedient method that allows visualization of vessel wall and lumen without any need for IV contrast. This case highlights the unique potential of this modality in diagnosing aortic dissection when other modalities cannot be performed.

CONCLUSION: Although rare, suspect aortic dissection as a cause in patients with mesenteric ischemia and utilize IVUS as a diagnostic modality for suspected cases of aortic dissection when other imaging cannot be performed.

ATYPICAL PRESENTATION OF A SYSTEMIC DISEASE WITH HIGH MORTALITY: A CASE REPORT

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LEARNING OBJECTIVE #1: Acute rheumatic fever can present with atypical clinical manifestations.

LEARNING OBJECTIVE #2: We should consider checking for anti-streptolysin O (ASO) titers in patients with atypical clinical presentations of ARF; even with no history of preceding streptococcal infection

CASE: A 29-year-old woman with morbid obesity and uncontrolled hypertension presents a few days of upper respiratory tract infection symptoms followed by acute onset of dyspnea and productive cough. She denied fevers, rash or arthralgias. Her physical exam was notable for scattered wheeze. Labs remarkable for creatinine: 2.90 mg/dL (baseline 1.2 mg/dL), albumin: 3.2 g/dL. Total protein: 6.7 g/dL and. 1.7 gr / d of proteinuria. Chest x-ray revealed mild pulmonary vascular congestion and cardiomegaly. Transthoracic echocardiogram had moderate, diffuse left ventricular hypo-kinesis and moderately decreased left ventricular (LV) ejection fraction of 37%. Exercise sestamibi perfusion scan revealed no signs of ischemia but global hypo kinesis and dilation of LV, compatible with myocarditis without valvular involvement. ANA, ds-DNA, complement 3 and 4, Ro/LA, Anti-GBM, p-ANCA, PR3, MPO were negative. ESR and CRP were found to be elevated (40 and 0.9, respectively). Anti-

streptolysin O (ASO) titer was (924 IU/mL) and patient was diagnosed with acute rheumatic fever (ARF); falling under the category of `Possible/ Uncertain Rheumatic Fever`.[1] Patient was started on Benzathine Penicillin 600,000 units IM monthly for 1 year for secondary prevention per revised Jones criteria.[1] Kidney biopsy planned as outpatient for interstitial nephritis.

IMPACT/DISCUSSION: Even though the incidence of ARF has significantly declined in North America and Europe, it is of high importance to be aware of the persisting high cardiovascular mortality and morbidity, especially among populations with poor socioeconomic resources worldwide; more prominently in developing countries. The diagnosis of initial or recurrent ARF relies on patients fulfilling a set of clinical criteria. Typical manifestation of carditis in ARF is valvulitis (involvement of the endocardium), especially of the mitral and aortic valves. However, myocarditis and pericarditis may occur as well. The 2015 Jones revision provides the diagnosis of "possible ARF" for cases with a high clinical suspicion of ARF but incomplete fulfillment of the criteria in the setting of lack of criteria secondary to the unavailability of laboratory or echocardiographic testing, poor clinical history, and/or late presentation. In these circumstances, it is recommended to offer secondary prophylaxis with clinical and echocardiographic re-evaluation in one year. [1]

CONCLUSION: Diagnosis of ARF might be challenging especially in patients with atypical presentations; and should be included in differential diagnosis of patients with cardiomyopathy.

Our case is a good example to remind general internist to check for ASO titer in patients even with no prior infection history and/or atypical cardiac presentations of ARF.

A UNIQUE COMBINATION OF UNILATERAL BELL'S PALSY, BILATERAL ANTERIOR UVEITIS, AND RASH AFTER CHECKPOINT INHIBITOR TREATMENT OF METASTATIC MELANOMA

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LEARNING OBJECTIVE #1: Recognize checkpoint inhibitor toxicity.

CASE: A 62-year-old male with stage IV BRAF+ metastatic melanoma to the brain and lungs presented to the hospital with a 2-day history of right-sided facial weakness, dysarthria, bilateral purulent eye discharge, bilateral leg rash, and fevers. He denied eye pain, headaches, and confusion. The patient had been receiving immune checkpoint inhibitor (ICI) therapy with Nivolumab and Ipilimumab within 3 months of presentation.

Neurological exam was notable for right-sided facial droop and decreased taste on the left, rear tongue, and dysarthria. Brain MRI was significant for hyperenhancement of bilateral facial nerves and geniculate ganglia, which was consistent with bilateral facial nerve palsy. There was no evidence of new brain metastasis on imaging or CSF cytology. There was pitting edema through both his calves, more significant on his left leg, associated with significant erythema, warmth, and tenderness. Ultrasound imaging was negative for deep vein thrombosis. Ophthalmic exam was notable for poor visual acuity, irregular and sluggish pupils, corneal dusting, and keratic precipitates which was consistent with bilateral anterior uveitis. Infectious work-up for uveitis was negative.

His constellation of symptoms was consistent with checkpoint inhibitor toxicity, thus, he was started on high dose glucocorticoids for his facial nerve palsy and steroid eye drops for his uveitis with significant improvement in his symptoms.

IMPACT/DISCUSSION: Ipilimumab, an anti-CTLA-4 agent, and Nivolumab, an anti-PD-1 agent, are both associated with immune-related adverse events (irAE). These irAE typically occur within 3 months of starting therapy, and are more common with combination therapy versus monotherapy with either class. Most commonly, these irAE include diarrhea, colitis, pruritus, rash, and endocrinopathies. Peripheral neuropathy involving cranial nerves is treated with prednisone. Anterior uveitis is treated with topical steroids, systemic steroids, and cycloplegic agents. ICI therapy may be resumed once systemic steroids are tapered down and symptoms improve.

While neurologic and ocular toxicities are associated with checkpoint inhibitors, both are exceedingly uncommon and occur in <1% of cases. Our patient had a unique combination of symptoms from these agents which have only rarely been described in the literature. Individually, cases with uveitis or Bell's palsy develop within weeks after administration of Ipilimumab, not Nivolumab. In cases where patients were on both Ipilimumab and Nivolumab, the irAE resolved with a steroid course and discontinuation of Ipilimumab.

CONCLUSION: ICI can cause neurologic and ocular irAE which may present months after treatment.

ICI may be continued after irAE depending on the severity of symptoms and response to treatment.

A UNIQUE PRESENTATION OF CARDIOGENIC SHOCK IN THE SETTING OF TYPE 2 AMIODARONE-INDUCED THYROTOXICOSIS

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LEARNING OBJECTIVE #1: Recognize the clinical features and course associated with Type 2 Amiodarone-Induced Thyrotoxicosis (AIT).

LEARNING OBJECTIVE #2: Understand proper treatment for Type 2 AIT.

CASE: A 59 year old female with a history of atrial fibrillation, cardiac arrest from presumed contrast allergy, unspecified arrhythmias and heart failure (EF 40%) presented as a transfer from an outside hospital (OSH). She was admitted 5 days prior for palpitations and was found to be in atrial fibrillation with a heart rate up to 220. She was intubated for respiratory distress and had intermittent ventricular tachycardia for which amiodarone was started. A TTE was grossly abnormal with an EF of 20%. The patient continued to decompensate and was transferred to our CCU.

Surgical history included pacemaker placement. Home medications were entresto, metoprolol, coumadin and aspirin. While in China for the past month she developed worsening cough, diarrhea and weight loss. Months ago she was found to have low TSH but free T4 was normal. On transfer, the patient was intubated, had an audible S3 and S4 with +JVD and had 3+ pitting edema of all extremities. Her acute decompensated heart failure required lasix drip, Swan-Ganz Catheter placement and pressors. For recurrent tachyarrhythmias amiodarone and esmolol drips were started. TSH was found to be <0.01. Steroids were started for possible Graves vs Type 2 AIT. Cholestyramine was also started. An AST of 359 U/L and ALT of 738 prevented propylthiouracil/methimazole use. Thyroid US and TSH receptor antibody were normal. The free T4 was elevated to 4.1 ng/dl. Given known amiodarone use during prior hospitalizations, Type 2 AIT was diagnosed. After initiating treatment, esmolol and pressors were weaned off, the Swan-Ganz was removed and extubation was successfully performed. The patient left the CCU 2 days later. She was discharged on oral steroids and amiodarone. At the time of discharge her free T4 was 3.3 and her heart rate stabilized in the 60s.

IMPACT/DISCUSSION: Type 2 AIT is a destructive thyroiditis resulting from intrinsic toxic effects of amiodarone. It can develop

months to years after use and causes excess follicular cell T3/T4 release without increased synthesis. Steroids are the primary treatment while cholestyramine is also used to aid enterohepatic clearance. With treatment, lab abnormalities may take months to normalize. For Type 2 AIT, amiodarone does not require immediate discontinuation. There is no benefit in doing so given its mean 58 day half-life. Additionally, amiodarone appears to ameliorate hyperthyroidism by blocking T4 to T3 conversion and beta-adrenergic receptors, along with possibly T3 receptors. Stopping amiodarone may actually worsen symptoms.

CONCLUSION: Patients with a history of amiodarone use require long-term thyroid function monitoring given its toxic effects can take years to develop. If any concern for type 2 AIT arises, urgent initiation of steroids is imperative. Immediate discontinuation of amiodarone, however, is unnecessary and potentially detrimental.

AUTOIMMUNE GASTRITIS INDUCED VITAMIN B12 DEFICIENCY AND RBC HEMOLYSIS

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LEARNING OBJECTIVE #1: Recognize the clinical signs/symptoms of severe anemia

LEARNING OBJECTIVE #2: Recognize the association between Vitamin B12 deficiency and hemolytic anemia

CASE: A 65 year old male with a history of hepatitis C status treated with sustained viral response and COPD who presented with subacute, progressive chest pain, dyspnea on exertion, and lower extremity numbness/tingling. Review of systems was notable for muscle aches, loose stools, and fifteen pound unintentional weight loss over the last 2-3 months. Vitals and physical exam were notable for tachycardia and pallor. Preliminary labs revealed pancytopenia with WBC of 2.7, Hb of 4.6 and platelets of 107. Further labwork revealed a low corrected reticulocyte count, MCV of 112.8, and 1+ schistocytes on peripheral smear.

Given his clinical history, pancytopenia, and schistocytes, we pursued work up for a possible hemolytic process. Haptoglobin was below detectable limit, while lactate dehydrogenase was above the detectable limit with normal total bilirubin (0.8). Devastating causes of hemolytic anemia such as thrombotic thrombocytopenic purpura, disseminated intravascular coagulopathy, hemolytic uremic syndrome, and autoimmune hemolytic anemia were considered but deemed unlikely given the absence of renal dysfunction, unremarkable INR (1.23), negative Coomb's test, ANA, and protein electrophoresis. Although worrisome for myelodysplastic syndrome, there were no atypical features on peripheral smear. Work-up for megaloblastic anemia was notable for a vitamin B12 level below the detectable lower limit with elevation in homocysteine and methylmalonic acid. Subsequent work-up revealed elevated intrinsic factor antibody (159.0) and antiparietal cell antibody (29.7) diagnostic of pernicious anemia.

IMPACT/DISCUSSION: Vitamin B12 deficiency is a common finding with readily available confirmatory testing and treatment strategies. However, when untreated, patients can develop severe hematologic complications including intramedullary hemolysis. Although the exact mechanism is not fully understood, in vitro studies suggest that oxidative stress from a buildup of homocysteine is an important factor. Despite the commonness of vitamin B12 deficiency, hemolytic anemia remains a rare complication, occurring in only 1.5% of B12 deficient patients. Our case highlights the many varied presentations B12 deficiency takes while emphasizing the need to evaluate the causes of B12 deficiency.

CONCLUSION: B12 deficiency has nonspecific symptoms but can have severe neurologic and hematologic complications if untreated.

B12 deficiency should be considered as a cause of hemolysis in the right clinical setting. Further studies to determine the cause of vitamin B12 deficiency should be conducted.

AUTOIMMUNE HEPATITIS AS AN UNDER-RECOGNIZED RISK FACTOR FOR HEPATOCELLULAR CARCINOMA

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LEARNING OBJECTIVE #1: Describe the clinical presentation of autoimmune hepatitis

LEARNING OBJECTIVE #2: Recognize the risk of progression of autoimmune hepatitis to cirrhosis and hepatocellular carcinoma

CASE: A 62-year-old woman with a history of well-controlled diabetes and hypothyroidism presented with one month of worsening epigastric pain radiating to her back. She had a history of 6 years of intermittent epigastric pain and more than 14 years of intermittently mildly-elevated aminotransferases (AST 60, ALT 50). Abdominal US done 10 years prior to presentation showed mild hepatomegaly and parenchymal disease with fatty infiltration. CT abdomen performed six years before presentation showed hepato-splenomegaly and perisplenic varices suggestive of cirrhosis. Hepatitis serologies were positive for HBsAb, anti-HBc and anti-smooth muscle antibody and negative for HBsAg and HCV Ab, suggestive of immunity due to past hepatitis B infection. On presentation, she had ascites. Alpha-fetoprotein was elevated. CT abdomen revealed cirrhotic liver, multiple small liver and pancreatic masses, and peripancreatic lymphadenopathy. Fine needle aspiration of the liver revealed metastatic hepatocellular carcinoma (HCC). The patient started chemotherapy, but her course was complicated by large volume ascites, acute renal failure, and severe anemia leading to the patient's death.

IMPACT/DISCUSSION: Abnormal liver enzymes are frequently detected in asymptomatic patients, as they are often included in routine blood test panels. Mild elevation (less than 15 times the upper limit of normal) is seen with chronic liver disease and reflects ongoing liver injury. Further evaluation should include a detailed review of medications, screening for alcohol use, viral and autoimmune hepatitis serologies, and workup for hemochromatosis and nonalcoholic fatty liver disease.

Autoimmune hepatitis (AIH) is a chronic inflammatory disease whose etiology is unknown but is thought to involve environmental triggers, in genetically susceptible individuals. It is often seen in women with other autoimmune disorders. Many patients are asymptomatic while others present with non-specific symptoms such as fatigue, weight loss, and anorexia. More rarely, patients present with evidence of acute liver failure. The diagnosis is made by a combination of elevated aminotransferases, increased gamma-globulin levels, serologic markers (e.g. ANA, anti-smooth muscle antibodies), and liver biopsy.

The incidence of HCC in patients with AIH is thought to be 3 per 1000 patient-years, but it increases to 10 per 1000 patient-years in patients with AIH-related cirrhosis. In a systematic review, patients with cirrhosis and AIH had a 20-year probability of 23% of developing HCC. However, AIH with cirrhosis has not been identified as a high-risk group requiring increased surveillance for HCC.

CONCLUSION: Recognition of the clinical and often subtle manifestations of chronic liver disease can yield a timely diagnosis of cirrhosis and treatment of underlying etiology can prevent the development of HCC

A VERY CHEEZY MASQUERADE

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LEARNING OBJECTIVE #1: Identify mimics of peritoneal carcinomatosis

LEARNING OBJECTIVE #2: Recognize those at risk for peritoneal tuberculosis

CASE: This is a 57-year-old Hispanic woman who presented with 3-weeks of abdominal distention and weight loss. She denied fever, chills, night sweats, cough, shortness of breath, leg swelling, vaginal bleeding or discharge. Past medical history included rheumatoid arthritis and latent tuberculosis (status post isoniazid x 6 months). Medications included adalimumab (recently started 3 months prior to admission) and hydroxychloroquine. Patient's mother passed away from cervical cancer at age 34. Patient originally from Mexico and has lived in San Diego for 15 years. She is up-to-date with age appropriate screenings and vaccinations.

Physical exam significant for moderately distended, non-tender abdomen with shifting dullness. Initial basic labs unremarkable. CT abdomen pelvis with large volume ascites and increased nodularity of omentum concerning for peritoneal carcinomatosis. Serum level of CA-125 elevated at 220. Ascitic fluid revealed cell count of 832 with lymphocytic predominance, serum-ascites albumin gradient of less than 1.1, and negative cytology.

After discharge, she followed with Oncology – repeat imaging revealed right adnexal mass. Biopsy of mass revealed granulomas with focal central necrosis. She was then referred to Gynecology Oncology – laparoscopy with necrotizing granulomas and no positive organism stains. Infectious disease consulted and further history obtained in terms of patient's dietary intake. Patient noted frequent ingestion of soft cheese from unpasteurized cow's milk from roadside markets in Mexico. There was then suspicion for Mycobacterium bovis (M. bovis). She was started on empiric treatment for possible M. bovis versus M. tuberculosis given recent initiation of adalimumab in setting of latent tuberculosis. Acid fast bacilli (AFB) culture returned positive for M. bovis and pyrazinamide discontinued. Ethambutol stopped after 2 months. Rifampin and isoniazid continued for a total 9-month treatment course. Patient's symptoms resolved and she was not restarted on adalimumab.

IMPACT/DISCUSSION: M. bovis is part of the M. tuberculosis complex and accounts for less than two percent of cases of disease in the United States. However, in certain regions along the border with Mexico, incidence is higher given more access to unpasteurized milk products. M. bovis is a zoonotic disease and involvement is most commonly extrapulmonary. Tuberculosis due to M. bovis is clinically and radiographically indistinguishable from tuberculosis due to M. tuberculosis. Difficulties lie in diagnosis given it is frequently mistaken for a gynecological malignancy. In our patient, initiation of adalimumab was a significant factor in either rupture of an existing M. bovis granuloma as well as in prevention of initial granuloma formation.

CONCLUSION: Keep in mind a patient's cultural background and nutritional intake when forming the differential diagnosis of new-onset ascites.

A WEAK SUSPICION REVEALED THE REASON FOR A PATIENT'S WEAKNESS: AN ATYPICAL PRESENTATION OF MYASTHENIA GRAVIS.

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LEARNING OBJECTIVE #1: Recognize an atypical presentation of Myasthenia gravis in a male.

LEARNING OBJECTIVE #2: Recognize the importance of accuracy and precision in taking the history of present illness.

CASE: Mr N is a 33 yo black male with no known past medical history, other than being previously told that he had a "problem with his eye nerves", who presented with progressive generalized weakness for five months, as well as significant weight loss. He is an immigrant from Cameroon who has been residing in an ICE detention center for several months. His weakness began in his lower extremities, then progressed to involve upper extremities, muscles of the neck, and face. He became unable to walk or eat solids, thus adopted a liquid diet. He denied having any sensory changes, numbness or tingling, but endorsed diplopia.

Upon examination, patient appeared expressionless. His strength was 2/5 throughout, also manifesting lid lag, ophthalmoplegia, hypophonia, and dysarthria. Patient was diagnosed with oropharyngeal dysphagia by SLP, confirmed with an MBS study, and was declared unsafe for PO intake. Following a PEG tube placement, feeds and vitamin B1 replacement were initiated. Neurology team anticipated improvement of his neurological symptoms, as thiamine deficiency was their primary working diagnosis. However, there was no marked improvement, and an EMG was pursued. Its findings revealed postsynaptic neuromuscular junction disorder, and the diagnosis of Myasthenia gravis was confirmed by a positive AchR binding antibody titer. Patient was given five sessions of IVIG infusions, Pyridostigmine was initiated, and Prednisone was up- titrated to 40mg by the time of discharge. Mr N is scheduled to follow up with Neurology at John Hopkins.

IMPACT/DISCUSSION: This case portrays an atypical presentation of Myasthenia gravis in a male. Lower extremity weakness as the initial symptom is known to be very rare. Ocular symptoms, on the other hand, are the most common presentation, found in 50% of patients later diagnosed with MG. If his "eye nerve disease" previously mentioned in his home country was truly his initial presentation, he is among the half whose disease progressed to the generalized form. The specificity of AchR binding Ab's in Myasthenia gravis is 99%. Although I previously resorted to Guillan-Barre and its variants when evaluating ascending weakness, I am now aware that MG is a potential diagnosis as well. This encounter also underscored the importance of precision in obtaining the history of present illness. Noticing that the patient's weakness preceded his dysphagia prevented us from attributing his symptoms to malnutrition alone and missing or delaying the diagnosis.

CONCLUSION: The initial presentation of Myasthenia gravis can be isolated lower extremity weakness. Ocular symptoms are the most common initial presentation, with progression to generalized disease in 50% of patients.

Demonstrating AchR binding Ab's provides the laboratory confirmation of myasthenia gravis, as they are 99% specific for the disease.

A YOUNG WOMAN SUFFERING FROM LOWER BACK PAIN WITHOUT ANY HISTORIES OF CANCERS: CAN YOU SUSPECT THE DIAGNOSIS OF DISSEMINATED CARCINOMATOSIS OF BONE MARROW ONLY WITH THE FINDINGS OF PLAIN X-RAYS OF BONES?

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LEARNING OBJECTIVE #1: Recognize that slight brightness and osteosclerotic changes of bones on plain X-ray can be clues to the correct diagnosis of disseminated carcinomatosis of bone marrow (DCBM).

CASE: A 34–year–old woman without a history of cancer visited our hospital because of lower back pain. Physical examination showed no

abnormalities including breast masses or lymphadenopathy. The laboratory examination showed WBC count of 2.9 × 10^9 cells/L without erythroleukoblastosis, hemoglobin of 9.4 g/dL, platelet count of 136 ×10^9/L, ALP concentration of 3,196 IU/L (isozyme type 2 plus 3, 91%), LDH of 169 U/L, serum calcium concentration of 8.9 mg/dL, and inorganic phosphorus concentration of 3.8 mg/dL. Diffuse hyperdense areas were found in the lumbar spine and bilateral alae of the ilium on plain X–rays. Enlarged views of lateral lumbar spine revealed disappearance of vertical lines of bone trabeculae and unclear endplates of vertebral body as findings of osteosclerosis. Bone scintigraphy showed beautiful bone sign and absent kidney sign, suggesting diffuse bone metastatic lesions. We suspected disseminated carcinomatosis of the bone marrow caused by gastric or breast cancer; however, upper gastrointestinal endoscopy revealed Borrmann 4 type cancer on the anterior wall of the gastric angle. We finally diagnosed DCBM due to poorly differentiated gastric adenocarcinoma by histopathological findings of gastric tumor.

IMPACT/DISCUSSION: It could be difficult to make a diagnosis of diffuse bone metastasis of a solid cancer by findings of plain X–ray, because they might apparently look normal. Although osteosclerotic changes such as sandwich sign or rugger jersey vertebrae are well known, these signs could become less prominent when cancer cells invade the bone marrow, making the transparency of whole vertebrae low. To notice the presence of slightly bright spines and disappearance of normally translucent lines of endplates are the keys to making a correct diagnosis. Disappearance of translucent lines of endplates was confirmed in the present case as well as previously reported cases of diffuse bone metastasis.

The only useful so-called red flag sign of low back pain concerning metastatic cancers of bones, which suggests the importance of careful interpretation of plain X-rays of bones, is a past history of a cancer. However, approximately 40% of DCBM cases did not have the history of cancer. It is essential to carefully interpret the findings of plain X-ray of bones with suspecting the presence of bone metastasis when they are examined due to lower back pain.

CONCLUSION: Clinicians should be alert to the presence of slight brightness and osteosclerotic changes of bones on plain X–rays, especially in patients without a history of gastric, colon, breast, lung, or prostate cancers, which could lead to the diagnosis of DCBM.

A 'STROKE' OF FUNGAL FATE

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LEARNING OBJECTIVE #1: Recognize the clinical features of Coccidioides infections of the CNS.

CASE: A 63-year-old Hispanic man with type 2 diabetes, hypertension, and hyperlipidemia presented to the ED with fever, headache, and altered mental status after recent treatment at an outside hospital for community-acquired pneumonia. On presentation, he endorsed persistent fevers up to 102 degrees, generalized headaches, and difficulty speaking since discharge the week prior. Social history was notable for primary residence in Bakersfield, California and recent travel to Mexico. He was admitted to medicine with a diagnosis of hospital-acquired pneumonia with associated septic metabolic encephalopathy. On examination, he was afebrile with stable vital signs. His neurologic exam was intact and non-focal, and his respiratory exam revealed faint left lower lobe crackles. Admission CT scan of the chest showed many pulmonary micronodules and a left upper lobe consolidation. Given his new neurologic symptoms, MRI of the brain was performed, revealing a left caudate infarct and leptomeningeal enhancement consistent with basilar meningitis. A lumbar puncture showed elevated protein and a lymphocytic pleocytosis. Given concern for disseminated tuberculosis, he was placed on isolation precautions and started on RIPE therapy. However, all AFB smears and a QuantiFERON gold test were negative. He underwent bronchoscopy, and bronchoalveolar lavage washings were positive for Coccidioides. CSF studies subsequently returned positive for Coccidioides. Tuberculosis therapy was discontinued, and high-dose fluconazole was initiated. The patient's symptoms improved after this correct diagnosis was made.

IMPACT/DISCUSSION: This case illustrates the importance of maintaining a broad differential for a constellation of findings that seems consistent with a particular diagnostic entity. Anchoring initially led to an erroneous diagnosis of tuberculous meningitis in a patient with neurologic and pulmonary symptoms, along with tuberculosis risk factors. However, fungal infections of the CNS can present similarly and must be considered in patients with evidence of disseminated disease. These infections can even afflict immunocompetent hosts, particularly within endemic areas. While Coccidioides commonly manifests in the CNS as meningitis, other complications can occur such as hydrocephalus, abscess, or infarction—as in this patient (1). Much of the diagnostic work-up in this case was also characteristic of Coccidioides infections of the CNS: namely, the basilar meningeal enhancement on MRI and the lymphocytic pleocytosis in the CSF (1).

CONCLUSION: Given the nonspecific nature of many presenting features of Coccidioides, there often is a delay in diagnosis and treatment of these infections. Serology and isolation of the organism itself are the worthy keys unlocking the doors to recognition of and recovery from this often elusive yet pernicious disease.

1. Johnson RH, Einstein HE. Coccidioidal meningitis. *Clin Infect Dis.* 2006 Jan;42(1):103-7.

BACK PAIN: NO WALK IN THE PARKINSON'S

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LEARNING OBJECTIVE #1: Recognize Parkinson's disease as a cause for low back pain in the elderly

CASE: An 85 year old man with a history of bilateral hand tremors presented to clinic for further evaluation of chronic low back pain. He had undergone multiple spinal surgeries without improvement. The pain was centered in his lower back, radiated to both hips (but not to his legs) and worsened with rising from a lying or seated position. He denied numbness or incontinence. He previously had been diagnosed with spinal stenosis but did not achieve symptomatic relief with a walker or duloxetine. His partner noticed that over the past year, the patient's voice had gotten softer, he moved more slowly, and he did not pick up his feet while he walked. She also thought that his kyphosis was worsening. Upon examination, his resting posture demonstrated exaggerated forward flexion. Tautness and tenderness of the paralumbar erector spinae and gluteus medius was noted bilaterally. Cogwheel rigidity was noted at the left elbow. Hand tremors were present at rest and with intention. Gait was notable for diminished stride length when performed with a 4-wheeled walker. Presentation was consistent with Parkinson's disease and he was started on carbidopa- levodopa. At 2 month follow-up, his pain, mobility, and posture had improved significantly as reported by decreased pain scores and ability to walk longer without stopping due to pain.

IMPACT/DISCUSSION: Internists should consider Parkinson's disease as a contributor to chronic back pain in the elderly, especially if it does not

resolve with usual therapy. Pausing to obtain additional history and thinking about pain in the context of his posture, rigidity, and slowing helped make the diagnosis of Parkinson's associated back pain in this case. Low back and lower extremity pain occurs 2-3x more frequently in Parkinson's patients than age-matched controls. Pain can precede motor symptoms by several years. It is caused by muscular imbalances associated with Parkinson's itself and skeletal degeneration. Specific contributing conditions may include lumbar spondylosis, scoliosis, spondylolisthesis, and camptocormia. Parkinson's disease also impairs the peripheral nervous system causing generation and amplification of pain as well as impaired pain modulation. Functionally, the patient frequently suffers from impairments with balance, sleep, lifting and walking, leading to more frequent falls.

Dopamine agonists such as levodopa are first line treatment for pain associated with Parkinson's, as they target the pain-generating rigidity and dystonia. Rehabilitation and physiotherapy that includes correction of abnormal posture have been proven more effective than analgesics, massage, or surgery.

CONCLUSION: 1. Consider the diagnosis of Parkinson's disease as a modifiable contributor to chronic low back pain in older adults.

2. First line treatment for Parkinson's associated back pain is a dopamine agonist.

BACLOFEN INDUCED ENCEPHALOPATHY IN A PATIENT WITH END-STAGE RENAL DISEASE

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LEARNING OBJECTIVE #1: Recognize the baclofen induced encephalopathy in patients with End-Stage Renal Disease (ESRD)

LEARNING OBJECTIVE #2: Learn the management of baclofen induced encephalopathy

CASE: 46 years old man with ESRD on dialysis, congestive heart failure, peripheral artery disease, left below-knee amputation presented with wound dehiscence and necrosis following the blunt trauma. He underwent urgent wound revision and debridement followed by negative pressure therapy.

On day 9, patient reported severe leg cramps for which Baclofen 5 mg three times a day was given.

Following two days after baclofen, he was found to be confused, lethargic and less responsive with Glasgow- Coma-Scale of 12. Extensive workup for altered mental status including infectious workup, neuroimaging and metabolic panel were unrevealing. Electroencephalogram was unremarkable apart from diffuse or multifocal cerebral dysfunction. Baclofen induced encephalopathy was suspected and patient was started on daily hemodialysis in addition to regular intermittent dialysis. Mental status improves gradually after second hemodialysis session.

IMPACT/DISCUSSION: Baclofen is a synthetic derivative of gamma-aminobutyric acid (GABA) which acts on GABA-B receptors producing an inhibitory effect on central neurons. It is widely used to treat muscle spasms, hiccups, multiple sclerosis and spinal cord lesion-induced spasticity. As baclofen is primarily eliminated by the kidneys (69-85%), patients with renal insufficiency are prone to develop intoxication. The risk is especially high in ESRD patients but can occur in chronic kidney disease or acute kidney injury. The half-life of baclofen is 4.5-6.8 hours in healthy patients. The half-life is significantly increased in ESRD patient and even low dose of baclofen can cause severe intoxication. Symptoms often began 2-4 days after the therapy with severe cases require intensive unit care.

Baclofen toxicity is under-recognized by healthcare providers and is a reversible cause of encephalopathy and respiratory failure. The first step of management is the recognition of the symptoms. Providers need to suspect baclofen toxicity when a patient with renal insufficiency develops unexplained encephalopathy, hypotonia, areflexia, myoclonus, seizures or respiratory depression. Serum baclofen level can be checked to support the diagnosis (toxicity usually occurs in level above 400 ng/ml). The treatment modalities include supportive care alone or hemodialysis and continuous ambulatory peritoneal dialysis. Hemodialysis can effectively eliminate the baclofen and shorten the time to recovery.

CONCLUSION: Baclofen should be used with caution in patients with renal insufficiency. Clinicians need to have a high index of suspicion for baclofen toxicity in renal disease patients who presents with change in mental state. Baclofen is not recommended in patients with estimated glomerular filtration rate (eGFR) of <30ml/min/1.73m2. With eGFR between 30-60ml/min/1.73m2, it is recommended to start with low dose at long intervals. (El-Husseini et al)

BENEATH THE SURFACE: A CASE OF TOPICAL TACROLIMUS INDUCED ACUTE KIDNEY INJURY

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LEARNING OBJECTIVE #1: Calcineurin inhibitors cause vasoconstriction of renal afferent and efferent arterioles leading to reduction in renal blood flow and glomerular filtration rate.

CASE: A 41-year-old African American woman with a history of plasma cell leukemia status post stem cell transplant presented to oncology clinic and was incidentally found to have a creatinine (Cr) of 3.8 mg/dL (baseline 1.0 mg/dL). Of note, she was admitted to the hospital two weeks prior for an acute kidney injury (AKI) and urinary tract infection for which she was given intravenous (IV) fluids and ciprofloxacin with improvement. She was diagnosed with prerenal AKI from dehydration and instructed to increase oral intake although she reported good intake. Her Cr on discharge was 1.3 mg/dL. From that hospitalization, she was discharged on topical betamethasone and topical tacrolimus for symptomatic cutaneous chronic graft versus host disease (cGVHD) — a complication from her stem cell transplant.

Five days later, her Cr at clinic was 3.8 mg/dL despite drinking eight glasses of water daily, resulting in readmission.

Her only complaints were unchanged chronic itchiness and pain from her cGVHD. She denied use of non-steroidal anti-inflammatory drugs and reported no change in urine output. She received one liter of IV normal saline on admission and Cr improved from 3.8 to 3.3 mg/dL. On exam, she had diffuse skin lesions from cGVHD. Her pancytopenia and Cr had been gradually worsening, with concern for myeloma relapse with nephropathy. Nephrology was consulted. On further history, it was elucidated that the patient was using generous amounts of tacrolimus cream at home. A tacrolimus level was obtained which was 13.9 ng/mL, suggesting significant systemic absorption. Topical tacrolimus was discontinued, with improvement in kidney function (Cr downtrended to 2.0 mg/dL in 2 days). She was discharged without tacrolimus. Her cGVHD was treated with extracorporeal photopheresis. At a follow-up clinic appointment one month after discharge, her Cr was 1.0 mg/dL and her cGVHD was improving.

IMPACT/DISCUSSION: Calcineurin inhibitors, including tacrolimus, have been known to cause acute kidney injury through inhibiting nitric oxide (NO) synthesis and endothelium-dependent NO-mediated renal vasodilation. Topical tacrolimus has not been shown to have this effect, and since it does not cause skin atrophy, serum levels are usually

undetectable or remain low.[4] Our patient's skin was denuded, which likely contributed to its systemic absorption, which allowed for nephrotoxicity to occur. The diagnostic challenge was recognizing an alternative cause for the patient's pre-renal AKI. She reported plenty of fluid intake at home. The next step is to consider other causes of pre-renal AKI including a thorough review of medications, and keeping an open mind.

CONCLUSION: Providers should keep an open mind, and consider the possibility of systemic absorption of topical medications in their differential diagnosis especially for patients with skin breakdown.

BEWARE OF CANDIDA AURIS: AN EMERGING FUNGAL PATHOGEN THAT MADE ITS WAY INTO MISSISSIPPI

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LEARNING OBJECTIVE #1: Increase awareness on C.auris among all healthcare providers for early recognition

LEARNING OBJECTIVE #2: Emphasize importance of early Infectious Diseases consultation in patients with candidemia to improve patient outcomes and prevent outbreaks

CASE: A 64 year old AAF missionary with past medical history of HTN was transferred from outside healthcare facility(HCF) with altered mental status. She underwent craniectomy for left ICH 2-months ago in Malawi, complicated by CSF leak with subsequent sepsis and unknown antibiotic treatment. Physical exam on presentation showed GCS of 8 with aphasia and right-sided hemiparesis. A PICC line was in place for unclear indication. CT Head revealed ventriculomegaly, left side hypoattenuation suggestive of edema, herniation through craniectomy defect and midline shift. She underwent craniectomy with EVD placement, then transferred to ICU on ventilator support. Laboratory studies revealed WBC count of 16.4. Blood culture on admission was positive for yeast. CSF studies showed RBC-6273, WBC-53 (N75,L20,Macrophage5), Glucose-43, Protein-62, yeast on Gram stain and S.epidermidis on culture. Serology was negative for Cryptococcus, HepC Ab and HIV Ag/Ab. Meningitis/Encephalitis panel was negative. She was initiated on empiric Vancomycin, Meropenem and Micafungin. Blood culture finalized as C.auris on day 5 of hospitalization. Subsequently, ID consultation was placed and PICC was removed. Per ID recommendation, isolation was initiated, Micafungin switched to Amphotericin B and Flucytosine due to concern for ventriculitis from multidrug resistant fungus. Sensitivities for C.auris resulted on day 18 of hospitalization with resistance to fluconazole alone. Patient continued to worsen during hospital stay and family opted for palliative care.

IMPACT/DISCUSSION: Candida auris is emerging multidrug-resistant yeast, which has been a major concern due to rapid spread in healthcare facility causing outbreaks. The inpatient mortality ranges from 30-60%. The key virulence factor is biofilm formation resulting in colonization of hospital environmental surfaces, patients and devices causing persistent and invasive infections. It shows intrinsic resistance to azoles, variable response to amphotericin B with some strains being pan-resistant. A study reported 14% of fungemia cases in S.Africa to be secondary to C.auris. Patients with recent stay in HCF outside the US are at highest risk for acquisition. A time lag of 5 days in identification of such cases, as in our case, can significantly delay initiation of effective treatment and isolation precautions resulting in increased patient morbidity, mortality and risk for outbreak in the HCF.

CONCLUSION: This is the first case of C.auris in Mississippi. Our case highlights the need for all healthcare providers, especially frontline staff, to be cognizant of this emerging fungal pathogen. It also emphasizes importance of prompt ID consultation in patients with fungemia to guide appropriate management and thus lower transmission and patient mortality.

BILATERAL CUTANEOUS METASTASES WITH NO SURFACE CHANGES SECONDARY TO INVASIVE LOBULAR BREAST CARCINOMA

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LEARNING OBJECTIVE #1: Assess all acute-onset cutaneous changes in breast cancer patients with triple assessment in the absence of typical surface changes.

LEARNING OBJECTIVE #2: Treat cutaneous metastases with concurrent cryotherapy and imiquimod.

CASE: A 54 year old female with metastatic, hormone positive, left lobular breast carcinoma status post- chemotherapy, radiation, and left mastectomy was found to have recurrence in right breast with a bump-like rash which the patient reports appeared one week prior to admission after starting capecitabine chemotherapy. Physical examination of the face, neck, chest, axillae, back and legs revealed scattered firm 1-cm well circumscribed pink dermal nodules on the chest, bilateral axillae, neck, back and left frontotemporal hairline with no involvement of the extremities and mucosal surfaces. Importantly, the nodules were mildy painful and firmly fixed to the underlying tissue with no erythema, crusting, scaling, lichenoid eruptions, drainage and plaques. A 4mm punch biopsy of a nodule was performed, revealing invasive lobular carcinoma consistent with patient's prior history of breast primary. The patient received no local treatment for her cutaneous disease.

IMPACT/DISCUSSION: Cutaneous metastasis is an unusual clinical finding occurring at a rate of about 2.5% per primary tumor with up to a 76% mortality within one year. Thetypical presentation is isolated painless dermal nodules w/ surface changes including superficial discoloration and changes in texture on the chest ipsilateral (40%) to the primary breast malignancy. Other common locations for cutaneous metastases include the head and neck (28%) and extremity (18%). Herein, this patient had a nodular presentation in multiple sites with pain and no surface changes, for which the differential includes lipomas, cysts, and fibromas. In a breast cancer patient, other possible etiologies include acute or chronic cutaneous change secondary to radiation therapy, or infectious processes such as cellulitis or candidiasis. The general internist may also be alerted to the possibility of cutaneous metastases by a lack of a febrile response, normal WBC counts and prolonged presence of the lesion (weeks to months) without response to antibiotics. Thus, clinicians should obtain a CBC to rule out infection and perform a comprehensive triple assessment with clinical, radiological and histologic evidence when evaluating acute skin lesions. Though many metastases can be detected based on histologic evidence alone, immunochemical analysis with markers p63, B72.3, and calretinin is an important diagnostic adjunct to differentiate metastases from primary skin tumors. Management w/ cryotherapy and topical immune modulators (imiquimod, 5-FU) may generate improved responses to systemic chemotherapeutics like capecitabine.

CONCLUSION: Appropriate detection of cutaneous metastases, followed by expedited management with topical immune modulators may generate improved responses to systemic chemotherapeutics, improving overall mortality for breast cancer patients.

BILOTHORAX: AN UNCOMMON COMPLICATION FOR A COMMON PROCEDURE

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LEARNING OBJECTIVE #1: Diagnose bilothorax in a patient with shortness of breath in the setting of elevated liver function tests and known biliary injury.

LEARNING OBJECTIVE #2: Recognize uncommon complications of percutaneous transhepatic biliary drain placement.

CASE: A 51 year old female with a history of secondary sclerosing cholangitis status post biliary stent placement ten days prior presented with abdominal pain and vomiting. Imaging showed stent malpositioning, and PTBD was placed; she clinically improved and was discharged home. One week later, she returned with abdominal pain and dyspnea. She was hemodynamically stable. Labs showed alkaline phosphatase 253, ALT 21, AST 63, total bilirubin 7.5, and WBC of 6.4K. CT scan of abdomen/pelvis with contrast revealed a properly positioned biliary drain and trace fluid in the falciform ligament. Her chest x-ray showed bilateral pleural effusions, worse on right. Right-sided thoracentesis yielded 1 liter of green exudative fluid notable for bilirubin of 7.4mg/dL, consistent with bilothorax. She was treated with ceftriaxone and metronidazole for seven days for bile pleuritis. Given the concern for a biliary-pleural fistula, a cholangiogram was performed, which showed a patent common bile duct draining into duodenum. The PTBD was removed without recurrence of her pleural effusion; her dyspnea and abdominal pain improved.

IMPACT/DISCUSSION: The occurrence of bilious pleural effusion, termed bilothorax, is a rare type of exudative pleural effusion. It is most commonly seen as an isolated right sided pleural effusion, and case reports describing etiologies range from sequelae of liver transplant[1], direct biliary-pleural fistula formation from biliary stent migration[2], biliary manipulation with subsequent biliary peritonitis and pleuritis[3,4], and more. However, a recent publication presented a case of an isolated left sided bilothorax[9]. Bile leakage into the pleural space is a dangerous complication that requires prompt recognition, as bile salts can cause severe inflammation in the pleural space leading to pleuritis as well as infection. Our patient developed bilateral bilious pleural effusions after PTBD placement. Percutaneous biliary drain placement is a fairly common procedure. Common complications of PTBD are bleeding and tube dislocation[7]. It is known to have more complications than ERCP or endoscopic ultrasound-guided biliary drainage[5] for malignant obstruction. Timely recognition of symptoms, clinical investigation with imaging, treatment with thoracentesis and possible removal of PTBD are essential for avoiding further complications of bilothorax.

CONCLUSION: Bilothorax, although rare in its occurrence, does occur after PTBD placement as shown in this case. It should be considered for a patient with recent biliary tree manipulation who develops abdominal pain and/or dyspnea. Bilothorax is a serious and life threatening condition, as bile salts can cause chemical pleurodesis as well as infection and has even been shown to progress to ARDS and death[3].

BIOPSY-PROVEN VASCULITIS WITH ACUTE MONOCULAR VISUAL LOSS AND MONONEURITIS MULTIPLEX

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LEARNING OBJECTIVE #1: Diagnose and treat giant cell arteritis (GCA)

LEARNING OBJECTIVE #2: Recognize mononeuritis multiplex (MNM) as a potential clinical manifestation of vasculitis

CASE: A 75 year-old female presented with fevers, acute right foot and right wrist drop, and subsequent acute left visual loss. Initial imaging studies demonstrated multifocal infarcts on brain MRI, a possible small mitral valve vegetation on TEE, and left lower lobe pulmonary microemboli on chest CTA. She had an elevated ESR >120mm/hr, elevated CRP 274mg/L, normal creatinine, mildly positive ANA (1:80 speckled pattern), negative specific ANA subserologies, negative ANCAs, negative cryoglobulins, negative antiphospholipid antibody panel, and normal C3 and C4. Extensive infectious disease and malignancy workup was negative. Electromyogram/nerve conduction studies were consistent with MNM. Cerebral angiogram and abdomen/pelvis CTA did not demonstrate any vasculitis. Repeat chest CTA did not show pulmonary emboli and repeat TEE did not show a vegetation. Right sural nerve biopsy showed necrotizing arteritis, right anterior tibial muscle biopsy showed necrotizing myopathy with perivascular inflammation, and left temporal artery biopsy showed temporal arteritis. The patient was treated with IV pulse cyclophosphamide (600mg/m^2) and high-dose corticosteroids with clinical stabilization.

IMPACT/DISCUSSION: Patients with suspected GCA should initially be treated with high-dose corticosteroids to prevent irreversible visual loss as urgent temporal artery biopsy is arranged. MNM is a pattern of neuropathy affecting two or more noncontiguous nerves simultaneously or sequentially. In this patient, the presence of MNM prompted consideration of an alternative diagnosis to isolated GCA given that MNM is not a typical clinical manifestation of GCA and instead more commonly occurs in small and medium vessel vasculitis such as ANCA-associated vasculitis and polyarteritis nodosa. There was no clear objective evidence in this case to support a more specific "name" for a small or medium vessel vasculitis that would typically cause MNM.

CONCLUSION: Given the presence of MNM, pulse IV cyclophosphamide was initiated to prevent progressive vasculitic neuropathy or other severe neurologic deficits. This unique case illustrated a challenge in vasculitis nomenclature that has been addressed in the literature and the importance of tailoring immunosuppressive treatment to the degree of clinical manifestations.

BLACK COHOSH INDUCED CHOLESTATIC LIVER INJURY

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LEARNING OBJECTIVE #1: Recognize Black Cohosh as the cause of Cholestatic Liver disease.

LEARNING OBJECTIVE #2: Monitor the LFTs in patients taking Black Cohosh.

CASE: A 50 year old AAF presented with a 4 month history of severe jaundice, malaise, itching and alopecia. Her medical history was significant for HTN, anemia, COPD and asthma. Her medications include FeSo4, Albuterol, Symbiocort and Coreg. Herbal medicine included Black cohosh for hot flashes. Family history was positive for Lupus and PSC. She denied tobacco, alcohol or illicit drug use. There was no history of recent travel, transfusions, tattoos or sick contacts. Physical exam on initial presentation was significant for a tender right upper quadrant and jaundice.

Laboratory studies revealed total bilirubin of 26.20 mg/dl with direct bilirubin of 17.14 mg/dl, AST of 37 U/L, ALT of 26 U/L, ALP of 207 U/L, GGT of 21 mg/dl. The INR was 1.02. CBC, BMP and albumin were unremarkable. Biochemical markers including : Hepatitis A,B and C serology, CMV Ig M, EBV PCR, ANA, antimitochondrial IgG, anti-smooth muscle, anti-LKM antibodies were all negative.

CT of the abdomen showed multiple liver hemangiomas. EUS demonstrated no significant pathology in the pancreas and common bile duct. ERCP demonstrated the common bile duct and common hepatic ducts were approximately 5 mm, smooth and without stricture. The cystic duct, gall bladder, intra-hepatic and extra- hepatic biliary duct systems were completely normal without missing secondary duct or irregularities.

Liver core biopsy demonstrated mild mixed inflammatory infiltrate with equicoval feature of biliary injury. There was no interface activity. The lobular parenchyma showed rare acidophilic bodies, patchy sinusoidal dilatation but without zonal destruction. Cholestasis was present and some hepatocytes showed cholate stasis injury, confirming Drug-induced Liver injury.

Black Cohosh was stopped and the patient was started on the steroids. Patient had a symptomatic relief and the bilirubin decreased by 70%

IMPACT/DISCUSSION: The use of alternative medicine has increased substantially. 40 million adults currently take herbal therapies. These escape requirement for safety and efficacy as they are considered "dietary supplements" by the FDA. There is paucity of randomized, placebo-controlled trials and adverse effects are often discussed only in case reports.

With data indicating that estrogen is associated with increased cardiovascular events, patients look towards Black Cohosh as an alternative therapy for menopausal symptoms. Black cohosh(Actaea racemosa) is marketed as a phytoestrogen. Formononetin, an estrogenic isoflavone, was reported to be isolated from it and is an active ingredient for activity.

CONCLUSION: This case presented had no known hepatic history, no potential hepatotoxic usage and a negative workup for any pathology. Biopsy confirmed Drug-induced liver injury. It hereby emphasizes the importance of recognizing herbal supplements like black cohosh as a cause of liver failure and close monitoring of hepatic function.

BLACK ESOPHAGUS- A RARE COMPLICATION OF DIABETIC KETOACIDOSIS

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LEARNING OBJECTIVE #1: Identify etiologies of esophageal necrosis

LEARNING OBJECTIVE #2: Describe the treatment of esophogeal necrosis

CASE: A 31-year-old man with a history of uncontrolled type I diabetes mellitus complicated by end stage renal disease and gastroparesis, who presented with several days of abdominal pain, emesis, and lethargy and was found to be in diabetic ketoacidosis. Shortly after presentation he developed multiple episodes of small volume hematemesis. He denied fever, caustic ingestion, melena, NSAIDs, alcohol or intravenous drug use. On exam, blood pressure was 90/60 mmHg, with a heart rate of 95 beats per minute. He was given IV fluids, an insulin drip, and IV pantoprazole with a GI consult for endoscopic evaluation. Esophagogastroduodenoscopy revealed patchy areas of distal esophageal necrosis with areas of ulceration consistent with acute esophageal necrosis (AEN). After a day of therapy with fluids, insulin, and pantoprazole, his hematemesis and DKA resolved.

IMPACT/DISCUSSION: There have been 88 case reports of AEN or "gurvitis syndrome," and the etiology is unclear. It is suspected that tissue hypoperfusion may be an underlying pathophysiology that leads to a vulnerable esophageal mucosa, however a superimposed insult to the vasculature or esophageal lining itself is often required. A few pathological conditions appear to have an association with AEN including caustic ingestion, lactic acidosis, coronary artery disease, sepsis, GERD, and DKA.

The pathophysiology of DKA and its association to AEN is centered around a state of profound dehydration causing a low flow vascular state with hypoperfusion. The distal esophagus is with the least vascular supply and is most susceptible in the setting of acute injury. Our patient's distal esophageal involvement, and history of prolonged emesis are consistent with this theory. Finally, given his concomitant risk factor of chronic GERD secondary to gastroparesis, it appeared the injury to his esophageal mucosa was too much to overcome.

CONCLUSION: Although the prevalence of AEN is only 0.001 to 0.2%, the mortality rate approaches 35%, emphasizing the importance of rapid recognition by clinicians. While the goal of therapy is directed at underlying medical comorbidities, initial management should include volume expansion with IV fluids, gastric acid suppression, Nil per oral, and consideration of sucralfate. It is also important to note a high complication rate of esophageal perforation, prompting a contraindication to nasogastric tubes.

BLOODY NIPPLE DISCHARGE IN A MAN ON DUAL ANTICOAGULANT AND ANTIPLATELET THERAPY: THE CLINICAL PRESENTATION OF BREAST CANCER IN MEN

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LEARNING OBJECTIVE #1: Distinguish the clinical presentation of breast cancer in men from that in women

LEARNING OBJECTIVE #2: Manage bloody nipple discharge in a man

CASE: A 74-year-old man presented for evaluation of unilateral bloody nipple discharge of 2.5 months' duration. There was no history of trauma. He noted no mass, skin changes, tenderness, or adenopathy.

PMH was significant for prostate cancer, CAD and atrial fibrillation (AF). Medications included apixaban for AF and clopidogrel following coronary angioplasty and stent placement. Two brothers had cancer, one of the throat and the other of unknown etiology. There was no family history of breast or ovarian cancer. He was a 15-pack year former smoker.

On examination, he appeared well. BP 134/65, Pulse 70, Temp 36 C, BMI 30.39. Discharge was triggered by right breast palpation along the areolar border at 10:00. The breasts appeared symmetric without any other irregularities. He had right supraclavicular adenopathy but otherwise the examination was normal. Mammogram and focused ultrasound revealed breast tissue in the right retroareolar region consistent with gynecomastia, but no tissue abnormality suspicious for malignancy. Cytology of the breast discharge revealed atypical ductal cells. Excisional biopsy of the right nipple-areolar complex found DCIS characterized by strong E-Cadherin staining, IM grade, cribriform subtype with microcalcifications and no blood vessel or lymphatic invasion. He was referred for genetic counseling.

IMPACT/DISCUSSION: Breast cancer (BC) in men is extremely uncommon, representing <1% of all reported BC's and <1% of cancers in men. The most common histopathology of male BC is invasive carcinoma. The typical presentation is a firm, painless, retroareolar mass, occasionally presenting with nipple retraction, ulceration, breast pain, and axillary adenopathy. In men, the diagnosis of DCIS without invasive disease is unusual, accounting for <5% of all cases. While DCIS in men commonly presents as a retroareolar cystic-like mass, nipple discharge may be the sole symptom of early disease. Though nipple discharge, even when sanguineous, is most frequently benign in women, the incidence of cancer is reported as 57% in men presenting with this symptom. Among patients with BC, up to 40% of men have BRCA2 mutations compared to up to 10% of women; thus, all men with BC should be referred for genetic evaluation.

The patient's dual anticoagulant and antiplatelet therapy likely contributed to an increased risk of bleeding in the setting of malignancy, with earlier onset of bloody nipple discharge, enabling the diagnosis of BC at an early pre-invasive stage.

CONCLUSION: This case highlights the importance of increasing both patient and physician awareness of the signs of male BC to facilitate earlier diagnosis of this disease. Anticoagulant therapy may precipitate bleeding from DCIS that would otherwise remain clinically silent, facilitating the diagnosis of male BC at an earlier stage and bettering its prognosis.

BLUE ADULTS: UNREPAIRED TETRALOGY OF FALLOT IN AN ADULT HONDURAN IMMIGRANT

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LEARNING OBJECTIVE #1: *Recognize atypical presentations of unrepaired Tetralogy of Fallot (TOF) in adults within the context of socioeconomic disparities*

LEARNING OBJECTIVE #2: *Recognize the global prevalence of uncorrected congenital heart disease (CHD) and propose heightened awareness for further workup in immigrants with a remote history of murmur*

CASE: 35 y/o Honduran male immigrant with a remote history of a heart murmur diagnosed in childhood presented to clinic for routine care. Denied prior treatment. Endorsed occasional dyspnea on exertion, first noticed at age 25. Denied orthopnea, PND, lower extremity edema, syncope, palpitations, or chest pain. Had no significant past medical, surgical, or family history. Vital signs were remarkable for hypoxia (O2 saturation: mid 80s on room air). Physical exam was remarkable for severe clubbing and a grade 3/6 systolic murmur best heard in RUSB with radiation to the neck. No diastolic murmur present. Labs showed polycythemia (Hgb>21). EKG was consistent with RVH. Echocardiogram revealed a large VSD, RVH and right atrial dilation with severe pulmonic stenosis. Cardiac MR confirmed above findings and showed an overriding aorta, thus confirming TOF diagnosis. Qp/Qs ratio 1.6:1. In March of 2019 he underwent successful TOF repair and is doing well.

IMPACT/DISCUSSION: Tetralogy of Fallot is the most common cyanotic congenital heart disease (CHD) in adulthood. It's generally recognized and surgically corrected at a young age. Survival rates of unoperated patients over the age of 30 are estimated to be around 6% (Bertranou et al) and compensatory mechanisms have been previously described in the literature. Presentation of unrepaired TOF in adults is rare in the US. However, the global burden of unrepaired CHD is much higher (Webb, 2015). Studies conducted in countries with poor access to care show a much higher prevalence of unoperated CHD persisting to adulthood. As our immigrant population continues to grow, we will likely experience a rise in cases of unrepaired CHD. Prompt diagnosis, management, and postoperative care are crucial determinants of patient outcomes. Surgical repair after age 40 and lack of access to follow up care have been associated with poorer outcomes. Unfortunately, studies have shown a significant difference in mortality rates between postoperative CHD patients from different racial and socioeconomic backgrounds (Gilboa). Our case raises awareness about the global burden of CHD and how immigration might impact the incidence of unrepaired CHD in the US. It also brings to light questions about current barriers to care in CHD across different socioeconomic groups.

CONCLUSION: -Unrepaired TOF in adulthood is rare and compensatory mechanisms may lead to atypical and variable clinical presentations

-Unrepaired CHD in adulthood may become more prevalent in the US due to a growing immigrant patient population with lack of access to care.

-We must be aware of the barriers to care in CHD contributing to differences in patient outcomes between socioeconomic groups.

BONY GROWTH AFTER A TRACK MEET

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LEARNING OBJECTIVE #1: Review imaging findings of myositis ossificans.

LEARNING OBJECTIVE #2: Identify treatment options of myositis ossificans

CASE: A 21-year-old man presents to clinic for right thigh pain with high-impact exercise. This pain began three years ago at a track event when he dropped a heavy weight onto his anterior right thigh. He had a several-month period of pain, swelling, and limited motion at his right knee joint. The limited range of motion resolved with rest, icing, and stretching, however, he noticed a growing mass in his right thigh. His right thigh pain also persisted and was exacerbated by activity and palpation.

On physical examination, there was a palpable solid mass 23 cm in length, extending along his right hip down the upper thigh, ranging from 1 to 2 cm in width. The mass was firm and painful to palpation but without surrounding erythema or fluctuance. Radiograph of his femur showed sheet-like areas of chronic heterotopic ossification in the soft tissues along the anterior right hip and thigh compatible with myositis ossificans.

IMPACT/DISCUSSION: Myositis ossificans most commonly occurs in young men after sports-related trauma in large muscles of the extremities such as quadriceps femoris, flexor muscles of arm, and hamstrings. Calcification typically occurs 2 to 6 weeks after injury, and is hypothesized to occur due to muscle damage leading cytokine activation of vascular endothelial cells of skeletal muscle.

CONCLUSION: Treatment is initially conservative with rest, ice, analgesics, and early physical therapy. NSAIDs may be used to decrease inflammatory ossification. Surgical excision was offered in this case, but not pursued.

BRACHIAL PLEXOPATHY: A RARE COMPLICATION AFTER HEROIN USE

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LEARNING OBJECTIVE #1: Brachial plexopathy should be considered as differential diagnosis for extremity weakness in heroin abuse.

CASE: A 25-year-old man was brought in because he was found unconscious by his mother after injecting heroin in his left arm. He gained consciousness after naloxone injection was administered. He complained of right upper extremity weakness and numbness. Physical examination determined weak handgrip, hand extension and flexion, decreased sensations in C5, C6, C7 dermatomes. The patient also had absence of right arm triceps reflex and diminished brachioradialis reflex. Creatine phosphokinase was elevated to 11,434 U/L, but kidney function was at baseline. MRI of brachial plexus revealed asymmetric muscular enhancement affecting several muscle groups in the right neck and shoulder, no extrinsic compression upon the brachial plexus nerve roots was reported. MRI findings were suggestive of an inflammatory neuritis, resulting in asymmetric abnormal muscular enhancement. He was treated with gabapentin and Meloxicam, as per neurology recommendation. Both of his sensory and motor symptoms partially improved within 24 hours of starting treatment.

IMPACT/DISCUSSION: The brachial plexus is a network of nerve fusions and divisions that originate from cervical and upper thoracic nerve roots and terminate as nerves that innervate muscles and skin of the shoulder and arm. It includes 5^{th}, 6^{th}, 7^{th}, 8^{th} cervical nerves and 1^{st} thoracic nerve root. Our patient had decreased sensation in C5, C6, and C7 dermatomes. Brachial plexopathy can be caused by inflammation, direct trauma, stretch injuries and pressure from tumors in the area. Our patient did not experience any trauma or stretch to neck and shoulder area

and MRI did not show any mass affecting nerves or muscles, however it did show inflammatory neuritis in the brachial plexus. Heroin can cause systemic effects via immunological/toxic mechanisms, which can include stroke, rhabdomyolysis, myositis, polyneuropathies and plexopathies. Brachial plexopathy, one of the rarest side effects of heroin, can be asymmetric and unrelated to site of injection. Four cases of heroin-induced brachial plexopathy have been reported. In most cases, symptoms began within 3-36 hours of heroin use, two had concurrent rhabdomyolysis, and one had symptoms on the same side as injection. The report cases had sensory deficits that responded to supportive therapy, but their motor deficits did not respond. Our patient had brachial plexopathy along with rhabdomyolysis, and both his sensory and motor deficits responded significantly to therapy.

CONCLUSION: Plexopathies should be considered in heroin abusers with extremity weakness and sensation loss. High-dose NSAIDS in addition to Gabapentin may facilitate symptomatic relief.

BRAIN-ONLY METASTASIS OF PRIMARY ADENOCARCINOMA OF RECTAL ORIGIN

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LEARNING OBJECTIVE #1: Describe a unique presentation of rectal adenocarcinoma.

LEARNING OBJECTIVE #2: Recognize that aggressive treatments in brain only metastasis of colorectal cancer can have positive outcomes.

CASE: 56-year-old female with no significant past medical history presented to the ED with new-onset mild left upper extremity weakness. She denied a history of headaches, dizziness, vision changes, changes in speech and nausea/vomiting. Imaging on presentation revealed 3 brain lesions, 1.5 x 1.6 cm lesion in the posterior right frontal lobe, 1.8 x 1.8 cm lesion in the left frontal lobe and 3.7 x 3.0 cm lesion in the right occipital lobe.

Upon obtaining further history, patient reported occasional rectal bleeding along with a 25-lb unintentional weight loss in the past 6 months. No family history of malignancy. CT abdomen/pelvis revealed thickening of the rectal wall and presence of prominent internal iliac lymphadenopathy, concerning for malignancy. CT Chest revealed no evidence of mass, lymphadenopathy or metastatic disease.

Patient underwent craniotomy with successful removal of 2 tumors with pathology consistent with metastatic adenocarcinoma of rectal origin. She also underwent flexible sigmoidoscopy which revealed a non-obstructing rectal mass extending 13 cm from the anal verge. Pathology positive for moderately differentiated adenocarcinoma.

Post-craniotomy, she received stereotactic radiosurgery (SRS) for the remaining brain metastasis. She received 8 cycles of chemotherapy with FOLFOX/bevacizumab. Restaging revealed stable CT C/A/P and MRI brain with no progression and no evidence of metastatic disease. She completed 5 weeks of chemoradiation, followed by a low anterior resection of the rectal mass. CT C/A/P performed after surgery negative for recurrence or metastatic disease. MRI brain revealed a new lesion to the left motor strip measuring 0.7 cm with mild edema. SRS performed to the new left motor strip lesion with follow up MRI brain negative for metastatic disease. Patient remains free of systemic disease 18 months since the initial diagnosis.

IMPACT/DISCUSSION: Colorectal cancer is the fourth most common malignancy and the second most common cause of cancer-related deaths in the United States. Brain metastasis from CRC are rare, with the incidence rate reported to be 0.6 to 3.2%. Literature review of brain only metastasis from CRC resulted in only one published case report. This case report highlights a unique presentation of the disease process and the positive outcome of an aggressive treatment protocol. There is an increased morbidity and mortality associated with brain metastasis with the reported median survival of 2.6 to 7.4 months.

CONCLUSION: Incidence of brain metastasis from CRC ranges from 0.6 to 3.2%. Due to the rarity of this presentation of colorectal cancer, there is very limited literature available on management and outcomes. This case report highlights the positive outcomes achieved with an aggressive treatment plan of brain-only metastasis of rectal adenocarcinoma.

BRAIN STEM TUMOR MIMICKING PHEOCHROMOCYTOMA IN AN ADULT

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LEARNING OBJECTIVE #1: Recognize the clinical features of brain stem tumors

LEARNING OBJECTIVE #2: Recognize that brain tumors may mimic clinical symptoms of Pheochromocytoma

CASE: A 58-year-old male truck driver with history of obstructive sleep apnea on CPAP, emphysema and hypertension presented to clinic to establish care, with concern for poorly controlled high blood pressure (BP), dizziness and fatigue over one year, despite compliance with Losartan 100mg and Hydrochlorothiazide (HCTZ) 25mg. Prior studies - stress tests, echocardiogram, carotid ultrasound, HbA1c and thyroid tests - were unremarkable. Clinic vital signs demonstrated orthostatic hypotension; therefore HCTZ was held. One week later, patient felt better - no dizziness, BPs from 120/80 to 130/90.

Two weeks later he reported a home BP of 190/100, dizziness, episodic headache, fatigue, unsteady gait and falls. Office BP was 145/107. Physical exam noted bruises on bilateral arms and ataxia. He was sent to the Emergency Department (ED) for evaluation of ataxia and possible secondary hypertension.

In the ED, Magnetic Resonance Imaging Head showed an expansile lesion involving the brainstem/craniocervical junction, extending from the inferior pons to C2 level, with minimal right cerebellar extension. The epicenter of the lesion was in the medulla oblongata. Surrounding cerebral edema resulted in posterior fossa compression. He underwent suboccipital craniectomy with C1-C2 bilateral laminectomies. Flow cytometry and cytology from intraoperative CSF sample were negative for malignancy. His post- operative course was uneventful. He was discharged with follow up.

IMPACT/DISCUSSION: This case highlights the importance of 1. A detailed physical exam, as gait ataxia prompted his ED referral 2. Considering a broad differential diagnosis for severe symptomatic paroxysmal hypertension. Prior to this case, my diagnostic approach may have been tunneled towards working up common causes like pheochromocytoma. A missed diagnosis of CNS lesion in this patient would have proven harmful, given his occupation as a truck driver.

Several case reports have addressed brainstem tumors mimicking pheochromocytoma in children, however few have documented cases in adults. The incidence of primary brain tumors in American adults is ~30 per 100,000[5]. Older adults (>40 yo) have higher prevalence of metastatic brain tumors, most of which have no identifiable cause[5.] Hypertension and tachycardia can result from stimulation of the cardiovascular center in the medulla oblongata, increased catecholamine production and increased intracranial pressure. This patient's lesion likely compressed the rostral ventrolateral medulla, resulting in: efferent sympathetic stimulation, increased cardiac contractility, tachycardia and vasoconstriction[4]. Aqueductal obstruction can further lead to headache and ataxia.

CONCLUSION: It is important to recognize atypical, classic features of brainstem tumors that mimic pheochromocytoma. A broad differential is also essential for proper investigation and diagnosis.

BREAKING THE CYCLE: HEALTHCARE'S MISSED OPPORTUNITY TO SUPPORT RECOVERING ADDICTS

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LEARNING OBJECTIVE #1: Learn how public health initiatives can help address social determinants of health that lead to relapse.

LEARNING OBJECTIVE #2: Recognize the extent to which lack of access to affordable prescription drugs determines recourse to street drugs, relapse, and recidivism.

CASE: 33-year-old uninsured man presents with heroin withdrawal. He reports a history of heroin use disorder and was discharged from intensive inpatient buprenorphine treatment two days prior to admission. He reported being unable to afford his buprenorphine prescription. He attempted to buy buprenorphine on the street, but the street price of buprenorphine was higher than heroin. At that point, he used heroin, was arrested and subsequently brought to the hospital when he developed withdrawal symptoms.

IMPACT/DISCUSSION: Buprenorphine is a long-acting opioid used to treat opioid addiction by reducing cravings and preventing withdrawal. Studies have shown buprenorphine to be as effective as methadone as medical therapy for opioid use disorder (MTOUD). Though shown to be effective, there is still limited access to these medications. For example, in Georgia, 93.2% of health care facilities provide substance abuse assessment or diagnosis. Only 58.9% offer some formulation of buprenorphine therapy and 39.6% of facilities offer no pharmacotherapy services.

Access to buprenorphine is further limited by cost. Poverty and unemployment correlate strongly with the prevalence of opioid use. While Medicaid, Medicare and other third-party payers cover MTOUD, a significant portion of the population remains uninsured, 27.5 million in 2018. The average retail price of buprenorphine is $300/month. In 2013, the median street price of buprenorphine for the average user was approximately $30 per day. Yet the street price for heroin is lower, around $20.

Breaking the cycle of relapse requires ready access to affordable, effective pharmacotherapy. Evidence shows that the strongest risk factor for use of diverted buprenorphine was failure to access legitimate treatment (OR 7.31). Data suggests that office-based opioid treatment reduces illicit opioid use and increase drug abstinence.

CONCLUSION: This case illustrates the barriers patients face in accessing affordable, effective pharmacotherapy for opiate use disorder. Public health initiatives to address the opiate epidemic must consider and address the barriers patients face in seeking to break the cycle of opiate addiction.

BREAST CANCER IN A MALE TO FEMALE TRANSGENDER PATIENT, AN UNCOMMON FINDING ... OR IS IT?

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LEARNING OBJECTIVE #1: To raise awareness regarding transgender population's unique situation which makes them vulnerable to be excluded from traditional screening guidelines.

CASE: A 53-year-old Male to Female transgender patient with history of Human Immunodeficiency Virus (HIV) on Highly Active Anti-Retroviral Therapy (HAART) presented with severe left elbow, bilateral chest pain and lower back pain. A CT angiogram of the chest was done to exclude pulmonary embolism showed an incidental 4 cm right breast mass. Enlarged lymph nodes in the right axilla, scattered lytic lesions in the axial skeleton and the left humeral head were also noted. Further evaluation of the breast mass using ultrasound guided biopsy confirmed invasive ductal carcinoma of the breast. Oncology team were consulted and recommended CT of the abdomen and pelvis and an MRI of her brain to assess for metastatic disease which were negative. She lives out of state and so opted to return home and subsequently lost to follow up. Multiple risk factors for breast cancer were recognized in our patient, including Cross-sex Hormone Therapy (CHT), HIV infection on HAART therapy.

IMPACT/DISCUSSION: Male to female breast cancer was first recognized in 1968. However, risk factors for this condition remain unclear. In our patient, long-term use of Cross-sex Hormone Therapy represented a major risk factor for breast cancer. However, there's growing evidence to support increasing rates of breast cancer in HIV-positive population, making it a potential risk factor as well. A case control study was conducted by the National Health Insurance Research Database of Taiwan showing increased risk of breast cancer in HIV positive individuals on HAART, likely related to the loss of CXCR-4 protective effect promoted by HIV virus. More studies are needed to explore HIV's effect on the incidence of breast cancer. HIV positive women have high frequency of poor prognostic features of breast cancer, such as bilateral disease and early metastasis. This was described in a study done at Harvard Medical School in 2005. These findings raise credible concerns given the lack of active breast cancer screening schedule in HIV positive population. As seen in our patient, increased estrogen exposure may have a role in the proliferation of neoplastic breast epithelium. However, a large cohort study in 2013 investigated breast cancer incidence among Dutch male and female transsexual persons between the ages of 18-80 years with exposure to cross- sex hormones between 5 to >30 years. They concluded that cross-sex hormone administration does not increase the risk of breast cancer development, in either MTF or FTM transsexual individuals. Multiple studies have also postulated that the short or medium-term use of CHT is considered safe, However, long term data are lacking.

CONCLUSION: Physicians should remember performing a regular breast exam in transgender male to female patients looking for the possibility of a breast mass and should educate them about the importance of screening.

BROWN RECLUSE SPIDER BITE IN NEBRASKA; IS CLIMATE-CHANGE AFFECTING THE GEOGRAPHIC DISTRIBUTION OF RECLUSE SPIDERS?

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LEARNING OBJECTIVE #1: Learn About th toxicity of Brown Recluse Spider Venom

LEARNING OBJECTIVE #2: Diagnose and treat Brown Recluse Spider Bite

CASE: Consider implications of climate change on Brown Recluse Spider Bite

IMPACT/DISCUSSION: Brown recluse spider bite is notorious for necrosis caused by a rare toxin, sphingomyelinase D. The bite is typically painless, appearing as red plaque. In the US, most lesions resolve without complications. Progression of necrosis typically occurs over several daysand heals over several weeks, without scarring. Treatment consists of cleansing, analgesics and tetanus prophylaxis. Antibiotics are prescribed only for secondary infection. Early surgical excision and/or curettage of necrotic lesion is not recommended as this can lead to painful and recurrent wound breakdown. Once the lesion is demarcated andstable, debridement with or without skin grafting can be considered. Systemic

toxicity may appear over several days following bite and can include hemolytic anemia, rhabdomyolysis, or DIC.

In our case, a 58 yo male with PMH of NSTEMI, tobacco use and HLD came to clinic with 10/10 pain at theback of head, radiating to ears. He described finding brown recluse spiders in bed. ROS was otherwise negative. On Physical Exam, he had 4cm open wound which was erythematous and indurated. He was noted to have surrounding tenderness and folliculitis. He was started onpain medications and antibiotics for secondary infection. One week later, the patient stated pain is better with the wound had scabbed over. Skin necrosis was noted. Surrounding skin was non-tender. The necrotic wound was treated supportivelyby daily cleansing with soap and water.

CONCLUSION: Loxosceles reclusa causes the majority of necrotic wounds induced by Araneae. However, its distributional limitations are poorly understood and often Loxacella are blamed for bites outside of its typical geographic range. In addition, a diagnosis of spider bite may mask other serious conditions such as Lyme disease, squamous cell carcinoma, and fungal infections. Brown Recluse Spider bites are rare in Nebraska. Loxacella are primarily found in south-central United States, from southern Illinois to Texas and from eastern Tennessee to Kansas. Few studies have stressed importance of climate change affectinggeographic distribution. One such study published in 2011 employed ecological niche modeling to investigate future distributional potential of this species. Results projected the distribution to expand northward. Newly influenced areas may include parts of Nebraska, Minnesota, Wisconsin, Michigan, South Dakota, Ohio, and Pennsylvania. Diagnosing insect bites can be challenging as diagnosis is mostly made from history and geographical factors. In the case of brown recluse spider, conservative treatment is usually better. Physicians should be cognizant of climate-change's effect on geographic distribution of insects, and keep differential diagnoses open. Fortunately, ourpatient noticed the spiders and identifiedthem, which is rarely the case in insect bites.

BYPASS-INDUCED TETANY: REFRACTORY HYPOCALCEMIA FOLLOWING TOTAL THYROIDECTOMY IN A PATIENT WITH BARIATRIC SURGERY

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LEARNING OBJECTIVE #1: Recognize biliopancreatic diversion/duodenal switch (BPD/DS) bypass surgery as a cause of hypocalcemia

LEARNING OBJECTIVE #2: Identify novel treatment options for bypass-related hypocalcemia

CASE: A 35-year-old woman presented with a 1-day history of bilateral hand spasms, paresthesia and diffuse pain. Her history is notable for BPD/DS surgery four years prior and total thyroidectomy complicated by symptomatic iatrogenic hypoparathyroidism two years prior. Two months prior to her current presentation, she developed severe refractory hypocalcemia and was hospitalized numerous times for calcium infusions.

On exam, her temperature was 37.4^{o} C, blood pressure 122/83 mmHg, and pulse 70 bpm. Gentle tapping of the facial nerve elicited tetany. Labs revealed hypocalcemia (6.5 mg/dL), hyperphosphatemia (5.3 mg/dL), low parathyroid hormone (11.4 pg/mL), low vitamin A (28.8 mcg/dL) and low zinc level (0.59 mcg/mL), but otherwise normal serum creatinine, albumin, magnesium, potassium, vitamin D 25-hydroxy, and vitamins E and K. Two months prior, she had a normal 24-hour urine calcium. During the hospitalization she required daily intravenous calcium despite maximum titration of oral calcium regimen. Therefore, she underwent conversion of BPD/DS to Roux-en-Y gastric bypass (RYGB) with functional return of 300 cm of small bowel. Post-operatively, her serum calcium normalized to 8.4 mg/dL and she was discharged home on oral supplementation. A repeat serum calcium at five days post-discharge was stable.

IMPACT/DISCUSSION: Given the risk for profound hypocalcemia following bariatric surgery and associated morbidity, the general internist must assess additional patient risk factors for hypocalcemia prior to surgery referral. This includes history of hypoparathyroidism or personal or family history of thyroid goiter that may predispose to future iatrogenic hypoparathyroidism. The prevalence of hypocalcemia following BPD/DS (10% to 48%) is higher than the prevalence of hypocalcemia following RYGB (1-3%). In RYGB, the gastric pouch is anastomosed to the distal jejunum, whereas in BPD/DS it is anastomosed to the distal ileum. The majority of dietary calcium is absorbed by paracellular diffusion in the lower small intestine; therefore, the additional small bowel bypassed in the latter explains increased hypocalcemia in this population. There have been few case reports on management of refractory hypocalcemia following total thyroidectomy in bariatric surgery patients. Of note, these reports were in patients with RYGB rather than BPD/DS, likely owing to the lower prevalence of the latter. In this case, surgical conversion from BPD/DS to RYGB led to the resolution of refractory hypocalcemia and serves as a guide for treatment in future cases.

CONCLUSION: - BPD/DS followed by iatrogenic hypoparathyroidism can lead to profound hypocalcemia

- Conversion of BPD/DS to RYGB is a novel treatment for refractory hypocalcemia in this population

CACHEXIA, PANCYTOPENIA AND VOMITING: AN UNUSUAL CASE OF VITAMIN B12 DEFICIENCY

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LEARNING OBJECTIVE #1: Recognize pancytopenia and dyspepsia as a presentation of vitamin B12 deficiency and autoimmune metaplastic atrophic gastritis (AMAG)

LEARNING OBJECTIVE #2: Discuss management of pernicious anemia and AMAG

CASE: 59-year old man presented with anorexia, vomiting, epigastric pain and progressively worsening fatigue. He had a 20 lb weight loss in the past three months along with chills and night sweats. He denied medical or surgical history and was not on medications. On physical exam, he appeared cachectic. Laboratory tests were significant for hemoglobin 5.4 g/dl, with mean corpuscular volume (MCV) 102 fL, white blood cell count 2,900/ml, and platelet count 57,000/mL. Peripheral smear showed macrocytosis, hyper segmented neutrophils, which was suspicious for vitamin B12 deficiency. B12 level was undetectable with normal folate level. Anti-intrinsic factor antibodies (AIFA) testing was positive, confirming pernicious anemia. In view of cachexia, flow cytometry and CT chest/abdomen were done but found to be normal. Upper GI endoscopy revealed diffusely atrophic gastric fundal mucosa with biopsy confirming chronic atrophic gastritis in fundus, corpus and antral mucosa with intestinal metaplasia which met the criteria for AMAG. He was treated with weekly B12 shots with improvement in pancytopenia and symptoms.

IMPACT/DISCUSSION: This case illustrates a dramatic presentation of B12 deficiency caused by AIFA in setting of AMAG. B12 is required for optimal hematopoiesis and neurologic function. B12 deficiency is either due to decreased intake (e.g. with veganism) or malabsorption. Deficiency arises when hepatic stores are depleted, which takes many years. While macrocytic anemia, neuropsychiatric symptoms and diarrhea are more common presentations, it can rarely manifest with gastric cancer and osteoporosis.

On laboratory evaluation of anemia, suspicion for vitamin B12 deficiency arises when MCV greater than 100 fL, low reticulocyte count, and hyper segmented neutrophils on peripheral smear. Methylmalonic acid levels are elevated in B12 deficiency. B12, folate and iron panel are essential. If B12 levels are low then AIFA should be checked, which if present indicates auto-immune nature of B12 deficiency. With presence of AMAG, Gastrin levels are elevated and anti-parietal cell antibodies are positive. No treatment is available for AMAG, but it requires lifelong B12 supplementation and H. pylori eradication is important as atrophic gastritis confers a higher risk of gastric malignancy by itself.

CONCLUSION: B12 deficiency should prompt testing for pernicious anemia with anti-intrinsic factor antibodies. Evaluation of pernicious anemia should include testing for AMAG.

CAINE YOU SPOT NON-ALCOHOLIC WERNICKE ENCEPHALOPATHY?

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LEARNING OBJECTIVE #1: Recognize the risk factors for developing non-alcoholic Wernicke encephalopathy

LEARNING OBJECTIVE #2: Describe appropriate diagnostic workup and treatment of Wernicke encephalopathy

CASE: Patient 1 was a 43-year-old female with a history of small bowel resection and recent pancreatitis who presented with confusion, weakness, and ataxia. She denied excessive alcohol intake. Exam revealed diplopia, horizontal and vertical nystagmus, lateral gaze palsy, and ataxia. She was oriented only to self with tangential speech and confabulations. Labs revealed lactic acidosis and hyperglycemia. MRI brain was notable for hyperintense signals in the periaqueductal gray area and medial thalami with enhancement in the mammillary bodies and inferior colliculi. Due to concern for Wernicke encephalopathy, the patient was started on IV thiamine. Her mental status and nystagmus improved, but her ataxia persisted at discharge. Patient 2 was a 42-year-old female with recent salpingo-oopherectomy complicated by ileus and poor oral intake who presented with altered mental status. She had no history of alcohol intake. Exam showed hypothermia, tachycardia, horizontal nystagmus, and profound lethargy. Labs were significant for leukocytosis and a low thiamine level of 16. MRI brain showed bilateral thalamic restricted diffusion. She was started on IV thiamine. Her clinical course was complicated by new-onset heart failure (wet beriberi) and autonomic dysfunction. Despite improvement in her confusion, she exhibited significant cognitive deficits at discharge.

IMPACT/DISCUSSION: Wernicke encephalopathy (WE) is a life-threatening condition caused by thiamine (vitamin B1) deficiency. Thiamine, a water-soluble vitamin stored in the liver with an 18-day half-life, is an imperative cofactor for metabolic reactions. WE is exhibited by the triad of oculomotor dysfunction, ataxia, and confusion which can progress to lethargy, coma, hypotension, hypothermia, vestibular dysfunction, peripheral neuropathy, and tachycardia. WE is commonly associated with chronic alcoholism but is underdiagnosed in patients without alcohol use. Other conditions associated with WE include hyperemesis gravidarum, starvation, gastrointestinal surgery, malignancy, dialysis, and HIV. Diagnosis is made by meeting two of the four Caine criteria: dietary deficiency, oculomotor abnormalities, cerebellar dysfunction and altered mental status. Labs are not required for diagnosis, though direct thiamine blood level or erythrocyte thiamine transketolase can be measured. MRI can show abnormalities in diencephalon, midbrain, mamillary bodies, or periventricular regions. Treatment of WE involves parenteral thiamine replacement. Ocular manifestations subside over hours to days, but improvement in confusion and ataxia is variable.

CONCLUSION: Non-alcoholic Wernicke's encephalopathy is an often missed diagnosis in patients with poor oral intake presenting with altered mental status. Clinical diagnosis using the Caine criteria should evoke prompt initiation of IV thiamine replacement.

CANDIDA LAMBICA; AN EXCEPTIONAL AND RARE FUNGAL INFECTION

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LEARNING OBJECTIVE #1: Candida lambica was first described by Linder and Genoud in 1913 as mycoderma lambica. In 1970, Mycoderma lambica was recognised as distinct species within candida genus. It is commonly found in belgian beer, milk products, water and fruits and rarely causes infection in humans. It is frequently misidentified as candida krusei due to their similar appearance on candida culture plate. In literature review, so far there have been only four reported cases of C. lambica infections.

CASE: A 72 year old female presented to the emergency room with altered mental status and fever. Her medical history is significant for uterine cancer treated with chemotherapy and radiotherapy, end stage renal disease on hemodialysis, ischemic colitis status post exploratory laparotomy with colectomy complicated by enterocutaneous fistula requiring total parenteral nutrition. The patient recently had prolonged hospitalization due to sepsis and was treated with meropenem for Klebsiella bacteremia and micafungin for candida parapsilosis fungemia. On physical examination, the patient appears cachetic with a temperature of 102F°, blood pressure of 124/40mmHg and a heart rate of 87/min. Rest of the examination was unremarkable. Blood analysis showed an elevated white cell count of 18,000/mm3. A chest x-ray showed consolidation. A CT abdomen and pelvis was reportedly unremarkable. Blood cultures were ordered and the patient was started on broad spectrum antibiotics (meropenem) and antifungal (micafungin). Blood culture came back positive for candida parapsilosis and yeast. Dialysis catheter and PICC line was exchanged and tips was sent for culture.

A fundoscopy examination did not reveal any signs of hematogenous dissemination of the yeast in eye. A transesophageal echocardiography was done that ruled out infective endocarditis. The culture later came back positive for candida lambica and antifungal treatment was switched to fluconazole. The patient started to improve and blood culture came back negative. The patient was sent to nursing home and recommended to complete the course of treatment.

IMPACT/DISCUSSION: Our patient was immunocompromised due to malignancy, chemotherapy and ESRD, leading to recurrent fungemia which later on found to be candida lambica. Our patient was initially treated with micafungin without improvement. The key tests to differentiate C.lambica from C.krusei are assimilation of xylose(positive for candida lambica and negative for candida krusei) and growth at 42C° (positive for candida krusei only) but definite identification is possible using molecular techniques. It is critical to differentiate between candida lambica and candida krusei since it has therapeutic implications with C. krusei being inherently resistant to fluconazole and C. lambica can be potentially treated with Fluconazole.

CONCLUSION: Candida Lambica rarely causes infection in humans and clinician should be aware of this organism as treatment differs and early recognition is decisive to decrease morbidity and mortality.

CAN MAGNESIUM CITRATE CAUSE PARADOXICAL CONSTIPATION?

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LEARNING OBJECTIVE #1: Prior to surgical interventions, it is imperative to correct all electrolyte abnormalities including hypermagnesemia, providing high value care to the patient.

LEARNING OBJECTIVE #2: Cautious use of magnesium citrate laxatives is emphasized. Importance to proper patient education should be given, as this can prevent patients from using higher doses than prescribed.

CASE: A 71 year old male presented with delirium, abdominal pain and distention. He had intermittent constipation for the last 1 year which was refractory to multiple medications. Clinical findings included diffuse abdominal distention with tenderness on palpation without guarding or rigidity and absent bowel sounds. CT abdomen and pelvis with IV contrast on admission showed right colonic dilatation with a diameter of 15 cm in the absence of a structural lesion. A diagnosis of ACPO was made. Decompressive colonoscopy was attempted, but the gastroenterologist was unable to pass the scope beyond sigmoid colon. General surgery recommended exploratory laparotomy, which the patient refused. We proceeded with conservative management. All electrolytes were optimized. IV fluids and furosemide were administered to correct hypermagnesemia (6.2 to 2.1). 2 days after correction of hypermagnesemia, patient had 2 large bowel movements. His mentation improved; WBC decreased from 34.1 to 11.1 k/cumm. A comparison of the CT abdomen and pelvis on admission and 1 week after our interventions showed marked reduction in colonic diameter (15 to 10 cm).

IMPACT/DISCUSSION: Acute colonic pseudoobstruction (ACPO) refers to acute dilatation of the colon in the absence of an anatomic lesion that obstructs the flow of intestinal contents. It has been reported in patients with preeclampsia/ eclampsia, multiple pregnancies and patients undergoing caesarian section [1]. Hypermagnesemia may decrease bowel motility by blocking the myenteric neurons [2]. However, the precise mechanism remains unknown.

Our Proposed Mehanism:

Chronic slow transit constipation > Magnesium citrate ingestion > Magnesium citrate retention and increased absorption > Hypermagnesemia > Worsened motility and progressive colonic dilatation > ACPO

CONCLUSION: Patient's remarkable improvement in mentation, GI motility, WBC and CT scan findings led us to hypothesize that hypermagnesemia had a significant role in the development of ACPO. The patient had consumed magnesium citrate in much higher doses than he was prescribed; exact cumulative dose could not be quantified. Due to preexisting slow-transit constipation, prolonged intestinal retention of the ingested Mg might have enhanced its absorption. The resulting hypermagnesemia might have slowed his transit time even more. A vicious cycle might have ensued, eventually leading to massive colonic dilation. In the current literature, no direct association has been made between ACPO and hypermagnesemia. More studies need to be done to explore the underlying pathophysiology.

CAN ONE KNOW WHAT RESIDES IN THE HEART OF ANOTHER?

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LEARNING OBJECTIVE #1: Apply specificity and positive predictive value (PPV) to echocardiography in diagnosis of infective endocarditis (IE).

LEARNING OBJECTIVE #2: Demonstrate the utility of pre-test probability in echocardiography interpretation

CASE: A 36-year-old man with AIDS and current IV drug use presented with right-sided facial swelling and fever. He had a temperature of 101F and heart rate of 117bpm. A soft tissue facial abscess was incised and drained. No murmurs were appreciated, and rhythm was regular. Laboratory studies revealed a WBC count of 5.6 x 10 9 /L, and a CD4 count of 25 cells/mm3. EKG returned normal sinus rhythm. A transthoracic echocardiogram (TTE) ordered to evaluate for IE revealed a 10x9 mm structure attached to the tricuspid papillary muscle, and a small mass on the lateral tricuspid annulus. Treatment for presumed IE was initiated.

Due to the unusual location of the 10x9mm structure (on papillary muscle) a transesophageal echocardiogram (TEE) was performed and returned with no evidence of vegetation and identified the 10x9mm "structure" as papillary muscle. The patient was transitioned to oral antibiotics for soft tissue infection and discharged. Blood cultures at 5 days remained negative.

IMPACT/DISCUSSION: The patient narrowly avoided prolonged hospitalization with the attendant risks of nosocomial infection, drug adverse effects, cost, and the inconvenience. His case raises questions about use of echocardiography in the diagnosis of endocarditis. A 2015 AHA Scientific Statement recommends obtaining a TTE for patients in whom IE is suspected. In hindsight, the presentation of this patient may not have warranted a TTE. Though he was a current IV drug user with AIDS presenting with sepsis, he did not have prior endocarditis, a murmur, or EKG abnormalities, and he had another source of infection. He also had negative blood cultures.

A 1994 article reports the specificity of both TTE and TEE in diagnosing endocarditis as 91%. This means that if TTE is positive, TEE is not indicated as the false positive rate would be the same. In patients with a "high risk" presentation and blood cultures growing an organism commonly causing endocarditis, the PPV of a positive echocardiogram is 79%. In patients with a low-risk clinical picture, even when blood cultures are positive, the PPV can be as low as 50%. Both TTE and TEE can incorrectly identify noninfectious valve abnormalities as vegetations. Intuitively, the PPV of TTE and TEE is lower in patients with low clinical probability of IE than in patients with high pre-test probability. However, there is not a consensus on what defines high- vs low-risk presentation.

CONCLUSION: This case demonstrates that the decision to obtain echocardiography is driven by physicians' clinical judgment and should not be reflexive. A low-risk presentation is not defined, but this patient could conceivably have been considered low-risk. In low-risk patients, the positive predictive value of TTE is reduced enough that the risk of obtaining the study may outweigh the benefit.

CAPTURING THE OVERALL PICTURE OF A POST-GASTRECTOMY PATIENT IN THE JAPANESE HEALTHCARE SYSTEM

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LEARNING OBJECTIVE #1: Assess unavoidable complications that occur years after surgery

LEARNING OBJECTIVE #2: Recognize potential pitfalls in follow up of postoperative patients in the Japanese healthcare system

CASE: A 74-year-old frail man had a surgical history of total gastrectomy in 2004 for gastric cancer. He presented with a three-month history of general fatigue and numbness in both feet. He described the sensation as if he was walking on gravel. He also described a tendency to fall backward especially at night over the previous year. It was initially thought that the patient was suffering from peripheral vascular disease, and he was referred to the vascular team. However, the ankle-brachial blood pressure index was normal in both legs, and upon consultation to general medicine, neurology examination revealed reduced vibration sensation and proprioception in both feet. Laboratory data showed macrocytic anemia with a severely low vitamin B12 (68 pg/mL). Our working diagnosis was subacute combined degeneration of the spinal cord due to vitamin B12 deficiency after gastrectomy. He was commenced on weekly intramuscular vitamin B12 supplementation and he was transferred to a community hospital.

Although he had been receiving weekly parenteral nutrition via a central line for the last nine years to manage the malnutrition due to his gastrectomy, monitoring of vitamin B12 was lacking.

IMPACT/DISCUSSION: Vitamin B12 deficiency is inevitable in post-gastrectomy patients. This can lead to macrocytic anemia and peripheral neuropathy. The Japanese Gastric Cancer Association guideline for gastric cancer treatment does not discuss vitamin B12 supplementation but focuses on detecting cancer recurrence. The National Comprehensive Cancer Network guideline for gastric cancer treatment recommends follow-up of vitamin B12 and iron levels after gastrectomy of T1a tumors, but there is no established protocol for postoperative care.

This case illustrates the clinical importance of vitamin B12 and the potential flaws of an overly specialized Japanese health service. Open access enables citizens to easily receive specialist care, but the lack of a family physician for most patients hampers overall management. Although this patient had regular surgical appointments, follow-up focused on detecting recurrent cancer and treating malnutrition.

CONCLUSION: Peripheral neuropathy may originate from postoperative vitamin B12 deficiency. Focused specialist care can ignore elements of the patient's overall health management.

CARDIAC-PRECIPITATED PRE-SYNCOPE

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LEARNING OBJECTIVE #1: Recognize the clinical features and cardiac exam findings of aortic stenosis

LEARNING OBJECTIVE #2: Understand criteria for valve replacement in aortic stenosis

CASE: A 62 yo female with a PMH of DMII and HTN presents to clinic with several episodes of lightheadedness. Her symptoms last for a few seconds and are exacerbated by positional changes. On physical exam, patient has sinus tachycardia and a new systolic ejection murmur heard best at the aortic position. Her orthostatic vitals are negative but patient is symptomatic when transitioning from laying to sitting position. Of note, review of TTE from ten years prior shows no signs of stenosis or outflow obstruction Patient was referred for a TTE that was significant for severe aortic stenosis (AS) (aortic valve area of 0.84 cm2 and mean gradient 48mmHg). During follow up with cardiology, patient presented with DOE, edema, paroxysmal nocturnal dyspnea, and weight gain. Cardiology recommended aortic valve replacement (AVR). Patient successfully underwent tissue AVR three months after her initial presentation. Postoperatively, patient's symptoms resolved.

IMPACT/DISCUSSION: This case highlights the progressive clinical manifestations of AS. Our patient's severe AS began with pre-syncopal symptoms but in a few short months, advanced to include symptoms consistent of heart failure. Other classic symptoms include decreased exercise tolerance and exertional angina. These vague symptoms are common and clinicians should include AS on their differentials.

While a late-peaking, loud systolic murmur in the aortic position (often radiating to the carotids) and a single second heart sound (S2) are sensitive for AS, a carotid upstroke delay and decrease in amplitude of the carotid pulse are the findings that most closely correlate with the severity of AS. Additionally, a normally split S2 is the only physical exam finding that can dependably exclude severe AS. Physical exam findings must be confirmed with a TTE.

AVR is recommended in patients with severe AS (stage D1). This is defined as a decreased systolic opening of the valve, a Vmax of 4.0m/sec or a mean pressure gradient of 40 mm Hg or greater and symptoms of heart failure, syncope, exertional dyspnea, angina or presyncope. Our patient's symptoms, combined with a mean pressure gradient of 48mm Hg, classified her as stage D1 AS,. Also, an AVA less than or equal to 1.0 cm2 is usually seen in severe AS. Our patient's valve area was 0.84 cm2, consistent with severe AS.

CONCLUSION: Physical exam findings, especially a new systolic heart murmur, should increase your suspicion for AS and further evaluation with TTE Knowledge about the indications for AVR will help the internist make appropriate referrals and streamline the patient's path to surgery

CARPHOLOGIA AND FLOCCILLATION

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LEARNING OBJECTIVE #1: Recognition of the abnormal hand movements specific for delirium and their clinical significance.

CASE: A 52-year-old Caucasian male with a past medical history significant for chronic alcohol use and mild intellectual disability presented to the emergency department with confusion and visual hallucinations. The patient was a poor historian and no further history could be obtained. Physical examination was prominent for cachexic state with global muscle loss and altered mental status. Initial labs and neuroimaging were unremarkable. Patient was started on high dose IV thiamine with no improvement. Four days after initial presentation he was transferred to a tertiary care center for further workup including a lumbar puncture. On subsequent physical examination, the patient appeared to be reaching for imaginary objects and attempting to talk to "some who was not present". Extremities were tremulous with increased tone and primitive reflexes(suckling reflex and palmar grasp) were also evokable.

Repeat labs obtained the following day showed elevated alkaline phosphatase, AST and ALT consistent with biliary disease. CT Abdomen done showed findings consistent with acute cholecystitis and laparoscopic cholecystectomy was performed. Patient's mental status gradually improved during the postoperative period and his abnormal movements resolved. Remaining hospitalization was uneventful and the patient was discharged to a skilled nursing facility for continuing physical therapy and safety.

IMPACT/DISCUSSION: Delirium is the acute change in brain function that affects nearly 30% of older medical patients while hospitalised. It can present as hyperactive, hypoactive or a combination of both. Delirium is heavily under-diagnosed with the majority of hypoactive delirium presenting unnoticed. Herein we discussed the case of a patient who presented in a delirious state with a highly specific but uncommon presentation.

Carphology(lint-picking behavior) and floccillations(plucking at the air) are uncommon physical signs but are highly suggestive of delirium. In a study out of 110 patients who experienced an episode of delirium, 21 exhibited carphology and/or floccilations.

The sensitivity and specificity of these findings were 14 and 98%, respectively. These behaviours tend to occur early in the delirium episode. The inpatient mortality rate of patients exhibiting these movements was double the rate of patients without them, although these did not reach statistical significance. These findings were present in both hypoactive and hyperactive delirium.

CONCLUSION: Although uncommon, floccillations and carphology can be easily recognised at bedside prompting investigation of delirium and its cause. If absent, delirium cannot be ruled out but if present then there should be a high suspicion for a delirious state

These movements are unrelated to delirium subtypes and can aide in the diagnosis of overlooked hypoactive delirium.

CASE OF CANDIDA GLABRATA BLADDER FUNGAL BEZOAR

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LEARNING OBJECTIVE #1: Recognize Fungal Bezoar as rare cause for renal failure in immunosuppressed patient

LEARNING OBJECTIVE #2: Treatment of Obstructive fungal Bezoars

CASE: Our Patient is a 66yo woman with history of uncontrolled diabetes mellitus type II who was initially admitted to our Intensive care unit for diabetic ketoacidosis and acute renal failure. She had presented with nausea/vomiting and diarrhea and had been non-adherent to anti-hyperglycemic therapy.

Initial CT scan of her abdomen demonstrated mild unilateral hydronephrosis and bladder wall inflammation without evidence of nephrolithiasis. Urine Culture on admission along with blood cultures grew Candida glabrata.

Due to continued fevers and non-improving renal function, it was believed that she may have fungal ball in her bladder. A percutaneous nephroureteral tube was placed to allow for decompression of the right collecting system and a cystoscopy was performed.

Cystoscopy revealed a mass in her bladder consistent with fungal Bezoar. Bladder irrigation was performed and this mass was removed. She was started on amphotericin B irrigation through her nephroureteral tube.

She received ten days of this antifungal as bladder irrigation in addition to her IV therapy. After a month in the hospital She was discharged to a rehab facility, however, she eventually required placement of a percutaneous urinary catheter.

IMPACT/DISCUSSION: Fungal infections are a common complication in the immunocompromised, especially diabetics. Obstructive nephropathy from a fungal Bezoar is a rare complication of renal failure.

This patient was found to have nephropathy due to fungal bezoar with only mild evidence of obstruction on imaging.

Candida albicans is the most likely cause of fungal bezoars with candida glabrata being very rare with few cases reported in medical literature. Initial therapy choices should consider coverage for glabrata since this agent is usually resistant to azoles antifungals.

CONCLUSION: Bladder fungal infections can uncommonly present as renal failure due to obstructive bezoars. Providers should have a high index of suspicion for a mass when patients do not improve with adequate antimicrobial coverage and any evidence of obstruction on imaging.

Advanced fungal infections such as fungal Bezoars should especially be considered in the immunocompromised such as uncontrolled diabetes. Treatment may require surgical intervention as well as percutaneous antifungals in addition to intravenous/oral therapy.

CASE OF UNILATERAL HEMIPLEGIA ASSOCIATED WITH VARICELLA ZOSTER VIRUS INFECTION

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LEARNING OBJECTIVE #1: Recognize and evaluate CNS complications of Varicella Zoster Virus (VZV) infection

LEARNING OBJECTIVE #2: Manage Disseminated VZV in a complicated patient

CASE: Our patient is a 73yo male with history of HTN and CKD V, currently on prophylactic antibiotics and high-dose steroid for contrast-induced nephropathy who presented with sudden onset of a large and painless vesicular rash on left upper extremity extending from hand to shoulder in a poly-dermatomal distribution. Initial ROS was positive for dyspnea, fatigue, cough. Vitals were within normal limits and exam demonstrated volume overload and a rash consistent with herpes zoster. Rapid flu testing was positive for Influenza type A.

Following admission, he was continued on his steroid taper and started on oral oseltamivir and acyclovir. PCR of skin lesions were positive for varicella Zoster virus.

His course was complicated by acute lower GI bleeding due to ischemic colitis. His oseltamivir was discontinued at this time due to rare associations with colitis and no other appreciable causes. In addition to GI issues, approximately 48 hours into admission he endorsed left sided weakness. These were consistent on physical examination.

MRI/MRA was obtained which revealed an acute left sided occipital lobe lacunar stroke but nothing to explain this acute change. Due to concern for disseminated infection, a lumbar puncture was performed which demonstrated elevated CSF protein. A bacterial/viral meningitis PCR panel was positive for VZV.

He was transitioned to IV acyclovir for 14 days and discharged with some improvement in his symptoms.

IMPACT/DISCUSSION: CNS complications are a rare but known issue from VZV reactivation. They range from post-herpetic neuralgia to meningoencephalitis, CVA or hemiplegia/paresis.

This case highlights an atypical presentation of VZV. Despite large surface area of zoster rash our patient remained without pain during his hospital course and presented with disseminated infection.

This patient also presented with influenza infection, renal failure and ischemic colitis. None of these explain his neurologic symptoms found during his hospital stay. While Influenza infection also has rare neurologic complications, our patient did not have a clinical syndrome of severe infection and CSF was positive for VZV.

While CNS complications from VZV are usually delayed, our patient's hemiparesis occurred relatively suddenly from onset of zoster rash.

CONCLUSION: Neurologic complications from common and otherwise benign viral infections should be considered when patients present with neurologic deficits and there is no evidence of other central nervous involvement such as acute stroke or seizure.

Disseminated VZV should be considered in anyone with zoster rash and other neurologic findings.

Diagnostic testing such as lumbar puncture should be performed. Patients should be rapidly transitioned to IV therapy when disseminated VZV is suspected.

CASE REPORT: A RARE CAUSE OF DRUG-INDUCED PSORIASIFORM DERMATITIS

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LEARNING OBJECTIVE #1: Consider the potential harms before prescribing PPIs

LEARNING OBJECTIVE #2: Take a thorough drug history when assessing rashes in the primary care setting

CASE: A 48-year-old female with a history of eczema, gastric ulcers, and seizure disorder presented with bilateral hand rash for one week. She described the rash as pruritic, burning, and not responding to Neosporin cream. She reported that her symptoms started two weeks after taking esomeprazole. Her other medications included citalopram, valproate, and levetiracetam. Her exam was notable for desquamating rash of bilateral palms. Initial labs were remarkable for elevated liver enzymes (Aspartate aminotransferase 158 U/L, alanine aminotransferase 69 U/L, alkaline phosphatase 300 U/L) and thrombocytopenia (platelets 134 x 10E3 U/L), which had previously been normal. Her valproate level was low. She was diagnosed with eczema, prescribed triamcinolone 0.1% cream, and esomeprazole was discontinued. A few days later, the patient presented to the emergency department complaining of worsening rash, with new erythema and spread to the elbows and axillae. She was discharged with hydroxyzine 10 mg and an oral prednisone taper.

A week later, the patient presented to clinic complaining of rash spreading to the buttocks, legs, and feet as well as daily emesis related to pain. She also noted fatigue, diarrhea, diffuse arthralgias, and pain with walking due to plaques on the soles of her feet. She reported not taking prednisone. Dermatology was consulted and noted erythematous to violaceous papulosquamous thin plaques of the arms, upper legs, hands, and feet with scattered violaceous papules with dusky centers on the abdomen and back. They recommended switching triamcinolone to betamethasone 0.05% ointment BID.

She presented to dermatology clinic shortly after and a biopsy was performed, showing subacute spongiotic dermatitis–consistent with drug-induced psoriasiform dermatitis. They recommended a course of oral prednisone while continuing betamethasone 0.05% ointment. The patient's rash improved within two weeks with resolution of erythema in axillary region, and improvement in itching of palms and soles. However, she continued to report burning of her palms and soles. Betamethasone was stopped, and the patient was started fluocinonide 0.05% ointment for maintenance therapy.

IMPACT/DISCUSSION: Proton pump inhibitors (PPIs) are among the most frequently prescribed medications in the primary care setting. PPIs have been identified as the offending agent in multiple cutaneous manifestations associated with hypersensitivity reactions.[1-9]This is the first case described in the literature of PPI-induced psoriasiform dermatitis.

CONCLUSION: Although PPIs are generally well tolerated, providers should remember to discuss possible adverse effects, including uncommon ones, with the patient.

When assessing a rash ash, we encourage internists to take a thorough drug history as medications have been implicated as etiologies for a variety of rashes.

CASE REPORT ON THE DIAGNOSTIC APPROACH AND MANAGEMENT OF E-CIGARETTE OR VAPING ASSOCIATED LUNG INJURY (EVALI)

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LEARNING OBJECTIVE #1: Recognize the clinical features and association of EVALI among young adults

LEARNING OBJECTIVE #2: Diagnose EVALI as a diagnosis of exclusion

CASE: A 19 y.o. female with a history of hourly smoking abuse with vape and dab pens for 2 years presented to the ED with a chief complaint of progressive dyspnea, rhinorrhea, nausea, and vomiting one day after failed outpatient management of suspected community acquired pneumonia (CAP) with oral doxycycline. Physical exam in the ED demonstrated VS of BP at 126/72, temperature at 37.3C, HR at 135, RR at 18, SpO2 at 100%, right-sided inspiratory rhonchi and chest wall tenderness to palpation. CXR showed consolidative opacities in the right lung and trace opacities in the left lung and CBC demonstrated a WBC of 15.4 x 103/μL. She was admitted for CAP and treated with IV vancomycin + ceftriaxone + azithromycin, levalbuterol nebulizer, IV methylprednisolone and IV fluids. Initial workup including BNP, liver enzymes, urinalysis, BioFire™ nasopharyngeal respiratory viral panel, urine pneumococcal antigen, blood cultures, urinary Legionella antigen, procalcitonin level, toxicology screen, and EKG were normal/negative. Chest CTA demonstrated diffuse bilateral patchy ground-glass lung opacities/infiltrates with subpleural sparing with bilateral hilar and mediastinal lymphadenopathy and multiple small foci of pneumomediastinum within the upper lobes. CT chest with oral contrast obtained was unremarkable and antibiotics were changed to vancomycin + piperacillin/tazobactam. Allergen panel, ANA, HIV screen, and TTE were normal. However, pro-BNP was elevated at 1,399 pmol/L, ESR elevated at 99 mm/hr, CRP elevated at 241 mg/L, and bronchoscopy incidentally positive for CMV (felt NOT to be a pathogen). Her leukocytosis and symptoms improved on therapy and she was discharged on a prednisone taper and oral levofloxacin. Outpatient PFTs were unremarkable, and she reported resolution of symptoms.

IMPACT/DISCUSSION: Clinical Impact: EVALI should be a differential in vaping patients that present with respiratory and gastrointestinal symptoms with opacities on CT or infiltrates on CXR. Treatment includes antibiotics and steroids.

Teaching Points: EVALI is a diagnosis of exclusion that can be ruled in if a patient has vaped prior to pulmonary symptoms, opacities are discovered on CT, and there is an absence of significant infection on workup.

Impact on Healthcare Provider: Providers should expand their assessment of a social history by questioning e-cigarette/vaping in addition to other substance abuse.

How Case Adds to Current Literature: E-cigarettes were only introduced in the U.S. circa 2006. According to the CDC, as of 2020, only 2,600 cases of EVALI have been reported within the U.S. This case aims to expand the limited literature on a modern-day pathology.

CONCLUSION: ●EVALI can present with respiratory and gastrointestinal symptoms with findings similar to other infectious pulmonary processes

●A comprehensive workup must be done to diagnose EVALI

CATASTROPHIC ANTIPHOSPHOLIPID ANTIBODY SYNDROME

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LEARNING OBJECTIVE #1: The unique characteristics of Catastrophic antiphospholipid syndrome (CAPS) are rapid onset thrombosis resulting in multiple organ dysfunction, common association with other thrombotic microangipathies, high risk of systemic inflammatory

response syndrome, unusual organ involvement, and high mortality rate despite optimal therapy

CASE: Our patient was a 44 year old man with known history of hypertension, diabetes mellitus, chronic thrombocytopenia, and autism, admitted for right sided weakness. He was diagnosed with acute ischemic stroke, treated for it, and transferred to acute rehabilitation facility. He developed abdominal pain and distention during the rehabilitation facility stay. Imaging of the abdomen revealed emboli in pulmonary arteries, superior mesenteric artery, splenic artery, and he was started on unfractionated heparin. Repeat abdominal imaging showed thickening of small bowel in right abdomen concerning for intramural hemorrhage and large territory splenic infarction. He underwent exploratory laparotomy for bowel ischemia secondary to thrombosis. He further developed lower extremity venous thrombus as well. Transthoracic echocardiogram revealed a patent foramen ovale. He tested positive for anticardiolipin antibodies and was started on plasma exchange along with Solumedrol for CAPS. The anticoagulation therapy was transitioned from intravenous heparin to warfarin, with a goal INR of 2-3 and intravenous heparin was later discontinued. He was switched to oral prednisone and placed on an appropriately scheduled steroid taper. He was discharged once medically stable and was planned to follow up with hematology, Coumadin clinic, and general surgery for appropriate continuation of care.

IMPACT/DISCUSSION: Antiphospholipid syndrome (APS) is a multisystem autoimmune condition that is characterized by vascular thrombosis and, or pregnancy loss associated with persistently positive antiphospholipid antibodies (APLA). Catastrophic antiphospholipid syndrome (CAPS) also known as Asherson's syndrome is the most severe form of APS with acute multiorgan involvement and is usually associated with micro thrombosis. CAPS has been defined as thrombosis in three or more organs developing in less than a week, micro thrombosis in at least one organ and persistent APLA positivity. If a patient has three out of four abovementioned criteria then they are probable CAPS as opposed to definite CAPS. Previous diagnosis of APS and persistently positive APLA is of significance for APS diagnosis but almost half of the patients with CAPS have no history of APLA positivity. All patients should be treated with anticoagulants, corticosteroids, and possibly plasma exchange. Newer therapies as rituximab and eculizumab may be options but need further study.

CONCLUSION: CAPS should be considered as a diagnostic possibility in patients with rapid onset thrombosis involving multiple organs and unusual organ involvement.

CAUTION WITH THAT TURTLE! SALMONELLA OSTEOMYELITIS IN THE SETTING OF ANTI-TNF TREATMENT

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LEARNING OBJECTIVE #1: Identify patients at risk for disseminated salmonella

LEARNING OBJECTIVE #2: What is a strategy to prevent harm in patients on anti-TNF therapy

CASE: A 70 year old man with psoriatic arthritis on infliximab, hypertension, and chronic low back pain complained of three weeks of intermittent fevers, headaches and worsening back pain after returning from the Dominican Republic. He reported contact with a box turtle and a nontraumatic bird bite but denied sick contacts. He was originally treated for sinusitis with no relief; back pain was thought chronic. Symptoms acutely worsened after infliximab infusion. He was promptly sent to the Emergency Department for MRI spine that showed nonspecific edema. He was admitted for severe back pain preventing his ability to move. He was hemodynamically stable with white blood cell count 17, erythrocyte sedimentation rate 109, C-reactive protein 230. Urinalysis and chest x-ray were normal. He was started on broad spectrum antibiotics but continued to spike fevers to 39 degrees Celsius. Blood cultures grew salmonella sensitive to Ceftriaxone.

MRI lumbar spine 1 week later showed discitis and osteomyelitis at L2-L3 and septic facet arthritis and myositis at L3-L4. Neurosurgery was consulted for spinal involvement. Decision was made to forgo surgery. At two months, he had improvement in pain and mobility but repeat MRI showed continued infection. He underwent biopsy and aspirate grew salmonella. At that time, antibiotic course was extended to a 96 day course of ceftriaxone plus oral azithromycin, which he remains on at present day.

IMPACT/DISCUSSION: This case demonstrates the rare risk of disseminated salmonella infection in patients, such as ours, on infliximab, an anti-tumor necrosis factor (TNF) agent. The medication inhibits TLR-4 expression on dendritic cells, leading to decreased activation of interferon gamma which defends against intracellular and fungal pathogens. This pathway is also involved in bacterial adherence in the gut, affecting bacterial migration across the intestinal epithelium. Case reports describe unusual salmonella soft tissue and joint infections in this population. Spinal osteomyelitis and discitis are uncommon manifestations, associated with sickle cell disease or an immunocompromised state, as our patient.

Anti-TNF drugs are now one of the best-selling pharmaceutical drugs. Over 1 million people are prescribed anti-TNF medications to treat chronic inflammatory conditions. These patients should be counseled to avoid risk factors. Reptiles are known to carry salmonella; turtles, birds, raw egg consumption should be avoided. Salmonella should be considered in these patients with persistent fevers, pain, travel to endemic regions, and no clear infectious source.

CONCLUSION: Understanding of susceptibility to disseminated salmonella infection with spinal involvement in patients on anti TNF medications is essential as these drugs become more widespread. Awareness can lead to timely diagnosis and treatment and may have mitigated complications in our patient.

CAVITARY LUNG LESION AND ERYTHEMA NODOSUM: A CASE OF SYSTEMIC COCCIDIOIDOMYCOSIS

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LEARNING OBJECTIVE #1: Recognize the epidemiological factors and clinical features of systemic Coccidioidomycosis

LEARNING OBJECTIVE #2: Create a differential for Erythema Nodosum

CASE: A 38 year-old male with a living donor renal transplant in 2016 in El Salvador with 2 months of fevers, chills, dry cough, and fatigue along with 2 weeks of polyarticular pain and swelling with associated tender subcutaneous nodules. Of note patient was on vacation in Los Angeles and had been residing in Utah prior to his arrival. Upon presentation he was found to be afebrile, normotensive, tachycardic to 120, and sating 100% on room air. Exam was notable for swelling of his left wrist and a few scattered, tender, slightly indurated subcutaneous nodules distributed over the lower and upper extremities consistent with erythema nodosum. Labs were significant for a leukocytosis to 12 with neutrophil predominance along with a creatinine of 2.20 which was near baseline. Chest X-ray and CT-thorax were remarkable for a right upper lobe cavitary lesion. The patient was ruled out for active tuberculosis infection and then underwent a

rheumatologic workup with no significant findings including normal complement, ANCA, and ANA levels. Biopsy of his rash was then performed and found to be consistent with systemic Coccidioidomycosis. The diagnosis was also supported with positive Coccidioidomycosis serum serologies. The patient was started on fluconazole with significant symptomatic improvement and discharged.

IMPACT/DISCUSSION: This case highlights the epidemiological and unique clinical features of a patient with systemic coccidioidomycosis. His immunosuppressed status as a solid organ transplant patient placed him at significant risk for developing systemic infection. In addition his relocation to Utah predisposed him to exposure to coccidioidomycosis. Most patients typically present with acute pulmonary symptoms even in patients with systemic infection. However it is also common, with one case series finding up to 75% of transplant patients to have extrapulmonary dissemination which often includes skin, bone, and joint involvement. A unique aspect of this case was the presence of a cavity lesion as there have only been case reports of patients presenting with cavitary lesions as a result of systemic infection. An additional unique aspect of this case was the presence of erythema nodosum. Causes of erythema nodosum include medications, infections, rheumatologic conditions, and idiopathic. Given the presentation this finding was helpful in narrowing the differential. Systemic coccidioidomyocisis is a rare occurance however in the immunocompromised namely solid organ transplant recipients it is quite common and can present with various extrapulmonary findings.

CONCLUSION: - Coccidioidomycosis is a common infection endemic to the Pacific Southwest that in solid organ transplant patients will often present with systemic findings

- The causes of erythema nodosum is varied however in the correct clinical context can greatly assist in narrowing differntials.

CHAGASIC MEGAESOPHAGUS IN A CENTRAL-AMERICAN PATIENT IN LOS ANGELES CLINIC

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LEARNING OBJECTIVE #1: Diagnose Chagasic Achalasia

LEARNING OBJECTIVE #2: Early diagnosis and treatment for chagasic achalasia

CASE: A 59- year -old female, originally from Sonsonate, a rural area in El Salvador with medical history of hypothyroidism, prediabetes, and worsening progressive dysphagia of 1 year. She recalls exposure to kissing bugs. She reported one year of worsening progressive dysphagia solids to liquids, eating 6 meals a day due to food getting stuck in her chest and regurgitating whole food particles, vomiting, no nausea, 10 pound weight loss in one month, odynophagia. She tried omeprazole but stopped four months before presentation due to no relief. Anamnesis positive for tobacco use in her youth, chronic constipation. Father and grandfather died of cardiac disease. Positive serology for *T. cruzi* at a commercial lab, confirmed by CDC TESA blot. An XR esophagram in 10/2018 showed a dilated esophagus with distal tapering concerning for achalasia vs megaesophagus from Chagas disease. Esophagogastroduodenoscopy found the middle third of the esophagus with mild dilation consistent with achalasia. A chest X-ray showed borderline widening of the mediastinum. Cardiac MRI indicated delayed enhancement of mid myocardium of basolateral wall. Normal echocardiogram, electrophysiology study and Holter. Manometry diagnosis of Type 2 achalasia. She underwent antitrypanosomal treatment and Heller myotomy. Patient reported complete remission of dysphagia after Heller myotomy,

IMPACT/DISCUSSION: Chagas Disease (CD), caused by the protozoan *Trypanosoma cruzi* affects approximately 6-7 million people, mostly in Latin America. CD's acute phase, lasting 4-8 weeks, is typically asymptomatic or may present with self-limited febrile illness. Irreversible cardiac, gastrointestinal, and/or neuronal damage appears in 30-40% of those in the chronic phase. In some regions, 15-20% have digestive alterations. CD digestive involvement has usually been characterized in South America and rarely seen in Mexico and Central America (CA), as it is thought that different regional *T. cruzi* strains produce different pathogenesis. We describe the first case of a chagasic achalasia (megaesophagus) reported in California and to the best of our knowledge the first in an individual from CA. Dysphagia is the major symptom of esophageal involvement in CD. In a 2014 study by Pinazo et al, they found a prevalence of 21.1% of chronic gastrointestinal manifestations in patients with *T. cruzi* infection. This report is important because dysphagia is not a pathognomonic symptom of CD, but, is a relevant factor that needs to prompt providers to test for *T. cruzi* in at-risk patients.

CONCLUSION: Chagasic achalasia should be suspected in patients from endemic countries or risk factors (i.e. travel to endemic areas, transfusion of contaminated blood, etc). Diagnosis is made by radiologic examination and manometry. Given the possibility of chagasic achalasia in the at-risk population, this condition should be part of U.S. clinicians' differential diagnosis.

CHALLENGES OF GUARDIANSHIP: EXTENDED INPATIENT LENGTH OF STAY IN A PATIENT WITH SCHIZOPHRENIA

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LEARNING OBJECTIVE #1: Recognize the challenges in treating non-decisional schizophrenic patients on the medicine inpatient service.

LEARNING OBJECTIVE #2: Emphasize the need for advocacy to improve establishment of guardianship.

CASE: A 71-year-old woman with schizophrenia, personality disorder, and multiple medical problems including pulmonary sarcoidosis was brought to the Emergency Department with acute psychosis and suicidal ideations. She was found non-decisional by psychiatry and, because she required chronic oxygen supplementation, was admitted to the medical service. She was treated with haloperidol for schizophrenia and oxygen, lisinopril, atorvastatin, aspirin, and levothyroxine for her other diagnoses. On psychiatric evaluation, the patient was not suicidal and was able to answer questions appropriately but displayed no insight into her condition. It was recommended she be discharged to a facility with supervised care. She remained on the medical service waiting for a guardianship hearing to allow placement post discharge. The patient attempted to leave on her own, and a sitter was provided. None of her comorbidities were medically problematic. After 39 days, guardianship still had not been established; the patient missed her appointment in the sarcoidosis clinic. Medications were adjusted by the pulmonary service. Guardianship was obtained on day 44, and she was discharged to a nursing home with continued outpatient psychiatric care.

IMPACT/DISCUSSION: Schizophrenia is a chronic disorder that causes a complex array of manifestations including disordered speech, hallucinations, and social dysfunction and often presents with a range of comorbidities. Treatment consists of medication and psychosocial interventions which can be carried out in in- or outpatient settings. In the US, significant acute changes in mental status are addressed primarily in inpatient facilities. Although this has the benefit of constant supervision, there are problems including increased cost and exposure to nosocomial

infections. Our patient was initially admitted with an acute psychiatric crisis and should have received an emergency guardian within 48 hours after appropriate parties were notified and filings submitted. However, she stayed on a medical ward for 44 days even though crisis

symptoms resolved and she was clinically stable. Inpatient hospital care is far more expensive than any other healthcare setting. Had timely guardianship been established, we could have greatly saved on costs as well as treated our patient more effectively.

CONCLUSION: All systems are interconnected. As we focus on training physicians to care for complex patients, we need to advocate for systems that are safe, timely, equitable, efficient, and patient centered. This includes advocating within our court systems to facilitate timely guardianship to avoid inappropriate and extended hospital stays, which unnecessarily expose patients to risk and increase healthcare costs.

CHOLANGIOCARCINOMA MASQUERADING AS HEPATIC ABSCESSES

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LEARNING OBJECTIVE #1: Understand that the incidence of cholangiocarcinoma is increasing in young adults.

LEARNING OBJECTIVE #2: Identify the risk factors associated with cholangiocarcinoma in young adults.

CASE: A 21-year-old female with no significant past medical history presented to her OB/GYN with the chief complaint of fever and diffuse abdominal pain starting 3 days earlier. On pelvic examination, she was noted to have white-colored discharge. Due to concern for pelvic inflammatory disease, she was given one dose of ceftriaxone and discharged on doxycycline and metronidazole. However, the patient could not tolerate oral medications due to severe nausea, prompting her visit to the emergency department (ED). In the ED, she was febrile, with an elevated white blood cell count to 12,800, transaminitis with AST 106, ALT 43, ALP 149. CT abdomen pelvis was done showing innumerable hypodense lesions throughout the liver, concerning for infectious process versus metastatic disease. She denied any sick contacts, recent travel, personal or family history of malignancy, inflammatory bowel disease. She was started on broad spectrum antibiotics with vancomycin and piperacillin-tazobactam for treatment of hepatic abscesses. Further work up including Echinococcus IgG, Giardia stool antigen, Entamoeba histolytica studies, stool O&P, blood cultures were negative. She then underwent ultrasound-guided biopsy of the liver lesion; the results were consistent with poorly differentiated adenocarcinoma, most likely cholangiocarcinoma (CCA).

She was then discharged with outpatient follow up with hematology-oncology to discuss treatment options. However, she was readmitted to the hospital due to persistent fevers and hyperbilirubinemia. Her labs were then significant for spontaneous tumor lysis syndrome. She, unfortunately, passed away shortly despite prompt hemodialysis.

IMPACT/DISCUSSION: Cholangiocarcinoma is the second most common liver malignancy (10-15%). The usual age at diagnosis is around 50 years. The incidence In young patients(<30 years age) is rising. In a few studies, primary sclerosing cholangitis (PSC) has been reported as the most common risk factor with as high as half the patients having a history of PSC. The other risk factors include inflammatory bowel disease, hepatitis B, hepatitis C, genetic polymorphisms. Our patient did not have any of the known risk factors.

CCA in the young is highly aggressive, and most commonly present at an advanced stage with a high histologic grade and is associated with poor survival. The treatment options may be limited to hepatectomy, adjuvant, or neoadjuvant chemotherapy, liver transplantation. The median survival is less than two years in unresectable patients.

CONCLUSION: It is important for clinicians to be aware of the rising incidence of CCA in young adults and opt for prompt biopsy of the lesions, especially in patients with known risk factors. Further research is warranted to better understand the risk factors and the need for surveillance in younger patients.

CHRONIC STRESS AND THE BROKEN HEART: TAKOTSUBO WITHOUT AN ACUTE TRIGGER

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LEARNING OBJECTIVE #1: Recognize atypical presentations of Takotsubo Cardiomyopathy.

LEARNING OBJECTIVE #2: Recognize possible underlying risk factors for Takotsubo Cardiomyopathy.

CASE: A 70 year-old female visiting from Mexico with a past medical history of hypertension and chronic anxiety presented with one day of acute onset substernal chest pain and shortness of breath. On arrival, the patient was hypertensive with systolic blood pressures above 200 mmHg, EKG was significant for ST elevations in leads I and AVL, and troponin T was elevated to 0.15 ng/ml. Given the high concern for ACS, the patient was taken directly to the catheterization lab. She was found to have non obstructive coronary artery disease and the ventriculogram showed apical ballooning with hyperdynamic basal wall motion. Subsequent TTE showed severe hypokinesis of the anterior apical, mid anteroseptal, and apical myocardium. A diagnosis of Takotsubo Cardiomyopathy was made.

2**IMPACT/DISCUSSION:** Takotsubo Cardiomyopathy characteristically presents with symptoms, EKG findings, and biomarker elevations consistent with acute coronary syndrome. The classic findings on subsequent cardiac catherization are non-obstructed coronary arteries and LV dysfunction with apical hypokinesis. Takotsubo myopathy is typically seen in postmenopausal females (~90%) with a preceding emotional or physical stress event (85%). While recognition of Takotsubo has increased greatly over the years, the syndrome remains relatively rare and poorly understood. New studies and case reports are illustrating atypical presentations, identifying possible underlying risk factors, and revealing long-term outcomes. This case illustrates how in a subset of patients, there is no identifiable stress event preceding Takotsubo Cardiomyopathy. Additionally, the case highlights chronic stress as a possible risk factor for Takotsubo. Whether chronic stress can predispose someone to develop Takotsubo cardiomyopathy remains largely unknown. However, several studies show that chronic anxiety and stress disorders are significantly more common in Takotsubo patients than in ACS patients. Additionally, while patients are typically thought to have improvement of LV function in the weeks to months following Takotsubo Cardiomyopathy, new data shows that long-term outcomes can be poor. Studies have shown that outcomes can be similar to patients with acute coronary syndrome, and the rate of major adverse cardiac and cerebrovascular events is around 9.9% per patient-year.

CONCLUSION: ● Takotsubo Cardiomyopathy is classically thought to be triggered by an acute stress event. However, in a small proportion of cases, there is no identifiably stressor.

● Though data is currently limited, several studies and case reports hypothesize that chronic stress may be an underlying risk factor for Takotsubo Cardiomyopathy.

● Patients must have good follow up as long term outcomes can be poor.

CHRONIC URTICARIA: A HINT TOWARDS SOMETHING MORE

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LEARNING OBJECTIVE #1: Describe the clinical presentation and natural history of chronic spontaneous urticaria

LEARNING OBJECTIVE #2: Review the initial diagnostic testing and management of chronic spontaneous urticaria

CASE: A 39-year-old man presented with a pruritic diffuse rash which has been recurring over the past two years, and getting worse in frequency over the past month. The rash occasionally develops after eating spicy foods, with stress, or when changing from a hot to cold environment, but often occurs without a clear preceding trigger. He had no personal or family history of thyroid or autoimmune disease, and took no medications. Exam was negative for thyromegaly and notable for scattered well-circumscribed oval plaques over the upper arms, chest, and flanks in a wheal and flare pattern. Laboratory studies including CBC, TSH, ESR, and CRP were all normal. He was diagnosed with chronic spontaneous urticaria based on the clinical appearance and chronicity of the rash. He was started on a daily second-generation anti-histamine and the frequency of the rash improved significantly.

IMPACT/DISCUSSION: In contrast to acute urticaria, chronic spontaneous urticaria (CSU) is a condition affecting only 1% of the population in the United States, and is defined as the presence of urticaria for a period of six weeks or longer. Although classic triggers of urticaria may be present, the absence of a clear trigger during the majority of occurrences satisfies the diagnostic criteria of spontaneous urticaria. CSU presents as a self-limited disease in most patients, with spontaneous remission rates between 30 to 50% within the first year. CSU has been shown to be associated with thyroid disorders, as well as autoimmune conditions such as rheumatoid arthritis, Sjogren's syndrome, and systemic lupus erythematosus. As such, the initial evaluation of patients presenting with CSU includes a careful history, exam, and screening tests to evaluate for thyroid and autoimmune etiologies. However, no specific cause can be identified in 80 to 90% of individuals with CSU. There are several established guidelines on treatment of CSU, with the consensus first-line agent being a second-generation anti-histamine. About 20% of individuals with CSU may experience symptoms beyond 5 years, and in these cases escalation to dual anti-histamine regiments, H2-antagonists, leukotriene receptor antagonists, and ultimately omalizumab or cyclosporine may be warranted.

CONCLUSION: This case reviews the presentation of a commonly recognized condition in urticaria, and explores how the initial diagnostic testing and management of this condition changes when patients present with a chronic course of symptoms.

CLOPIDOGREL-INDUCED THROMBOTIC THROMBOCYTOPENIC PURPURA SUCCESSFULLY TREATED WITHOUT PLASMA EXCHANGE

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LEARNING OBJECTIVE #1: Recognize thrombotic thrombocytopenic purpura (TTP) in patients treated with thienopyridine anti-platelet agents.

LEARNING OBJECTIVE #2: Acknowledge that a subset of patients with TTP may respond to steroids alone, while recognizing that plasma exchange remains the standard of care.

CASE: A 54-year-old male with history of peripheral artery disease and recent popliteal artery stent placement presented with acute right middle cerebral artery stroke. Platelet count was 22 K/μL at admission and normal one month ago at clopidogrel initiation. Peripheral blood smear displayed schistocytes, indicating microangiopathic hemolytic anemia (MAHA). Fresh frozen plasma and prednisone were initiated. Plasma exchange (PLEX) was initially scheduled, but ultimately deferred due to 1) uncertainty about the TTP diagnosis, and 2) concerns that PLEX would induce transient hypotension and exacerbate ischemic neurological damage.

Briefly after the start of steroids, platelet count began to rise with stabilization of neurological symptoms. Six days after admission, ADAMTS-13 activity evaluated on admission was reported to be $\leq 2\%$, confirming diagnosis of TTP. By this time, the platelet count had normalized and thus PLEX was not initiated. An alternative anti-platelet agent for thromboprophylaxis was administered and the patient was discharged in good condition with no further relapse.

IMPACT/DISCUSSION: Thienopyridine anti-platelet agents such as ticlopidine and clopidogrel are prescribed to prevent thrombosis after peripheral vascular or coronary stent placement. Ironically, microvascular thrombosis is a rare adverse event of thienopyridines, manifesting as TTP. Patients with TTP present with MAHA, schistocytosis, and thrombocytopenia and may display neurological and renal deterioration. The mainstay of treatment for thienopyridine-induced TTP is emergent plasma exchange, which eliminates circulating niduses of thrombosis formation. Glucocorticoids are often administered acutely in conjunction to PLEX therapy to mitigate any autoimmune etiology.

Prior to the era of PLEX, TTP was associated with a 90% mortality rate due to systemic infarcts. Our patient's recovery indicates not all patients necessitate emergent PLEX administration in cases of clopidogrel-induced TTP. Further investigation must determine which patients may benefit from glucocorticoid treatment alone and if glucocorticoid bridging to PLEX initiation for initial poor responders provides outcomes equivalent to immediate plasma exchange in a select TTP population.

CONCLUSION: Induced thrombotic thrombocytopenic purpura (TTP) is a rare but potentially adverse effect of clopidogrel treatment and presents as MAHA, thrombocytopenia, and schistocytosis, often in the context of neurological and/or renal impairment. Emergent plasma exchange is standard-of-care for TTP treatment but not always required for TTP resolution. Further study must determine if glucocorticoid treatment is as efficacious as immediate plasma exchange in a subset of TTP patients.

CLOSTRIDIUM SEPTICUM-INFECTED AORTIC ANEURYSM: A RARE INDICATION FOR SCREENING COLONOSCOPY

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LEARNING OBJECTIVE #1: Diagnosis and treatment of mycotic aortic aneurysm

LEARNING OBJECTIVE #2: Recognize *C. Septicum* is associated with GI malignancy

CASE: A 70-year-old woman presented with 4 weeks of progressively worsening abdominal and lower back pain. Accompanied by nausea, retching, non-bloody emesis, & subjective fevers. 1 week prior went to an urgent care where she received fluids and a course of oral metronidazole for presumed gastritis without clinical improvement. Her past medical history is otherwise uneventful.

On exam vitals are normal. She is in pain and retching. Abdominal exam with tenderness to deep palpation throughout all quadrants without

guarding. No point tenderness of spine on palpation. Exam otherwise unremarkable.

Initial laboratory investigations with a leukocytosis of 23,000 WBC and elevated CRP 19 mg/dl. A CT abdomen shows a saccular infra-renal aortic aneurysm measuring 4.2x5.4x7.2 centimeters with surrounding soft tissue stranding along with nodularity and inflammation adjacent to the cecum. MRI of the spine is negative for osteomyelitis.

Broad spectrum antibiotics were started on admission. A TEE was performed to rule-out endocarditis, but with preliminary findings concerning for possible aortic dissection. Emergent CTA was negative for dissection, but did show a second aneurysm measuring 3.0x3.0x2.2 centimeters arising distal to the left subclavian artery. Infectious work-up remained negative, including several blood cultures and a DNA-PCR sequencing assay for microbial cell-free DNA.

Vascular Surgery performed an open infra-renal abdominal aortic aneurysm repair using an aorto-iliac graft on hospital day 5. Anaerobic surgical tissue cultures were positive for *Clostridium Septicum*. Uneventful post-operative course and discharged on indefinite suppressive amoxicillin therapy. Colonoscopy as outpatient was negative for malignancy. Vascular surgery is planning for close outpatient follow-up with serial imaging for the second thoracic aortic aneurysm,

IMPACT/DISCUSSION: This case demonstrates the diagnosis and management of mycotic aortic aneurysm. Diagnosis should be established with CT, and antibiotics should be tailored to cover Staph and Salmonella spp. the most common pathogens. Chronic suppressive antibiotics should be considered if poor source control.

A literature search reveals this diagnosis to be a rare and lethal combination. Diagnosis is often challenging as *C. Septicum* is an obligate anaerobe. Several case-series report a nearly 100% mortality for untreated patients. The literature also reveals a strong link between *C. Septicum* infection & primary GI malignancy in well over 50% of patients. For our case, the cecal lesion gains added importance as a potential primary malignancy. Despite the negative colonoscopy, suspicion of malignancy for our patient remains high and brings into consideration the possibility of appendiceal etiologies as well.

CONCLUSION: The imaging modality of choice for the diagnosis of mycotic aneurysms is CT *C. Septicum* Infection should prompt screeing colonoscopy

CMV COLITIS IN AN IMMUNOCOMPETENT PATIENT

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LEARNING OBJECTIVE #1: Differentiate CMV colitis from inflammatory bowel disease and other causes of severe colitis.

LEARNING OBJECTIVE #2: Recognize CMV as a possible diagnosis in a healthy patient with severe colitis.

CASE: A 34 year old male with no significant past medical history presented to the hospital with a five day history of fever, chills, diffuse abdominal pain, and hematochezia. The patient endorsed two similar episodes of self-resolving hematochezia in the past that lasted for three weeks. His family's medical history was significant for a mother who was diagnosed with colon cancer at 55 years old. A CT of the abdomen showed severe colitis from the right colon to the rectum. Infectious colitis and IBD were considered in the differential diagnosis, thus a colonoscopy with a biopsy was performed. The colonoscopy showed moderate inflammation from the anus to the hepatic flexure that was concerning for either ulcerative colitis or CMV colitis. The biopsy confirmed CMV colitis and an infectious workup showed CMV IgM with >10,000 IU/mL on a quantitative CMV PCR. Since CMV colitis is so rare in immunocompetent individuals, tests for immunosuppression were conducted. However, no sources of immunosuppression could be identified. Four days of ganciclovir were given in the hospital and the patient's fever, abdominal pain, frequency of bowel movements, and hematochezia improved significantly. He was discharged with valganciclovir 450mg 2 tablets BID for twenty-one days to treat his CMV colitis.

IMPACT/DISCUSSION: Cytomegalovirus (CMV) is a common virus that is typically asymptomatic or causes a mild mononucleosis syndrome in healthy adults. Severe manifestations of the virus, such as CMV colitis, are rarely seen in immunocompetent patients, especially those who are young, healthy, and without comorbidities. CMV colitis can be difficult to differentiate from other forms of colitis such as inflammatory bowel disease, thus a biopsy can confirm the diagnosis. CMV colitis should be a part of the differential for severe colitis when other sources have been ruled out, even in those who are young and healthy.

CONCLUSION: -CMV should remain in the differential for a patient with severe colitis, even in healthy individuals.

-CMV colitis can be confirmed and distinguished from other forms of colitis via biopsy of the colon.

CNS RING ENHANCING LESIONS AFTER SOLID ORGAN TRANSPLANTATION: A LATE COMPLICATION

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LEARNING OBJECTIVE #1: Distinguish between CNS toxoplasmosis and CNS lymphoma in immunocompromised patients

LEARNING OBJECTIVE #2: Assess utility of serum and CSF markers for central brain lesions

CASE: A 60 year-old man with a history of deceased donor renal transplant with thymocyte induction 5 years ago that was complicated by acute t-cell mediated rejection requiring three additional rounds of thymoglobulin post-transplant, presented with 8 months of progressive focal neurologic deficits and paranoid delusions. Brain imaging revealed ring enhancing lesions. CNS fluid had WBC of 13, high protein, normal glucose, and no organisms. Further CNS studies were pertinent for a positive PCR for Epstein-Barr virus, a negative PCR for Toxoplasma gondii, a negative cryptococcal antigen, and a negative PCR for JC virus. Serum Toxoplasma IgG antibody was positive with no past Toxoplasma levels for comparison, a SPECT/CT scan of the brain showed no increased uptake in the lesions, which is more consistent with an infectious process rather than lymphoma. The patient was treated with Bactrim for several weeks, and serial MRIs showed decreasing lesion size and resolution of enhancement.

IMPACT/DISCUSSION: The differential for multiple enhancing brain lesions in immunocompromised patients, such as transplant patients, is broad, including Toxoplasma gondii, Aspergillus, Nocardia asteroides, EBV, Listeria monocytogenes, Mucorales, Tuberculosis, Coccidioides, and less commonly Cryptococcus. Although data on transplant populations is limited, the two most commonly reported causes of brain lesions with mass effect are Toxoplasma and lymphoma. In most patients with Toxoplasma reactivation, serology IgM is absent with positive IgG antibodies, but serum IgG cannot distinguish between active and past infection. PCR for Toxoplasma in CSF is not always helpful, with a sensitivity of only about 50%. And unfortunately, sensitivity and specificity for EBV in CSF varies widely. SPECT/CT scan can be helpful in distinguishing between toxoplasma and CNS lymphoma. Thallium, a potassium analog, will be taken up more by hypermetabolic tumor cells, such as in lymphoma as compared with toxoplasma with no cellular component. It has a sensitivity and specificity of 100% and 93%, respectively. Nevertheless, brain biopsy is still the gold standard. In cases where a biopsy would put

the patient as significant risk, patients are sometimes empirically treated with follow up imaging to assess for response. Finally, Toxoplasma should be always be considered on the differential in this type of patient, as the 60 day mortality is reported to be up to 82%.

CONCLUSION: - Toxoplasma remains rare in patients with renal transplant after 3 months, but needs to be on differential with CNS process work-ups

- While serology testing and lumbar puncture is helpful for ruling out many other etiologies, a negative result for toxoplasma cannot rule out toxoplasmosis

- Advanced imaging can help to distinguish between toxoplasma and lymphoma

COAGULATION SYSTEM GONE ROGUE: CATASTROPHIC ANTIPHOSPHOLIPID SYNDROME

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LEARNING OBJECTIVE #1: Identifying the thromboembolic events involving three or more organs as a presentation of Catastrophic Antiphospholipid Syndrome (CAPS)

LEARNING OBJECTIVE #2: Role of Plasmapharesis and IVIG in the management of CAPS

CASE: 43 year old gentleman presented with right hemiparesis found to have acute left pontine infarct with pure motor deficit. In the initial acute rehabilitation course, patient developed fever of 101 F and abdominal pain. A CT scan abdomen with IV contrast showed multiple emboli in the Pulmonary arteries, SMA, splenic artery and veins with splenic infarction. There was also evidence of small bowel edema resulting from ischemia. Patient was started on a heparin drip. Patient underwent exploratory laparotomy with 20 cm of ischemic bowel resected. Lupus anticoagulant screen returned positive. Hematology was consulted and a diagnosis of the Catastrophic Antiphospholipid Syndrome (CAPS) was made. Patient then underwent plasmapharesis thrice followed by a course of IVIG for 5 days. Histopathology of the small bowel showed hemorrhage and vascular congestion and was interpreted to be consistent with thromboembolic disorders. Patient was then started on IV methylprednisolone and transitioned to prednisone and tapered off after 1 month. Patient was discharged on long term anticoagulation with warfarin with a goal of INR 2-3.

IMPACT/DISCUSSION: Catastrophic Antiphospholipid Syndrome (CAPS) is the unusual but severe form of antiphospholipid antibody syndrome and is characterized by arterial and venous thrombosis involving 3 or more organs with characteristic microvascular thrombosis. Early diagnosis and management of CAPS is essential as the mortality can be as high as 30% based on initial reports. Triggers for thrombosis may include infection, medications, surgery, lupus flare and obstetric complications must be appropriately managed. Treatment is focused at managing the hypercoagulable state with anticoagulation and the suppression of the inflammatory cascade and reducing the antibody burden. Plasmapharesis helps with removal of the Antiphospholipid antibodies. A systemic review of 342 CAPS cases showed patients who underwent therapy with anticoagulation, glucocorticoids and combination of plasmapharesis and IVIG had better outcomes. In patients resistant to the initial therapy, Rituximab and eculizumab have been found to be effective. Long term anticoagulation is of utmost importance to prevent recurrence of the thromboembolic events.

CONCLUSION: Timely management of CAPS with IVIG and plasmapharesis after identification of acute thrombosis with involvement of 3 or more organ systems can be lifesaving in this nearly fatal condition.

COCAINE INDUCED PSEUDO WELLENS SYNDROME

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LEARNING OBJECTIVE #1: Recognize Wellens' syndrome on an electrocardiogram (ECG).

LEARNING OBJECTIVE #2: Distinguish pseudo-Wellens' syndrome from true Wellens' syndrome.

CASE: A 59-year old male with a past medical history of hypertension presented with shortness of breath and dyspnea on exertion. He used marijuana daily and denied any additional recreational drugs. The physical examination showed a heart rate of 79 beats per minute, blood pressure of 158/102 mm Hg, jugular venous pressure of 12 cm, left parasternal heave, and displaced point of maximal impulse.

Laboratory workup was notable for an elevated creatinine, troponin, and brain natriuretic peptide. Chest radiograph showed new cardiomegaly. ECG showed left ventricular hypertrophy; T wave inversions in leads I, II, III, and aVF; and biphasic T waves in leads V4 – V6. Repeat ECG showed new biphasic T waves in V3 and V4. Transthoracic echocardiogram showed moderate left ventricular hypertrophy, severe global hypokinesis, and left ventricular systolic function of 20%. The patient was started on aspirin, heparin, and furosemide for new onset systolic heart failure and non-ST segment elevation myocardial infarction (NSTEMI). He urgently underwent left heart catheterization for his ECG pattern concerning for Wellens' syndrome. Coronary angiography showed normal coronary arteries. He was diagnosed with pseudo-Wellens' syndrome. His urinary toxicology screen returned positive for cocaine and his diagnosis was attributed to cocaine use.

IMPACT/DISCUSSION: Wellens' syndrome was first described in 1982 as an ECG finding observed in patients with unstable angina and critical stenosis of the proximal left anterior descending (LAD) artery. It is a precursor to a potentially fatal extensive anterior myocardial infarction, implying that the ECG pattern should be treated as a STEMI equivalent. The Wellens' ECG pattern is characterized by symmetric, deeply inverted T waves (Type A) or biphasic T waves (Type B) in the precordial leads along with the following criteria: normal or minimally elevated ST segments, no Q waves, and normal to slightly elevated troponin. Characteristic T wave changes are classically seen in leads V2 - V3 with normal precordial R wave progression and often occur when patients are free of chest pain. The pathophysiology of Wellens' syndrome is unknown. Pseudo-Wellens' syndrome is described in several case reports of patients with ECG findings of Wellens' syndrome but with normal coronary angiography. The condition has been documented in patients with cocaine use, marijuana use, immune checkpoint inhibitor use, hypertension, pulmonary embolism, acute cholecystitis, takotsubo syndrome, and intracranial hemorrhage.

CONCLUSION: (1) Wellens' pattern on ECG requires urgent cardiac consultation for evaluation of critical proximal LAD stenosis.

(2) Pseudo-Wellens' syndrome is a condition characterized by Wellens' pattern on ECG in patients with normal coronary angiography. It can be seen in a variety of clinical scenarios including cocaine-induced coronary artery vasospasm.

COGNITIVE BIASES ARE ESSENTIAL TOOLS IN DIAGNOSIS, BUT CAN ALSO LEAD TO SERIOUS ERRORS!

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LEARNING OBJECTIVE #1: Recognize cognitive biases in clinical medicine.

LEARNING OBJECTIVE #2: Strategies to reduce diagnostic errors.

CASE: A 62-year-old male presents to the hospital with numbness of arms, thigh pain and difficulty walking for 2 weeks. His symptoms started at work after a prolonged extension of his back. A spinal MRI showed severe cervical stenosis. Neurosurgery team advised no surgical intervention with out-patient physical therapy. Three days later, he presented to another hospital with persistent symptoms. These were again attributed to cervical stenosis with recommendations for outpatient neuro-surgery follow up and continued physical therapy. Five days later, he presented to a third hospital with progressive symptoms. History revealed a recent respiratory tract infection. Physical examination was remarkable for equally diminished power in both lower extremities with absent ankle and knee reflexes as well as decreased sensation in feet.

MRI spine from the previous hospitalization showed severe cervical stenosis without cord compression. Electromyography showed sensory-otor neuropathy with early demyelination. Lumbar puncture revealed elevated proteins. A presumptive diagnosis of Guillain- Barré syndrome was made and he was started on high dose IVIG. Within two weeks he was asymptomatic and walking independently.

IMPACT/DISCUSSION: Relying too heavily on the initial piece of information to formulate a diagnosis can lead to premature closure of cases resulting in diagnostic inaccuracies and harm to our patients. In this case, multiple providers succumbed to common cognitive biases by attributing the patient's symptoms to cervical stenosis, even without a history of back pain or evidence of cord compression on imaging. None of the previous notes documented a sensory exam or deep tendon reflexes, nor a history of respiratory tract infection which assisted in arriving at the accurate diagnosis. Easy availability of advanced imaging has led us away from the basics of practicing medicine - history and a complete physical examination.

CONCLUSION: Identification and increasing awareness of cognitive biases in clinical practice can help reduce medical errors. A few strategies include:

Re-visiting history and examination when the diagnosis is not forthcoming. Formulating a differential diagnosis independent of the labels applied by others. Using a diagnostic "time-out" for difficult clinical problems.

COLD AGGLUTININ DISEASE IN THE SETTING OF MYCOPLASMA PNEUMONIAE INFECTION AND CHRONIC MYELOGENOUS LEUKEMIA

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LEARNING OBJECTIVE #1: Recognize the classical association of cold agglutinins with *M. pneumoniae* and hematologic malignancies.

LEARNING OBJECTIVE #2: Avoid premature closure when evaluating complex clinical cases, especially when multiple etiologies can explain one clinical finding.

CASE: A 60 year-old woman with bronchiectasis presented to care with 2 weeks of dyspnea, fever, and productive cough. On admission, she was intubated for acute hypoxemic respiratory failure. Exam revealed fever to 100.6 F, scleral icterus, wheezing, and jaundice. Laboratory workup revealed leukocytosis of 79,000/mm^3, hemoglobin of 6.7g/dL, total bilirubin of 28 mg/dL (direct 22 mg/dL). CT chest revealed multi- lobar pneumonia. She underwent bronchoscopy which detected *M. pneumoniae* via PCR. Given her anemia and hyperbilirubinemia, an autoimmune hemolytic anemia work-up was initiated. Direct antiglobulin testing was positive for C3, suggesting cold agglutinin disease (CAD) or paroxysmal cold hemoglobinuria.

Peripheral smear showed erythrocyte clumping and cold agglutinin titer was 1:640, consistent with CAD. Her pneumonia was treated with moxifloxacin and her respiratory status and laboratory abnormalities improved. Her leukocytosis persisted, peaking at 96,000/mm^3. Peripheral smear showed precursor cell forms, initially thought to be due to steroids and critical illness. Thus BCR-ABL testing and bone marrow biopsy were pursued and revealed chronic myelogenous leukemia (CML). Dasatinib was initiated and she achieved a major molecular response.

IMPACT/DISCUSSION: CAD is an autoimmune hemolytic anemia in which circulating autoantibodies bind to erythrocyte antigens at low temperatures, causing erythrocyte agglutination and extravascular hemolysis. CAD can be primary (i.e. idiopathic) or secondary to an underlying infectious (e.g. *M. pneumoniae*, EBV), autoimmune, or lymphoproliferative disorder (e.g. lymphoma, lymphocytic leukemia). Although many patients are asymptomatic, some present with hemolytic anemia or cold-induced symptoms such as Raynaud phenomenon. Diagnosis requires clinical and laboratory evidence of hemolysis, positive direct antiglobulin test for C3, and a cold agglutinin titer of ≥1:64. Evaluation for underlying etiology is appropriate. Management includes cold avoidance, supportive transfusions, and treatment of the underlying disorder. There is also a role for rituximab-based therapy to target antibody production. While this patient had an underlying infection contributing to her CAD, her relentless leukocytosis was not fully explained by this alone. She was ultimately found to have CML as well, underscoring the importance of avoiding premature diagnostic closure.

CONCLUSION: CAD is an autoimmune hemolytic anemia in which cold agglutinins bind erythrocytes, causing clumping and hemolysis.

Infectious and lymphoproliferative conditions can be associated with CAD.

Premature diagnostic closure in complex clinical cases may cause critical concurrent differential diagnoses to be missed.

COMMON SYMPTOMS WITH AN UNCOMMON CAUSE: A RARE COMPLICATION OF PEPTIC ULCER DISEASE

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LEARNING OBJECTIVE #1: Recognize rare complications of peptic ulcer disease (PUD)

LEARNING OBJECTIVE #2: Review management of gastric outlet obstruction due to PUD

CASE: A 45 year old male presented with severe nausea, vomiting, and abdominal pain for one month. He noted symptoms were worse after meals and reported a 40 pound weight loss. His social history was remarkable for heavy marijuana use.

On admission, the patient's vital signs were within normal limits. Physical exam was notable for tenderness to palpation in the epigastric area. Laboratory evaluation revealed a creatinine of 1.6 from a baseline of 1.0 and metabolic alkalosis. CT Abdomen/Pelvis revealed a distended, fluid-filled stomach, concerning for gastroparesis. Given his cannabis use, age, and lack of other risk factors, the initial working diagnosis was cannabinoid hyperemesis syndrome.

An esophagogastroduodenoscopy (EGD) was attempted, which revealed an edematous pylorus and erosions of the antrum with inability to pass the endoscope through the pylorus. Subsequent upper GI series showed a gastric outlet obstruction with stricture at the gastric antrum, concerning for malignancy. A repeat EGD with balloon dilation was attempted, but still with inability to advance past the stricture. Biopsies

were positive for *H. pylori* and negative for malignancy. The patient was started on 4-drug therapy for *H. Pylori* in hopes this would relieve his symptoms. However, his symptoms recurred following his treatment and he required laparoscopic pyloroplasty for gastric outlet obstruction secondary to peptic ulcer disease.

IMPACT/DISCUSSION: Peptic ulcer disease (PUD) has many complications, including obstruction. Prior to the discovery of *H. Pylori* and proton pump inhibitors, PUD caused 90 percent of gastric outlet obstruction cases. Currently, PUD accounts for only five percent of cases of outlet obstruction. In fact, today obstruction is more likely to be caused by malignancy than PUD. Gastric outlet obstruction in PUD may arise from inflammation and edema from the ulcer in the acute setting as well as fibrosis and scarring in the chronic setting. Prolonged obstruction can also cause gastric atony, leading to gastric retention and symptoms of nausea and vomiting.

Management for gastric outlet obstruction involves intravenous hydration, nasogastric decompression, nutritional optimization, and proton pump inhibitor therapy. Intervention with endoscopic dilation or surgery is usually reserved for those who fail conservative management. Half of obstruction cases due to peptic ulcer disease respond to medical management, although some may eventually need intervention. Furthermore, evidence suggests that in cases of *H. Pylori*, eradication of the infection resolves the obstruction and prevents recurrence.

CONCLUSION: This case highlights the importance of maintaining a wide differential when approaching common presenting symptoms. What was initially thought to be a case of cannabis hyperemesis syndrome was actually a rare complication of peptic ulcer disease.

CONCOMITANT CRYPTOCOCCAL MENINGITIS AND AFRICAN TICK BITE FEVER IN A RETURNING TRAVELER

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LEARNING OBJECTIVE #1: High index of suspicion

LEARNING OBJECTIVE #2: Pre-travel counselling

CASE: We present a case of a man returning from safari in South Africa with African tick bite fever (ATBF) and cryptococcal meningitis.

A 35-year-old man presented to the hospital complaining of fever of 39.30 C at home, chills, severe headache for 1 day, dizziness, fatigue, and body aches for one week. He returned from safari in South Africa near Zimbabwe 7 days earlier and reported removing 5 ticks from his body while there. He had no medical conditions prior to travel. On admission, heart rate was 112 bpm and temperature was 37.60 C on Tylenol. Physical examination revealed periumbilical and left anterior thigh eschars with inguinal lymphadenopathy. Initial laboratory results were WBC 5.18 K/mm3, lactic acid 2.5 mmol/L, C-reactive protein 20.8 mg/L, blood glucose 141 mg/dL, normal coagulation profile, normal liver functions, and serum creatinine 1.39 mg/dL. Chest radiograph and computed tomography of the brain were normal.

Blood cultures, Influenza A and B, and malaria smear were all negative. His cerebrospinal fluid tested positive for cryptococcus antigen. He was admitted for presumed cryptococcus meningitis and ATBF. Treatment for ATBF with doxycycline 100 mg oral twice daily and cryptococcal meningitis with Amphotericin B Liposomal (AmBisome) 275 mg IV daily with Flucytosine 2 g orally every 6 hours was started. He developed acute kidney injury secondary to AmBisome with serum creatinine peaking at 2.03 mg/dL and returned to 1.43 mg/dl when treated with normal saline.

Eventually Rickettsia typhi IgG and IgM results came back negative. There are no specific tests for Rickettsia africae readily available, but other rickettsia panels may cross react allowing for confirmation of rickettsia infection. HIV 4th generation and serum cryptococcus antigen tested negative. Eschar biopsies showed non- specific inflammation.

The patient completed 7 days of Doxycycline and 14 days of induction antifungal therapy then transitioned to 8 weeks of outpatient consolidative therapy with Fluconazole 800 mg once daily. He was doing well at follow-up.

IMPACT/DISCUSSION: ATBF is a bacterial disease caused by Rickettsia africae spread by Amblyomma-type ticks in sub-Saharan Africa, West India and Oceania. Confirmatory testing with culture, PCR, or Immunofluorescence are often unavailable and do not return in a timely fashion. Clinicians need to have a high index of suspicion in returning travelers from endemic areas with tick bites and presumptive treatment should be started.

Patient also tested positive for another potentially fatal infection, cryptococcal meningitis. A fungal infection caused by *Cryptococcus neoformans* or *Cryptococcus gatti.* This emphasizes the importance of screening for other associated infections in returning travelers.

CONCLUSION: Ecotourism and adventure travel are increasingly popular worldwide, the incidence of travel-associated tick-borne rickettsioses is likely to increase. Pre-travel counselling regarding prevention measures is important.

CONFUSING CASE OF DELIRIUM

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LEARNING OBJECTIVE #1: Recognize multi-factorial delirium

LEARNING OBJECTIVE #2: Prioritize medication reconciliation

CASE: A 68-year-old male with history of paraplegia on the Medicine service with sepsis secondary to pyelonephritis and aspiration pneumonia has worsening confusion for 1 day. Due to a switch day, the entire Medicine team was new and had not previously examined the patient; mental status was not documented. Patient was increasingly somnolent on exam, requiring sternal rub for arousal. On chart review, patient's last bowel movement was 2 days ago. Straight catheterization revealed >700cc retained urine. Medication review showed patient received diazepam 10mg the day prior due to concern for withdrawal (listed as home medication but had not received for 3 days in hospital) as well as 15mg oxybutynin (home dose 5mg TID) due to dosing confusion. Team contacted patient's daughter who managed home medications and confirmed all medications patient was actively receiving at home. Patient was receiving baclofen 40mg QID in hospital but taking 20mg TID at home and patient not currently taking diazepam at home. Bowel regimen and routine bladder scans/straight caths were initiated in addition to medication adjustments to correct dosing. Overnight patient had a bowel movement, 1.2L urine output via catheterization.

Baclofen and oxybutynin doses were adjusted and diazepam was discontinued. Patient's mental status returned to baseline (oriented x4) approximately 48 hours later. Patient and family received medication education at discharge including updated EMR medication list.

IMPACT/DISCUSSION: Delirium is common in hospitalized patients, but can be difficult to identify and treat. It is a significant burden on society associated with increased risk for cognitive and function decline as well as increased cost of health care. While delirium is common in elderly hospitalized patients with a prevalence of 25%, it still poses a challenge for clinicians to recognize. Up to 70% of new cases of delirium are missed by clinicians and, even in recognized cases of delirium, the exact etiology often goes uncovered. This is in part because most cases of delirium have multifactorial causes and a wide range of presentations. Among all causes of delirium, polypharmacy and medication effects continue to be the number one reason for reversible delirium. Complicating the matter, infection or dehydration can trigger drug-induced delirium even without changes to patient's medication. There has been increased effort to implement medication reconciliation to minimize any associated adverse events such as delirium. Delirium continues to be difficult to diagnose and treat, but documenting mental status and reconciling medications early are easy steps to help reduce the prevalence of delirium and chances of poor outcomes from it.

CONCLUSION: Establish patient's baseline mental status during handoff

Reconcile medication list early in the patient's admission

Record person in charge of patient's medication regimen at home

CONNED BY CONN'S: A CASE REPORT ON THE MANIFESTATION OF CONN'S SYNDROME POST-RENAL TRANSPLANT IN A PATIENT WITH PCKD

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LEARNING OBJECTIVE #1: Recognize the clinical manifestations of Conns syndrome in a patient with PCKD who underwent a successful renal transplantation.

LEARNING OBJECTIVE #2: Understand the mechanism by which Conns syndrome remains masked in such a patient.

CASE: We present a case of a 66-year-old male with End Stage Renal Disease (ESRD) secondary to a history of Polycystic Kidney Disease (PCKD). He successfully underwent a cadaveric renal transplant, prior to which he received peritoneal dialysis for 2 years. The newly transplanted kidney showed no signs of graft rejection and he sustained no post-operative complications. A regularly scheduled follow-up 2 months later revealed the patient to have worsening control of hypertension. Despite an increase in blood pressure lowering medications, it remained uncontrolled. Various causes of new onset hypertension such as anti-graft rejection medication (anti-calcineurin therapy), renal artery stenosis, and allograft injury were investigated and excluded. The patient's biochemistry panel revealed the presence of hypokalemia, a finding that was not present in previous reports. In view of these findings, plasma Aldosterone and Renin levels were ordered and the level was found to be elevated. The Aldosterone, Renin, and Aldosterone-Renin Ratio (ARR) were found to be 50.4 ng/dL, 0.4 ng/dL, and 126, respectively. A detailed review of the patient's past medical records revealed a routine CT scan performed in 2017, which showed an adrenal adenoma of 17 x 13 mm and was diagnosed as an incidental finding at that time. In view of the new symptoms, the patient was started on spironolactone with little to no improvement in blood pressure and potassium levels.

IMPACT/DISCUSSION: Conns syndrome presenting after renal transplant is exceedingly rare and as of date, there are only two such cases occurring in the context of PCKD which are published in literature. Early diagnosis of Conns represents a reversible cause of hypertension and moreover, high aldosterone levels is associated with detrimental cardiovascular outcomes. The mechanism behind unmasking Conns syndrome is related to the newly transplanted kidney being able to actively secrete potassium into the tubules which was previously impaired in the old kidneys. Presence of PCKD adds diagnostic difficulty as the cysts obscure an adrenal adenoma. Release of renin by renal cysts makes the diagnosis of Conns syndrome tougher. It is important not to rely solely on the presence of hypokalemia in such cases. When medical treatment fails, as in our case, surgical resection of adenoma is mainstay of treatment. We suggest having a high index of suspicion and not solely relying on the presence of hypokalemia in these cases.

CONCLUSION: For patients with pre-existing Conns in the setting of a renal transplantation, the condition may be clinically silent until successful transplantation. It may be useful to consider further testing with ARR in suspected cases.

CORONARY CONUNDRUM: ACUTE MYOCARDIAL INFARCTION AS INITIAL PRESENTATION OF CATASTROPHIC ANTIPHOSPHOLIPID SYNDROME

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LEARNING OBJECTIVE #1: Recognize the uncommon cardiac manifestation of catastrophic antiphospholipid syndrome in a young adult

LEARNING OBJECTIVE #2: Manage catastrophic antiphospholipid syndrome in a multidisciplinary theraputic approach

CASE: A 35-year old African American woman with history of Systemic Lupus Erythematosus(SLE) complicated by Lupus nephritis and recurrent thromboembolism on Apixaban presented with acute pleuritic chest pain for one day. She was diagnosed with acute pulmonary embolism(PE). Electrocardiogram showed normal sinus rhythm without ST changes. Initial troponin of 1.03 rose to a peak of 48.3. Echocardiogram showed ejection fraction of 45% with apical akinesis. Right ventricular size and function were normal. Emergent cardiac catheterization showed multiple grade IV-V LAD thrombi, treated by thrombectomy and suctioning. During her prolonged hospital course, she developed left upper extremity acute deep vein thrombosis(DVT) and subacute infarct in right thalami despite therapeutic anticoagulation. Repeat laboratory tests revealed new positive lupus anticoagulant, although negative for cardiolipin and beta-2 microglobulin antibodies. The diagnosis was consistent with catastrophic antiphospholipid antibody syndrome (CAPS). She had progressive renal failure from contrast induced nephropathy, septic shock and lupus nephritis requiring hemodialysis and MRSA bacteremia

related to dialysis catheter. She also had massive hemoptysis presumably due to enlarging cavitory lung lesions eroding into vasculature. Ultimately resulting in hypoxic respiratory failure requiring intubation and pulseless electrical activity arrest. A multidisciplinary approach to care was followed in collaboration with rheumatology, nephrology, hematology and cardiology subspecialties. Multimodality therapy included steroids, cyclophosphamide, plasmapheresis and rituximab. Despite her tenuous clinical course over two months, she made remarkable clinical recovery. Therapeutic heparin was bridged to warfarin, with the addition of aspirin, hydroxychloroquine and steroid taper. She was discharged home in stable condition with close outpatient follow-up

IMPACT/DISCUSSION: Acute MI is uncommon in young adults and prothrombotic states like CAPS should be considered as potential etiology especially with evidence of widespread thrombosis. High index of clinical suspicion is necessary for prompt diagnosis of CAPS. An aggressive multidisciplinary therapeutic approach is of paramount importance. Cornerstone of APS therapy is long term anticoagulation with warfarin. In CAPS, therapy is directed towards immunosuppression with steroids, cyclophosphamide, rituximab and plasmapheresis.

CONCLUSION: This case highlights the need for a collaborative team approach to a patient with CAPS.

Overall mortality rate has declined from 53 to 33% in the last decade with effective first line multimodality theraputic strategy.

COULD BACTEREMIA BE A SIGN OF MALIGNANCY? A CASE OF CLOSTRIDIUM SEPTICUM BACTEREMIA DUE TO B-CELL LYMPHOMA

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LEARNING OBJECTIVE #1: Determine when further abdominal imaging/workup is indicated in patients presenting with sepsis

LEARNING OBJECTIVE #2: Examine relationship of Clostridium species bacteremia with intraabdominal malignancy

CASE: 78 year old man with history of Parkinson's Disease and chronic constipation presented with 2 weeks of low grade fever and an acute onset of 2 days of severe weakness and malaise. On review of systems, he also reported a 3 month history of mild, crampy, right-sided abdominal pain and occasional night sweats. He reported no nausea, vomiting, or diarrhea. Vital signs showed Temp 38.2, BP 107/54, HR 83, RR 18. Physical exam revealed no lymphadenopathy, mild right sided abdominal tenderness to palpation, no rebound, guarding, or signs of peritonitis. Laboratory studies showed a lactate 2.3, WBC 17.6, Hgb 8.5. Initial infectious workup with CXR and UA were unrevealing. Blood cultures were obtained. The patient was treated for presumed sepsis with fluid resuscitation and empiric vancomycin and piperacillin/tazobactam. A CT abd/pelvis was obtained revealing a large (18.7x13.1x16.0 cm), necrotic, right-sided abdominal mass congruent with the hepatic flexure of the colon with pockets of gas. No abscess was identified. Anaerobic blood cultures resulted as *Clostridium septicum*.

Surgical biopsy and debridement of the mass was performed and pathology showed diffuse large B-Cell lymphoma. The patient was continued on piperacillin/tazobactam, blood cultures cleared after 2 days, and the patient was later started on chemotherapy.

IMPACT/DISCUSSION: *Clostridium septicum* is a gram-positive, spore-forming, anaerobic bacteria found in the gut. Tumors invading the bowel mucosa can lead to pathological spread into the bloodstream. This case illustrated sepsis as the original presentation of intraabdominal large B-Cell lymphoma causing *C. septicum* bacteremia. The patient exhibited some nondescript signs of lymphoma and abdominal pathology prior to presentation with sepsis. Prompt abdominal imaging aided in recognizing the source of bacteremia and initiating treatment. In patients presenting with sepsis with no source, an internist should look for subtle signs and symptoms that may indicate further abdominal workup should be pursued.

Internists must have high suspicion for intraabdominal malignancy (primarily GI and hematological) with *C. septicum* bacteremia. In 1979, Koransky et al. showed malignancy was associated with bacteremia from this organism in 71% of cases reviewed. Positive blood cultures for *C. septicum* should trigger further workup for occult malignancy. If imaging reveals gas pockets within a mass, consider anaerobic bacterial species such as Clostridium causing gas gangrene. These cases require prompt antibiotic therapy and referral for surgical resection.

CONCLUSION: -Early recognition of malignant abdominal processes causing bacteremia/sepsis is imperative

-Intraabdominal malignancies must be suspected in cases of *Clostridium septicium* bacteremia

COULD IT BE THE FILTER? – A RARE PRESENTATION OF HEMODIALYSIS-INDUCED THROMBOCYTOPENIA IN A CIRRHOTIC PATIENT

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LEARNING OBJECTIVE #1: Recognize the importance of monitoring for adverse effects to all forms of medical intervention.

LEARNING OBJECTIVE #2: Apply a systematic approach to establishing association for suspected adverse effects.

CASE: A 26-year-old female with a history of alcoholic cirrhosis and chronic pancreatitis presented with progressive epigastric abdominal pain consistent with prior episodes of pancreatitis. Her course was complicated by oliguric acute kidney injury (AKI) attributed to receiving contrast while in a volume depleted state. Intermittent hemodialysis (iHD) was initiated using the standard polysulfone membrane. On admission, the patient's platelet count was 256 x 10^9/L. After two iHD sessions, the patient's platelets fell to a nadir of 57 x 10^9/L. iHD was held for six days while assessing for spontaneous renal recovery and the platelets rose to 138 x 10^9/L during that period. When iHD was resumed for an additional three sessions the platelet count fell to a nadir of 42 x 10^9/L. The patient began to have low-volume bleeding from her access site. A coagulation profile and a factor 8 level were obtained and were consistent with liver failure coagulopathy. Over the course of another six-day line-holiday, the platelets again gradually rose to 160 x 10^9/L. Within 24 hours of resumption of iHD, the platelets fell to 65 x 10^9/L. Hemodialysis sessions were transitioned from heparin to sodium citrate, but platelet factor 4/heparin antibodies were negative, and thrombocytopenia recurred despite substitution. The polysulfone membrane was then replaced with a cellulose filter. The patient underwent two iHD sessions while the platelet count rose from 42 x 10^9/L to 115 x 10^9/L. A subsequent iHD session was erroneously conducted with a polysulfone filter and within 24 hours platelets fell to 42 x 10^9/L and the patient developed bright red blood per rectum. The cellulose filter was reintroduced, and no additional episodes of thrombocytopenia post-dialysis were recorded.

IMPACT/DISCUSSION: Hemodialysis-associated thrombocytopenia has been demonstrated in the literature, though it is often a benign phenomenon. The patient's comorbid impairment in platelet production due to cirrhosis likely impeded her compensatory response to a common physiological reaction to filter exposure. This case is unique in that an unfortunate medical error clearly demonstrated the effect of different filter types. To prove the relationship between an intervention and an adverse effect, it is imperative to use a systemic approach, such as the Naranjo probability scale, which takes into account prior reports of the reaction, occurrence after exposure, improvement with withdrawal of intervention, recurrence with re- exposure, and absence of effect with placebo. With score of nine, a definitive association between filter exposure and thrombocytopenia was established.

CONCLUSION: Filter reactions may result in clinically significant consequences. Identification and reporting of suspected adverse reactions are crucial to ensuring patient safety.

COXIELLA BURNETII (Q-FEVER) A RARE CAUSE OF GRANULOMATOUS INFLAMMATION OF THE LIVER WITH NORMAL LIVER FUNCTION TEST.

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LEARNING OBJECTIVE #1: Recognize the rare infection with Coxiella burnetii (Q-fever) in patients with fever and unexplained abdominal pain, normal transaminases and/or liver mass with biopsy showing granulomatous inflammation.

CASE: A 37-year-old woman with a history of pancreatitis and gastroesophageal reflux disease who presented with mid back pain for few days followed by worsening epigastric and right upper quadrant (RUQ) abdominal pain. She reported she had a cat at home; she had a fever of 38.5°C, chills, and fatigue but she did not have jaundice, change in bowel habits, hematochezia or melena. On physical examination, she had epigastric and RUQ tenderness. She had normal transaminases. Her Computerized Tomography of the abdomen and pelvis showed a three, centimeter(cm) liver lesion with suspected malignancy, Magnetic resonance imaging (MRI) of the liver confirmed the Three, cm lesion in the medial left hepatic lobe. Further imaging including magnetic resonance cholangiopancreatography and RUQ ultrasound, Hepatobiliary scintigraphy, were normal. Liver lesion biopsy was negative for malignancy but showed necrotizing granulomatous inflammation.

Broad Range PCR and cultures for bacteria, mycobacterium, and fungi showed no growth. Her workup including Histoplasma, Blastomyces urine and serum Ag, Beta D glucan, toxoplasma IgM, Interferon- Gamma Release Assays (IGRA), serum cryptococcal antigen, Antinuclear antibody and antineutrophil cytoplasmic antibodies (ANCA) were negative. HIV test was non-reactive. Her Bartonella serology, Coxiella burnetii serology, was sent out. Bartonella serology returned normal but Coxiella serology showed a positive IgM phase 1 (titer 1:16), IgM phase 2 negative, IgG phase 1 & 2 negative. Coxiella Convalescent titers showed a positive Coxiella IgM phase 1 (titer 1:32) and a positive Coxiella IgM phase 2 (titer 1:16), IgG titers negative. She was treated with Doxycycline for two weeks, at the follow-up visit, her symptoms resolved. Repeat MRI of the liver, after two months from her illness, showed resolution of the liver lesion.

IMPACT/DISCUSSION: Per the literature review there are only 0.28 cases of Q-fever per 1 million people in the United States. More than 50% of Q fever are asymptomatic; around 2% gets hospitalized. If patients develop hepatitis with a fever of unknown origin, it shows characteristic granulomas on liver biopsy. Transaminases are typically elevated (85% cases); our patient had normal transaminases level, which made this case unique.

CONCLUSION: Consider infection with Coxiella burnetii (Q-fever) in the differential diagnosis of patients with fever, unexplained abdominal pain/liver lesion with granulomatous inflammation on liver biopsy. Although transaminases are typically elevated in granulomatous inflammation of the liver, the normal liver function test does not rule out Coxiella burnetii infection.

CRACKING THE CASE OF AN UNUSUAL CAUSE OF ABDOMINAL PAIN

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LEARNING OBJECTIVE #1: To recognize an abnormal cause of abdominal pain in the primary care clinic

LEARNING OBJECTIVE #2: Understand the radiologic work-up for left renal vein entrapment syndrome

CASE: A 44-year-old man with gastroesophageal reflux disease, nephrolithiasis, and history of appendectomy presented to primary care clinic with 6-8 weeks of worsening, intermittent abdominal pain localized to the left lower abdomen. The patient rated the pain as a 4-5/10, achy in nature, and it was not associated with eating or bowel movements. The abdominal pain differed from his pain with nephrolithiasis in location and severity. Review of systems was negative for hematuria, blood in the stool, and abdominal or scrotal masses. The patient had one rectal polyp removed on prior colonoscopy, completed due to family history of colon cancer. Vital signs were within normal limits. Abdominal exam did not reveal any visible or palpable masses, and the abdomen was non-distended, non-tender to palpation with normal bowel sounds. Laboratory findings from a complete blood count with differential, complete metabolic panel, and urinalysis were within normal limits. Abdominal ultrasound was completed with no significant findings. Next, computed tomography (CT) of the abdomen/pelvis with contrast was completed to investigate a possible underlying structural etiology and to rule out malignancy given the family history of colon cancer. This demonstrated left renal vein stenosis secondary to compression by the superior mesenteric artery, consistent with left renal vein entrapment syndrome (LVES) also known as Nutcracker Syndrome (NCS). The patient was referred to vascular surgery who recommended observation given the lack of serious clinical signs, such as hematuria or orthostatic proteinuria, and the high risk of morbidity and mortality associated with surgical intervention.

IMPACT/DISCUSSION: LVES occurs when the renal vein is compressed, commonly between the superior mesenteric artery and abdominal aorta. While this typically resolves, clinical

sequelae include renal vein hypertension, thrombosis, chronic kidney disease, and infertility. NCS can present as abdominal or flank pain, hematuria, orthostatic proteinuria, fatigue, and scrotal swelling. The current diagnostic gold standard of NCS is retrograde renal venography coupled with measuring renocaval pressure. However, this diagnostic test is controversial given its invasive nature. Increasingly, abdominal ultrasound and abdominal CT with contrast have been used as less-invasive and more cost-effective alternatives. Our patient's abdominal ultrasound was normal, and only upon further investigation with abdominal CT was the radiologic finding of the "beak sign", demonstrating narrowing of the left renal vein secondary to compression, revealed.

CONCLUSION: NCS represents a "must-not-miss" diagnosis for the common complaint of abdominal pain due to potential morbidity and mortality. A thorough differential diagnosis coupled with a stepwise radiologic work-up of abdominal pain were key to diagnosis.

CRACKING THE DIAGNOSTIC BIAS: A CASE OF PROGRESSIVE INTERSTITIAL LUNG DISEASE IN A TRANSFER PATIENT

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LEARNING OBJECTIVE #1: Recognize the role of cognitive bias in the diagnosis of patients undergoing transfers of care.

LEARNING OBJECTIVE #2: Identify the similarities between granulomatosis with polyangiitis (GPA) and cocaine-induced lung injury, and recognize the importance of obtaining an accurate exposure history.

CASE: A 60 year old female with progressive hypoxic respiratory failure presented from an outside hospital (OSH) for further evaluation. Evaluation of new-onset dyspnea began 18 months prior and revealed evidence of hypoxia, interstitial lung disease (ILD) on chest CT, and a positive anti-neutrophil cytoplasmic autoantibody (ANCA), resulting in a diagnosis of GPA. Glucocorticoids and rituximab therapies yielded little improvement. One week prior to presentation, she was admitted to an OSH with worsening hypoxia and transferred for evaluation of pulmonary HTN. On arrival, the patient had a negative review of systems with the exception of dyspnea. She denied occupational exposures or illicit drug use. Her RR was 24 breaths/min, and her O_2 saturation was 89% on 10 L of O_2, increased from a 7L/min home requirement. Heart exam revealed tachycardia and regular rhythm with a II/VI systolic murmur at the left lower sternal border. Pulmonary exam revealed fine crackles to the mid-lung bilaterally. Distention of neck veins and nail clubbing were present.

Labs revealed a hemoglobin of 11.7 g/dL, creatinine of 0.7 mg/dL, and urinalysis with no evidence of hematuria. A lung CT demonstrated diffuse ILD with extensive fibrosis, traction bronchiectasis, and honeycombing. Serologic studies revealed an ANCA of 1:80 with a negative anti-proteinase 3, with otherwise normal inflammatory markers and complements, A right heart catheterization showed elevated right and left heart filling pressures. High dose steroids led to minimal improvement. The progression and severity of the lung disease in absence of renal, sinus, ophthalmic and neurologic complications of GPA remained a concern. On day 6 of hospitalization, the patient disclosed for the first time previous crack cocaine use of 20 years. Given this relevant history, she was diagnosed with chronic cocaine-induced lung injury.

IMPACT/DISCUSSION: Internists routinely confront bias in the diagnostic process, particularly in transfers of care. This case highlights potential contributions of anchoring and framing bias. Without an accurate exposure history, the age of onset, ILD findings, and a positive ANCA confirmed suspicion for a vasculitis. As lung function worsened, the absence of common features of GPA raised doubt for this diagnosis. Further discussions with this patient built rapport and resulted in a disclosure of an accurate substance use history.

CONCLUSION: 1. Cocaine-induced lung injury can mimic GPA with radiographic evidence of interstitial lung disease and often positive ANCAs.

2. Obtaining an accurate exposure history plays a critical role in diagnosing ILD, and trust-building is required for patients to divulge the use of illicit and stigmatized substances.

CRASHING INTO A DIAGNOSIS: NEUROCYSTICERCOSIS, A CAUSE OF NEW-ONSET SEIZURE.

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LEARNING OBJECTIVE #1: Diagnose neurocysticercosis in the setting of new-onset seizure.

LEARNING OBJECTIVE #2: Manage calcified lesions based upon Infectious Diseases Society of America (IDSA) guidelines.

CASE: A 53-year-old Spanish-speaking male with no past history presented to the Emergency Department (ED) following new-onset seizure and consequent motor vehicle collision. He reported a sudden syncopal episode followed by a return of consciousness in which he found himself within a crumpled car. During the moments leading up to loss of consciousness, he denied any headache, chest pain, dyspnea, or diaphoresis. The patient immigrated to the United States from Mexico fourteen years ago. He denied any sick contacts, recent travel or tuberculosis exposure. The patient had always eaten a lot of pork, but he had no recent dietary or lifestyle changes. He denied steroids, illicit drug, alcohol, or tobacco use. He reported no weight loss, fevers, chills, or night sweats. In the ED, the patient was hemodynamically stable but post-ictal. Laboratory results were significant for lactate of 8.7, anion gap of 19, troponin less than 0.01, and mild leukocytosis at approximately 12. Electrocardiogram (EKG) depicted normal sinus rhythm. Computerized Tomography (CT) of abdomen and cervical spine depicted no traumatic injuries. CT of the head revealed a six-millimeter calcified lesion within the left frontal lobe surrounded by vasogenic edema. The patient was given 1000 milligrams (mg) of levetiracetam in order to prevent further seizure activity.

During hospitalization, Human Immunodeficiency Virus (HIV) and Rapid Plasma Reagin (RPR) returned negative. Magnetic Resonance Imaging (MRI) of the brain confirmed a focal calcification in the left frontal lobe with peripheral rim enhancement. Findings were consistent with neurocysticercosis rather than primary malignancy, metastasis or vascular malformation. Per Infectious Diseases Society of America (IDSA) guidelines, no

antiparasitic treatment was indicated in the setting of significant lesion calcification. The patient was treated with 500mg of levetiracetam twice a day to prevent recurrent seizures.

IMPACT/DISCUSSION: Though clinicians in the United States may not be familiar with the sequelae of cysticercosis, infection with *Taenia solium* is a common cause of new-onset seizure throughout the world, especially in endemic areas such as Mexico. As immigration continues to contribute to the American patient population, medical professionals should consider neurocysticercosis in their differential diagnoses. This vignette also highlights IDSA guidelines which recommend seizure prophylaxis rather than antiparasitic therapy in the setting of lesion calcification.

CONCLUSION: Neurocysticercosis is the leading cause of adult-onset epilepsy worldwide.

When patients from endemic countries present with new/adult-onset seizure, consider neurocysticercosis in the differential diagnosis.

In the setting of calcified lesions, treatment is directed toward seizure prophylaxis rather than antiparasitic therapy.

CSF IS ALL YOU NEED: PRIMARY CNS LYMPHOMA IN AN IMMUNOCOMPETENT PATIENT

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LEARNING OBJECTIVE #1: Recognize how to diagnose primary CNS lymphoma

LEARNING OBJECTIVE #2: Distinguish primary CNS lymphoma from other causes of leptomeningeal enhancement

CASE: 46 year old male with no past medical history presented for evaluation of progressive weakness. His symptoms began 4 months prior with a sore throat and cough followed by right-sided facial weakness. He was treated with steroids for presumed Bell's palsy without improvement in his symptoms. Over the next two months, he developed bilateral wrist pain along with paresthesia of the left arm and leg. In addition to neurological symptoms, he endorsed intentional weight loss of 60 pounds over 5 months. His physical exam revealed moderate bilateral facial weakness. Upper and lower extremities elicited 4/5 bilateral weakness with intact sensation. Deep tendon reflexes were 0/4 and Babinski sign was negative. The MRI of the brain and spine showed non mass-like enhancement of left 7th/8th cranial nerves along with leptomeningeal enhancement of thoracic spine and diffuse thickening and abnormal enhancement of the cauda equina. Lumbar puncture revealed CSF total protein of 618, RBC <1, glucose 21, and WBC of 410. Flow cytometry confirmed the presence of monoclonal B-cell lymphoma. He was started on MATRix regimen including methotrexate, cytarabine, thiotepa, and rituximab for primary CNS lymphoma and is currently on his fourth cycle of chemotherapy.

IMPACT/DISCUSSION: Primary central nervous system lymphoma (PCNSL) represents 4% of newly diagnosed primary CNS tumors. Historically, patients with immunodeficiency related to HIV have carried the greatest risk of developing PCNSL. However, with the advent of HAART, incidence has decreased among these patients and increased in immunocompetent patients to 51 cases in 10 million per year. MRI with gadolinium is the preferred imaging modality as CT scan can miss 10% of PCNSL. The most common radiographic features include solitary, non-hemorrhagic lesions in the periventricular region. Up to 40% of patients have meningeal involvement. Leptomeningeal enhancement can be seen in other conditions including autoimmune and infectious diseases, and other brain tumors. Diagnosis requires CSF evaluation including flow cytometry, and immunoglobulin heavy-chain gene rearrangement. Presence of neoplastic cells in CSF confirms the diagnosis of PCNSL. Full ophthalmologic evaluation using slit lamp should be performed even in the absence of visual symptoms. Up to 38% of patients with ocular involvement have no visual symptoms. Suspected involvement should be evaluated with intraocular biopsy. If CSF and ophthalmologic evaluation is inconclusive, then biopsy of cerebral tissue is performed to establish the diagnosis of PCNSL.

CONCLUSION: Incidence of PCNSL has decreased in immunodeficient and increased in immunocompetent patients

Presence of neoplastic cells in CSF avoids the need for cerebral biopsy

Ophthalmologic evaluation should be performed even in the absence of visual symptoms

CUSHING'S DISEASE WITH AN UNEXPECTED OVERLAP WITH ITP

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LEARNING OBJECTIVE #1: Recognize the clinical features of Cushing's disease.

LEARNING OBJECTIVE #2: Differentiate between obesity-related metabolic syndrome and Cushing syndrome.

CASE: A 25 year-old male presented to a local Emergency Department after a fall at home. He was in his usual state of health prior to five months ago when he was diagnosed with diabetes. Since that time, he developed progressive weakness to the point that he had difficulty getting up from a chair without assistance. His diabetes became symptomatic with polydipsia and polyuria. He also reported worsening depression and insomnia.

His physical exam was remarkable for obesity, flat affect, round facial features without plethora, dorsal fat pad, supraclavicular fat pads, violaceous striae across his abdomen and arms, multiple ecchymoses, and proximal weakness in his upper and lower extremities. Initial laboratory evaluation was notable for potassium 2.2, glucose 451, and platelet count 70,000. Further evaluation demonstrated urine free cortisol 2,759 (normal < 45), morning serum cortisol 75.2 (normal < 18), ACTH 150 (normal < 63), free testosterone 22.4 (normal > 47), undetectable LH, undetectable FSH, and Prolactin 4.8. MRI Brain revealed a 7x10 mm hypo-enhancing anterior pituitary gland microadenoma.

Over the next week, his platelets decreased to 41,000. He did not respond appropriately to platelet transfusions, raising concern for ITP. Evaluation for other causes of thrombocytopenia, including bone marrow biopsy, was unrevealing. He began treatment with Romiplastin, a thrombopoietin receptor agonist. He also developed severe back pain and was found to have an acute T7 compression fracture. Given the continued delay in surgery, he began medical management of Cushing's with Ketoconazole. His platelet counts slowly normalized.

More than one month later, he underwent transsphenoidal resection of the microadenoma. His serum cortisol and ACTH declined appropriately post-operatively. His diabetes and accompanying polydipsia and polyuria resolved after surgery. He lost 109 pounds over the course of 3 months. He still requires use of a walker for long distances. His depression is improving with a noticeable change in his affect.

IMPACT/DISCUSSION: Endogenous Cushing syndrome is relatively rare but likely underrecognized given its subtle presenting symptoms and overlap with obesity-related metabolic syndrome. This case demonstrates the potential for severe complications of Cushing syndrome including myopathy, electrolyte disarray, osteoporosis, diabetes, hypertension, and depression with significant morbidity for this particular patient.

This case also demonstrates an unusual complication with thrombocytopenia, for which there is no known prior association between Cushing's disease and idiopathic thrombocytopenic purpura.

CONCLUSION: Consider alternative causes of diabetes, hypertension, unexplained weight gain, and depression, particularly in patients with increasingly difficult to manage diabetes and other symptoms concerning for Cushing syndrome.

CUTIBACTERIUM CAUSING AN UGLY COMPLICATION: A RARE CASE OF C. ACNES SEPTIC ARTHRITIS

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LEARNING OBJECTIVE #1: Identify predisposing factors to Cutibacterium acnes infection in native joints.

LEARNING OBJECTIVE #2: Distinguish between infection and contamination of Cutibacterium acnes in culture.

CASE: A 37-year-old man with IgA nephropathy induced ESRD on HD through a right femoral TDC presented with one-week of left shoulder pain. Pain was described as sharp and progressively worsening over the last week. No recent trauma or previous shoulder surgeries. Exam revealed stable vitals. The left shoulder was erythematous and tender with limited range of motion. Labs revealed normal CBC, ESR of 75, and CRP of 12. CT of the left shoulder showed joint erosion and remodeling. Aspiration of the joint revealed 79000

WBC's and negative gram stain. The TDC could not be removed due to an exhaustion of alternate access sites. Blood and synovial fluid cultures showed no growth. Anaerobic deep wound culture grew C. acnes on day five. He was discharged on 2 weeks of IV cefazolin. He returned three weeks later with continued left shoulder pain. ESR was now 115 and CRP was 22.9. All culture data was negative and he was discharged on 4 weeks of cefazolin to treat suspected recurrent C. acnes. At follow up appointment two weeks later, patient was asymptomatic and clinically improved.

IMPACT/DISCUSSION: Septic arthritis in a native joint is most commonly attributed to S. aureus. Dubost et. al revealed the most common causes of septic arthritis in native joints were due to staphylococci, streptococci, and gram-negative rods with infections from anaerobes infecting 2 patients (0.5%). With an increase in shoulder surgeries, there has been an increase in septic joints infected with C. acnes. However, septic arthritis infections with C. acnes remains exceedingly rare.

C. acnes is considered normal skin flora. It is recognized as causing endocarditis, meningitis, and osteomyelitis and joint infections with the greatest predisposing factor being prior surgery or penetrating trauma. Since 1982, only 18 case reports of native joint infections with C. acnes have been published. Diagnosis can be delayed as cultures take up to 21 days to result. Culture of C. acnes from joints is commonly attributed to contamination as it is also prevalent in skin flora. In this case, the patient's x-ray showed joint destruction consistent with osteoarthritis, which was likely the predisposing factor for initial infection.

Anaerobic deep wound cultures took five days to grow, yet blood cultures and synovial fluid cultures finalized as negative. While the culture growing C. acnes could've been a contaminant, this seems unlikely in the setting of pure growth of C. acnes (whereas contaminants would show a variety of organisms), native joint infection with no possible contamination from surgical source, and clinical improvement on cefazolin.

CONCLUSION: Overall, there needs to be a strong suspicion for anaerobic bacterial infection, including C. acnes, in the setting of a native joint septic arthritis with negative cultures and an indolent time course.

CYCLOPHOSPHAMIDE-INDUCED PNEUMONITIS: A RARE COMPLICATION

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LEARNING OBJECTIVE #1: Distinguish the different etiologies of pneumonitis.

LEARNING OBJECTIVE #2: Recognize cyclophosphamide related pulmonary toxicity.

CASE: A 43-year-old female with SLE complicated by pericarditis and lupus nephritis Class 5, presented with chest pain and dyspnea five days following administration of a maintenance dose of CPA for management of SLE. Chest pain was described as constant, retrosternal, pleuritic-like, exacerbated with lying down, associated with shortness of breath and palpitations. Similar episodes had occurred after CPA administration before, but ultimately resolved without additional investigation or treatment. Physical exam was significant for presence of bibasilar crackles and absence of pericardial rub. ECG was negative for ST elevations and PR depressions. Serum dsDNA antibodies and C3/C4 complement level were normal.

C-reactive protein level was elevated to 9.8 mg/dl. Transthoracic echocardiogram was negative for pericardial effusion and showed normal cardiac function. Chest imaging showed diffuse interstitial ground glass pattern consistent with pneumonitis. Initial therapy with NSAIDS for presumed atypical pericarditis given patient's history was not effective to relieve patient's symptoms. As respiratory symptoms of dyspnea and cough continued to worsen requiring administration of oxygen therapy, high dose corticosteroid therapy was started for presumed CPA-induced pneumonitis with significant clinical improvement noted. Patient was discharged home on steroid taper regimen.

IMPACT/DISCUSSION: Pulmonary complications due to CPA are infrequent and described in less than 1% of patients treated with CPA. There are two types of CPA related pulmonary complications described: the early and the late-onset types. Depending of the type, time frame for complications after exposure to CPA, treatment and prognosis varies. In the early-onset type, symptoms of pneumonitis may develop within days to up to 6 months after CPA exposure, and typically improve with corticosteroid therapy. However, the late- onset type of pulmonary complications usually emerges years after CPA treatment, responds poorly to corticosteroid therapy, and is associated with high mortality rate of more than 60%.

In our patient, pneumonitis was found shortly following administration of CPA. Given the temporal relationship between onset of symptoms and the administration of CPA, medication related pneumonitis became the top differential. Patient responded very well to high dose steroid therapy confirming our diagnosis of CPA induced pneumonitis. Other etiology of pneumonitis such as SLE flare was rule out with non-elevated levels of dsDNA and normal complement C3/C4 levels.

CONCLUSION: The infrequency of pulmonary CPA-related toxicity requires high degree of clinical suspicion on a part of the diagnostician. Physicians need to be aware of CPA related pneumonitis as CPA is widely used for various medical conditions and may potentially lead to life threatening complications unless recognized in the timely manner.

CYTOMEGALOVIRUS COLITIS IN AN IMMUNOCOMPETENT PATIENT

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LEARNING OBJECTIVE #1: Learning Objective: Recognize cytomegalovirus colitis in immunocompetent hosts.

CASE: A 71-year-old male with history of hypertension, hyperlipidemia, and pre-diabetes presented to clinic with one episode of watery stool, which was associated with anorexia for 1 week. Over the last 4 months, he experienced a 17-pound weight loss. He denied fever, chills, abdominal pain, nausea, vomiting, or melena. Denied recent travel, or taking any glucocorticoids or other immunosuppressive medications. Vital signs were normal. His physical exam was normal including a soft, nontender abdomen. Labs revealed acute kidney injury (Cr: 1.34 mg/dL), hyponatremia (Na: 132 mmol/L), mildly elevated monocyte (979 cells/uL), and no other abnormalities. HIV test was negative. Given the unintentional weight loss and diarrhea, he was sent for a colonoscopy. The colonoscopy showed 4 polyps (3mm, 3mm, 8mm, 5mm) which were biopsied. In addition to tubular adenomas, the pathology showed areas of stromal inflammation with neutrophilic and histiocytic infiltrates that contain few large mesenchymal cells with granular nuclei and cytoplasm that were consistent with cytomegalovirus infection. Patient was admitted to a hospital for intravenous antiviral agent in setting of AKI for the treatment of CMV colitis and then discharged home on oral valganciclovir to complete a three-week course of treatment. In the follow-up visit, patient was doing well and had improved appetite with weight gain.

IMPACT/DISCUSSION: CMV colitis almost always occurs in immunosuppressed patients such as AIDS, transplant, and chemotherapy patients. It is rarely reported in immunocompetent hosts as in this patient. In a case series published in 2014, a total of 33 immunocompetent patients with CMV colitis were identified, of which the median age was about 70 years and that 75% of the patients were 60 years old or older. Diarrhea (76%), followed by abdominal pain (52%), hematochezia/melena/bloody stool (27%), and fever (18%) were the most common symptoms. Endoscopic findings included ulcerations, mucous edema, inflamed mucosa, and minimal findings. In 8 cases (24.2%), the disease was self-limited and improved without any treatments, which was similar to another study published in 2003, in which the spontaneous remission rate was 32%. Patients who received treatment usually had favorable outcomes. There is no clear criteria to distinguish patients who do not need to be treated. However, advanced age and male gender has been associated with higher morality. These risk factors, in addition to his symptoms and AKI contributed to his treatment decision.

CONCLUSION: This case reminds us that the CMV colitis can occur not only in immunocompromised patients but also in the immunocompetent host, especially in the elderly. Further research with more cases included is needed to study the risk factors, diagnose, and optimal treatment of those patients.

CYTOMEGALOVIRUS REACTIVATION IN A PATIENT WITH SYSTEMIC LUPUS ERYTHEMATOSUS ON LONG-TERM BELIMUMAB THERAPY

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LEARNING OBJECTIVE #1: Understand the unique infections that can occur when using biologics for the treatment of SLE

CASE: 55 year old African-American female with a 12 year history of SLE with secondary Sjogren's. Her lupus was manifested by polyarthritis, proteinuria, and serologies positive for ANA, SSA, and RNP antibodies. She was managed with methotrexate (MTX) monotherapy for a number of years, however, because of poorly controlled arthritis, monthly belimumab infusions were added. At the time of presentation, the patient was on MTX 15 mg weekly and had been on belimumab IV infusions for approximately 2 ½ years. She had not been on prednisone for over a year. The patient presented to the ED with a one week history of fever, chills, myalgias, nausea, vomiting, and profuse watery diarrhea. On admission, she was noted to be febrile with tachycardia with labs significant for hyperkalemia (5.7 MMOL/L) and transaminitis (AST=166 U/L, ALT=119 U/L). Her workup was negative for Monospot, HIV, and Hepatitis B and C. CT scan of abdomen and pelvis revealed enlarged portal and left-sided inguinal lymph nodes but no other findings to account for her clinical presentation.

Further infectious testing revealed positive CMV IgM levels and an increased CMV viral load of 1493 copies/mL. She was started on Valganciclovir with a final diagnosis of CMV ileitis and hepatitis. MTX was held throughout her hospitalization and belimumab was subsequently discontinued.

IMPACT/DISCUSSION: A number of case reports and large scale studies have described CMV infection associated with SLE treatment, but almost exclusively in the setting of acute flares or high dose corticosteroid use. Our patient had a unique presentation of CMV infection after being on belimumab for a period of 2 ½ years in the setting of clinically quiescent SLE. It is unclear whether it was the combination of methotrexate and belimumab that predisposed her to CMV reactivation or beliumumab alone. However, since our patient did not have issues with infections while on MTX for over 10 years, one can postulate that belimumab perhaps contributed to her CMV infection, whether through additive immunosuppresion with methotrexate or via a different pathway.

CONCLUSION: This patient demonstrates the importance of ongoing monitoring for opportunistic infections especially when combining multiple immunosuppressive medications.

CYTOPENIA SECONDARY TO HAIRY CELL LEUKEMIA: A RARE INCIDENTAL DIAGNOSIS

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LEARNING OBJECTIVE #1: Recognize Hairy Cell Leukemia as a rare cause of cytopenia in patients with splenomegaly without liver disease.

CASE: A 68-year-old Caucasian male who was a former smoker with a past history of coronary artery bypass surgery five years ago and a left hip replacement presented to the hospital with complaints of one-day history of acute on chronic right hip pain that started suddenly while he was walking to the bathroom. He drank 1 to 2 glasses of alcohol per week. His home medications included 81 mg Aspirin daily and had no family history of blood disorders. Physical exam showed normal vital signs, significant point tenderness of the right trochanteric area and splenomegaly. Blood work showed a WBC of 2700/μL, hemoglobin 14.5 gm/dL, MCV 102.8 fl, platelets 64,000/μL and absolute neutrophil count (ANC) 1400/μL. His complete metabolic panel, serum vitamin B12 and folic acid were normal. CT scan of the right hip showed acute fracture of the right femoral head and neck in underlying hip osteoarthritis. Ultrasound of the abdomen with doppler showed splenomegaly (17 cm), hepatic steatosis and patent portal vein. Serologies for Hepatitis B, C and HIV were negative. Further work up to evaluate his cytopenia and splenomegaly included peripheral blood flow cytometry which showed small population of CD103 positive clonal B cells representing Hairy Cell Leukemia (HCL) that tested positive for BRAFV 600 E mutation consistent with diagnosis of HCL. Patient had an open reduction and internal fixation of right hip and was discharged home with outpatient follow up with the Hematologist.

IMPACT/DISCUSSION: HCL is a rare hematological malignancy representing less than 1% of lymphoid neoplasms. It is an uncommon chronic B cell lymphoproliferative disorder and is characterized by collection of small mature B cells with abundant cytoplasm and hairy projections within the peripheral blood, bone marrow and splenic red pulp leading to peripheral cytopenia and splenomegaly. Exposure to radiation, pesticides and farming may be possible risk factors. Twenty five percent of patients are asymptomatic. Symptomatic patients present with generalized fatigue, weight loss, frequent infections, gingival bleeding, ecchymoses, epistaxis, or menorrhagia. Palpable splenomegaly is a classic feature on physical exam.

Laboratory findings may show pancytopenia in 60-80% of patients. Peripheral smear demonstrates cytopenia and HCL tumor cells. Flow cytometry and BRAF V600E mutation are important to confirm the diagnosis. Bone marrow biopsy is often not attainable because of fibrosis. Indications for treatment include constitutional symptoms that interfere with quality of life, symptomatic splenomegaly and significant cytopenia (Hb <11 g/dL, platelets <100,000/μL, and ANC <1,000/μL). Purine analogs are the preferred initial treatment with a durable response seen in greater than 90% of patients.

CONCLUSION: Hairy Cell Leukemia though rare should be considered in patients presenting with asymptomatic cytopenia and splenomegaly.

DANGERS OF SKIN POPPING: WOUND BOTULISM MIMICKING A MYASTHENIC CRISIS

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LEARNING OBJECTIVE #1: Describe skin popping as a route of administration for illicit drug use

LEARNING OBJECTIVE #2: Recognize the clinical presentation of botulism infection

CASE: A 33-year-old man presented with a 1-day history of progressively worsening diplopia. He later developed dysarthria, generalized muscle weakness, and shortness of breath. He used heroin by skin popping with his last use 1-2 days prior to presentation. He was diaphoretic and appeared uncomfortable while taking shallow breaths. Speech was slurred. He had bilateral ptosis with intermittent dysconjugate gaze as well as bilateral vertical nystagmus. Several erythematous, indurated lesions were present on his anterior forearms. Ice pack test revealed decreased ptosis with subjective improvement of diplopia. No acute infarct, mass lesion, or hemorrhage was appreciated on CT or MRI of the brain His respiratory status subsequently deteriorated and he required intubation. Antibody testing for myasthenia gravis returned negative and there was no evidence of thymoma on CT imaging. Anterior forearm abscesses were drained. C. botulinum and Botulinum toxin Type A were isolated from both the tissue culture as well as a wound swab culture from right arm. Treatment with antitoxin, ampicillin, and metronidazole was initiated. His strength and clinical picture improved.

IMPACT/DISCUSSION: Botulism is a rapidly progressive, but reversible, paralytic disease that is precipitated by infection with the neurotoxin produced by Clostridium botulinum. While traditional teaching is that the disease is a foodborne illness, there have been an increased number of reported wound botulism cases in recent years. This spike can be attributed to the growing number of intravenous drug users and opioid misuse in the United States. It is important that clinicians recognize the importance of including wound botulism in their differential diagnosis for a patient presenting with symptoms of progressive weakness, diplopia, and other bulbar symptoms, specifically in those with intravenous drug use. Botulism can cause severe respiratory distress which can be fatal making prompt identification of the disease a priority. Rapid administration of the botulinum toxin after symptom onset decreases mortality and morbidity associated with the disease.

The patient in this case practiced skin popping, a method of injecting illicit drugs directly into the skin in order to decrease the risk of overdose and to achieve slower absorption of the drug. Skin popping is a major risk factor to the development of wound botulism; it creates the perfect anaerobic environment that allows C. botulinum to germinate and produce its toxin. Most reported cases of wound botulism are associated with the use of black tar heroin produced in Mexico that is illegally transported to the United States.

CONCLUSION: While botulism has traditionally been associated with food-borne illnesses, new risk factors can lead internists to this diagnosis

as wound infections from skin popping can result in a similar clinical presentation.

DEADLY STRING: CONNECTING AN EYE TO THE LIVER

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LEARNING OBJECTIVE #1: Search for a source of infection in patients with endogenous endophthalmitis

LEARNING OBJECTIVE #2: Initiate antibiotics as soon as possible when endogenous bacterial endophthalmitis is suspected

CASE: A 78-year-old woman with hypertension, dyslipidemia, angina pectoris, and atrial fibrillation presented with one-day of left eye pain, decreased vision, and fever. On admission, she had a temperature of 38.3°C, hypopyon in her left eye and liver percussion tenderness. Her WBC was 13400/μL, AST 50 U/L, ALT 59 U/L, LD 291 U/L, ALP 635 U/L, and γ-GTP 164 U/L. Abdominal computed tomography showed two right lobe liver masses (55 and 50 mm). Two sets of blood cultures drawn on admission yielded Klebsiella pneumoniae with viscous colonies showing a positive string test. Presumed Klebsiella pneumoniae liver abscess and endogenous bacterial endophthalmitis of the left eye was diagnosed, and intravenous (IV) cefazolin and intravitreal ceftazidime and vancomycin followed by oral antibiotics were initiated for 6 weeks. On hospital day 3, drainage of the liver abscess was performed and the culture confirmed Klebsiella pneumoniae. Because her visual acuity deteriorated, evisceration of the left eye was performed on hospital day 9. IV antibiotic therapy continued, and the patient was discharged on hospital day 45 in stable condition.

IMPACT/DISCUSSION: An acute course of unilateral eye pain with hypopyon and visual impairment requires early intervention. Differential diagnosis for hypopyon includes bacterial endophthalmitis, cytomegalovirus retinitis, and uveitis caused by multiple diseases such as sarcoidosis, Behçet disease, Harada disease, fungal endophthalmitis, and acute retinal necrosis. Intravenous and intravitreous antibiotic treatment should be initiated as soon as possible to avoid the need for eye evisceration when endogenous bacterial endophthalmitis (EBE) is suspected. The incidence of EBE among patients with bacterial liver abscess ranges from approximately 1% to 8%. Over 60% of patients with EBE had an extraocular focus of infection and suppurative liver abscess was the most common source. A study reported that 77% of cases of endogenous endophthalmitis found in East Asia was caused by Klebsiella. Invasive liver abscess caused by Klebsiella pneumonia often yielded a positive string test, a formation of a viscous string larger than 0.5 cm in length. Nearly 80% of patients with endogenous Klebsiella pneumoniae endophthalmitis had poor outcomes (visual acuity worse than 4/200) and research reveals 27% required evisceration, which was also performed in our patient. Early diagnosis and intervention including systemic and intravitreal antibiotic treatment are essential for preventing poor visual outcomes.

CONCLUSION: Liver abscess is the most common source of infection in patients with endogenous bacterial endophthalmitis. Early investigation for a possible source of infection, including the liver, is crucial for the well-being of these patients.

DELAYED DIAGNOSIS OF MALIGNANCY IN A PATIENT WITH ALCOHOL USE DISORDER

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LEARNING OBJECTIVE #1: Recognize clinical manifestations of exocrine pancreatic cancer.

LEARNING OBJECTIVE #2: Appreciate that cognitive biases among providers can contribute to health care disparities.

CASE: A 34-year-old female presents with epigastric pain. Social history was notable for polysubstance use disorder, with alcohol, marijuana, and tobacco use. The patient had been admitted three times within the past year for epigastric pain that was attributed to alcoholic pancreatitis.

On presentation, lipase was elevated (226) and transaminases were normal. CT abdomen showed an edematous pancreatic gland with focal areas of parenchymal hypodensities centered in the pancreatic body, and a normal appearing gallbladder and biliary tree. The patient was counseled on alcohol cessation and discharged.

The patient returned to the hospital two additional times with dyspnea and cough, was treated empirically for pneumonia, and counseled on tobacco and marijuana cessation. The patient presented again with unresolved cough and dyspnea. She reported quitting all substances after her second hospitalization for acute pancreatitis. CT chest showed diffuse groundglass and consolidative opacities as well as peribronchial wall thickening. Lung biopsy was performed, which revealed pancreatic adenocarcinoma. A subsequent repeat CT abdomen showed a hypodensity in the pancreatic body, compressing the superior mesenteric vein and causing ductal dilation. On retrospective chart review, the patient had experienced 20 kg weight loss over three years, and a hypodense pancreatic lesion creating a mass effect had been present on prior abdominal imaging.

IMPACT/DISCUSSION: Exocrine pancreatic neoplasms are relatively uncommon, particularly before the age of 45 years, but are highly lethal malignancies. Common presenting symptoms of these malignancies are weight loss (85%), abdominal pain (79%), and jaundice (56%). Abdominal pain can occur even with small (<2cm) pancreatic cancers, prior to the development of major laboratory or imaging abnormalities. The typical appearance of an exocrine pancreatic cancer on imaging is an ill-defined hypoattenuating mass.

Disparities in health care can occur across many dimensions, including populations struggling with substance use disorders. Substance use disorders are widespread, and nearly a third of Americans meet criteria for alcohol use disorder in their lifetimes. Despite this, they remain stigmatized. Physicians may have cognitive biases that negatively impact the provided care and health outcomes for patients with substance use disorders.

CONCLUSION: This case illustrates how a patient with a substance use disorder experienced delayed diagnosis of a deadly medical condition. Anchor bias related to the substance use disorder led to mistaken and delayed diagnoses, despite the patient's repeated efforts to seek care.

DERMATOPATHOLOGY CINCHES THE DIAGNOSIS FOR SPOR(E)ADIC FEVERS

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LEARNING OBJECTIVE #1: Recognize the clinical features of disseminated histoplasmosis

LEARNING OBJECTIVE #2: Appreciate the importance of investigating abnormal skin findings

CASE: Ms G is a 63 yo woman from Belize with a history of recurrent pleuropericarditis on long-term prednisone and mycophenolate, and a positive PPD who presented with 5 months of recurrent fevers.

Five months prior to admission she was visiting Belize and developed fevers, generalized weakness, and a productive cough. She was diagnosed and treated for Dengue fever based on serologies and pneumonia. However, her symptoms never fully resolved.

One month prior to admission her fevers recurred, she was hospitalized, treated with broad spectrum antibiotics and high-dose steroids without improvement. During that hospitalization she developed injected conjunctiva, oral ulcers, violaceous papules, and severe thrombocytopenia. Providers recommended she return to the US for further diagnostic work-up and management of fever of unknown origin.

Upon presentation her temperature was 39.7^0C and her physical exam was notable for cushingoid features, injected conjunctiva with chemosis, painful oral ulcers, diffuse umbilicated purple papules, and anasarca. Her labs were notable for acute macrocytic anemia and thrombocytopenia, and an elevated CRP. CT revealed subsegmental PE, nonspecific bilateral pulmonary nodules, and hypodensities within the spleen.

Dermatology found the lesions concerning for deep fungal infections or CMV, less likely an autoimmune process. Skin biopsy visualized dermal parasitized histiocytes and numerous small spores consistent with histoplasmosis. Serum, urine, and CSF infectious work up later confirmed disseminated histoplasmosis with histoplasmal meningitis. The remainder of the extensive infectious work up was negative and rheumatologic studies were unchanged from previous.

Her fevers resolved with a 4 week course of Ambisome with initial plans for a 1 year course of itraconazole for disseminated histoplasmosis. However, she was switched to posaconazole for recurrent fevers and persistently positive Histoplasma antigen in her serum and urine.

IMPACT/DISCUSSION: Ms G's risk factors for disseminated histoplasmosis included long term immunosuppression and frequent travel to an endemic area. The natural history of disseminated histoplasmosis can range from a rapidly fatal infection to a chronic, intermittent course lasting years. Histoplasmal meningitis cure rates are around 50% with high rates of relapse. What was particularly memorable about this case was that the skin biopsy results came back a few days before serum and urine testing. This emphasizes the importance of interdisciplinary collaboration in approaching complex, undifferentiated patients.

CONCLUSION: - Histoplasmosis has a wide range of presentations from asymptomatic to pulmonary complications to disseminated multiorgan involvement

- CNS involvement should be assessed in cases of disseminated histoplasmosis

- Dermatology consult for atypical skin findings should not be delayed

DIAGNOSING CASTLEMAN DISEASE IN AN AIDS PATIENT PRESENTING WITH LYMPHADENOPATHY

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LEARNING OBJECTIVE #1: Evaluate lymphadenopathy in a patient with AIDS given a broad differential diagnosis

LEARNING OBJECTIVE #2: Recognize the role of disseminated Karposi Sarcoma in AIDS and Castleman's Disease

CASE: A 36 year old Sierra Leonean woman with AIDS presented with abdominal pain, diarrhea, and fever. On admission she was febrile up to 38.8 C, hypotensive with blood pressures of 80s/50s mmHg and tachycardic up to 120 beats per minute. Labs were notable for pancytopenia with a white blood cell count of 1.8x103 cells/µl, a hemoglobin of 5.4 g/dL and platelets of 41x103 cells/µl. Her physical exam was notable for several soft, dark brown indurated plaques along the right upper thigh, left inner arm, and left lower back. She also had several violaceous exophytic nodules along the mons pubis, and palpable bilateral axillary, submandibular, and cervical lymphadenopathy. Given initial concern for sepsis, neutropenic fever, and anemia, she was started on broad spectrum antibiotics, transfused blood, and fluid resuscitated. Further work up revealed a CD4 count of 98 cells/µl and 2% on flow cytometry, HIV viral load of 104K units/d, and interleukin-6 level of 46.1 pg/mL (range 0.0-15.5 pg/mL). HHV-8 is pending. Biopsies of lesions on her back, right thigh and mons pubis were all consistent with Kaposi's sarcoma. A cervical excisional lymph node biopsy showed partial involvement of HIV-associated Kaposi sarcoma in the background of multicentric Castleman disease (MCD). A bone marrow biopsy showed 10-15% atypical B-cells, also concerning for MCD. She was started on antiretroviral therapy with Biktarvy (bictegravir, emtricitabine, and tenofovir alafenamide) with improvement in her pancytopenia, and was referred for a clinical trial with targeted therapy of Pomalidomide and liposomal doxorubicin.

IMPACT/DISCUSSION: In this report, we present a case of biopsy-proven multicentric Castelman's disease as well as Kaposi's sarcoma in a female patient with AIDS. The differential for lymphadenopathy in a patient with AIDS includes persistent generalized lymphadenopathy secondary to HIV, lymphoma, disseminated mycobacterium avium, tuberculosis, Ebstein-Barr virus or cytomegalovirus. MCD typically presents with nonspecific 'B-symptoms' including fevers, lymphadenopathy, and splenomegaly. Excisional node biopsy is the preferred method for diagnosis of MCD. Given MCD's association with HHV8, biopsied tissue should be stained for HHV8 specific markers. MCD can be with or without KS; however, in AIDS patients it is almost always associated with HHV-8. MCD is typically treated with rituximab, but because rituximab can cause KS flares, doxorubicin is added for patients with KS.

CONCLUSION: MCD with concomitant visceral KS is a rare disease usually seen in patients from areas with high incidences of HIV infection

The extensive workup involved in diagnosing MCD involves close collaboration between oncology, pathology and infectious disease

Few case reports discuss the findings and workup of a patient with lymphadenopathy and AIDS consistent with MCD

DIAGNOSING HEARTLESS ENDOCARDITIS

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LEARNING OBJECTIVE #1: Diagnose infective endocarditis (IE) with modified Duke criteria.

LEARNING OBJECTIVE #2: Recognize that echocardiogram evidence is not required for diagnosis of IE.

CASE: A 57-year-old male with distant history of IV drug use (IVDU) presents in clinic with worsening productive cough, chest and abdominal pain, fever and 30-lb weight loss. Labs are remarkable for WBC of 17.9. He is started on levofloxacin for 10 days. 4 months later, patient presents

to ED with worsening symptoms. Imaging shows multiple pulmonary and hepatic abscesses. Blood cultures are positive for *Streptococcus intermedius*. Hepatic drain is placed; patient is started on ceftriaxone and metronidazole. TEE is negative for vegetations. Patient receives MRI brain due to confusion and hallucinations. It shows multiple abscesses. Patient is treated with 6 weeks of IV antibiotics for presumed IE based on Duke criteria.

IMPACT/DISCUSSION: IE is diagnosed by the modified Duke criteria. It includes major and minor criteria diagnosing definite, possible, or rejected IE.[3] Major criteria are 1) two positive blood cultures for typical IE organisms, 2) *Coxiella burnetii* positive blood culture, or 3) echocardiogram evidence. Minor criteria are 1) IVDU or predisposing heart condition, 2) fever (>38°C), 3) vascular/immunologic phenomenon, 4) other microbiologic evidence. Definite IE diagnosis meets 2 major criteria OR 1 major and 3 minor criteria. Possible diagnosis meets 1 major and 1 minor criterion OR 3 minor criteria. Rejected diagnosis is when 1) a clear alternate diagnosis is made, 2) symptoms resolve with <5 days of antibiotic therapy, 3) surgery or autopsy shows no IE evidence after <5 days of antibiotic therapy, or 4) criteria for definite or possible IE are not met.[3] Therefore, IE diagnosis does not require evidence of endocardial involvement. Moreover, TTE sensitivity/specificity in detecting vegetations is 44-63%/91-98%.[2] TEE sensitivity/specificity is 87-100%/91-100%.[2] In patients with positive blood cultures, TEE found vegetations in 82% and TTE in 69% of patients.[1] Therefore, patients that meet the criteria should be treated for IE despite lack of echocardiogram evidence. Our patient meets 3 minor criteria for possible IE: history of IVDU, fever and *S. intermedius* positive blood cultures. He was treated with 6 weeks of IV antibiotics as no other clear source was identified.

1. Erbel, R., Rohmann, S., Drexler, M., … Meyer, J. (1988, January). Improved diagnostic value of echocardiography in patients with infective endocarditis by transoesophageal approach. A prospective study.
2. Evangelista, A., & Gonzalez-Alujas, M. T. (2004, June). Echocardiography in infective endocarditis.
3. Li, J. S., Sexton, D. J., Mick, N., … Corey, G. R. (2000, April). Proposed modifications to the Duke criteria for the diagnosis of infective endocarditis.

CONCLUSION: Based on the modified Duke criteria, it is important to reiterate that diagnosis of IE does not require evidence of endocardial involvement.

DIAGNOSING MYCOBACTERIUM TUBERCULOSIS BACTEREMIA IN AN IMMUNOCOMPROMISED FEMALE

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LEARNING OBJECTIVE #1: Assess the various diagnostic modalities used to diagnose Mycobacterium Tuberculosis

LEARNING OBJECTIVE #2: Recognize the importance of a timely diagnosis and the utility of mycobacterial blood cultures

CASE: A 67-year-old female with a past medical history of psoriasis on adalimumab therapy presented with worsening chills, fever, and a non-productive cough for the past month. She denies any hemoptysis or night sweats but states she has had a 30-pound weight loss over the past two months.

In the ED, she was afebrile, normotensive, and was saturating 95% on room air. A Chest X-ray was notable for bilateral miliary nodules. A CT scan of her chest and abdomen was then done and showed extensive miliary lesions in her lungs and spleen. She was placed on airborne isolation and admitted to the medicine service for further workup.

Over the course of her hospital stay, the patient's lab work was significant for a negative fungal workup as well as a negative QuantiFERON Gold assay. Inflammatory markers and hepatic markers, specifically alkaline phosphatase and GGTP, were elevated. MRCP was then done and was notable for hepatic lesions.

Sputum AFB stain and culture were collected and acid fast bacilli were noted on day 1 with PCR positive for MTB. RIPE therapy was initiated immediately. Due to the extent of extrapulmonary manifestations, blood cultures were sent for AFB staining. A month later, they returned positive for Mycobacterium Tuberculosis.

IMPACT/DISCUSSION: Mycobacterium Tuberculosis is a communicable disease that is one of the top 10 causes of death worldwide. The timely diagnosis of TB is important due to treatment options and new drug resistance. A QuantiFERON Gold blood assay is used to detect TB, but does not differentiate latent from active disease. In order to diagnose a patient with active TB, confirmation via diagnostic microbiology, specifically the presence of acid-fast bacilli on sputum smear and a positive culture, is needed. Twenty percent of patients with active TB can have negative blood assay results. Therefore, with concern for extrapulmonary TB, a negative blood assay should not dissuade practitioners from obtaining blood and sputum cultures.

Hematogenous dissemination of TB should be suspected in patients with presumed miliary TB and warrants the collection of mycobacterial blood cultures. MTB bacteremia is especially common in immunocompromised adults with extrapulmonary tuberculosis. While blood cultures can assist in the diagnosis of tuberculosis, growth can take up to 6 weeks and treatment should not be withheld until blood cultures result.

CONCLUSION: Here we present a case of an immunocompromised female with miliary TB with a negative QuantiFERON Gold assay but with positive mycobacterium tuberculosis blood cultures. QuantiFERON Gold assay can be used to help rule in or rule out TB, but not to establish a diagnosis. When patients present with extrapulmonary manifestations, blood cultures can confirm a diagnosis, especially when patients lack pulmonary manifestations on radiographic imaging.

DIAGNOSTIC DELAY AND OPPORTUNITY COSTS OF A NOSEBLEED

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LEARNING OBJECTIVE #1: Describe how social determinants of health alter disease presentation, management, and clinical trajectory

LEARNING OBJECTIVE #2: Recognize healthcare and medication access options for patients without insurance

CASE: A 37-year-old man with Type 2 Diabetes at a free medical clinic for patients without health insurance has isolated thrombocytopenia to 14,000 incidentally found (confirmed with repeat CBC and manual differential). He is diagnosed with Immune Thrombocytopenia (ITP) after ruling out other causes of thrombocytopenia. The patient declines emergency department (ED) presentation due to time constraints and insurance status, and he reports friends without insurance laden with crushing medical debt following ED visits. He ultimately presents to the ED 2 days later with spontaneous epistaxis. Platelet count at time of ED presentation is 12,000. After 2 steroid courses, his platelet count only reaches 25,000, and he loses 1 of his 2 jobs due to symptomatic glucocorticoid-induced hyperglycemia. His Emergency Medicaid application is pending to allow for appropriate management of steroid-resistant ITP. Due to social

determinants of health, the patient experiences delays in diagnosis and inadequate treatment of ITP.

IMPACT/DISCUSSION: ITP is immune-mediated platelet destruction in the absence of other causes of thrombocytopenia, typically treated when platelet count is below 30,000. Half of patients develop chronic ITP; fatal hemorrhage occurs in 3% per patient year. First-line therapy is glucocorticoids plus IVIG. Second- line therapies include further glucocorticoids, rituximab, thrombopoietin agonists, other immunosuppressants, and splenectomy.

The CDC defines social determinants of health (SDOH) as "conditions in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks." Patient-specific examples of SDOH that affected presentation, management, and clinical trajectory are undocumented immigration status, living in concentrated poverty, transportation resources, access to health services, and employment situation.

Inquiring about SDOH as a routine part of encounters reveals barriers to good health outcomes. Simple phrases like "Have you had problems affording medicines or healthcare? How do you travel to office visits or work? What are you worried about when it comes to your health?" identify and address SDOH without adding time or hassle to encounters. Two easy-to-use and free resources exist for patients without insurance: (1) the GoodRx discount program (www.goodrx.com) provides major discounts on medications for patients without insurance; (2) The National Association of Free & Charitable Clinics (www.nafcclinics.org) lists 1,400 free and charitable clinics across the USA.

CONCLUSION: Address social determinants of health routinely in encounters given their influence on patient outcomes

Reference www.goodrx.com and www.nafcclinics.org to provide better care to patients without insurance

DIAGNOSTIC DILEMMA, SYMPTOMATIC OSTEOMALACIA: A REACTIVE ARTHRITIS MIMIC

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LEARNING OBJECTIVE #1: Diagnose reactive arthritis and differentiate it from other causes of pains

LEARNING OBJECTIVE #2: Recognize vitamin D deficiency on laboratory work and being able to order the right workup

CASE: A 38-year-old 19 weeks pregnant female who presented with multiple joint pains that started with right ankle pain and then progressed to the left ankle and both knees over several weeks. She described her pain as sharp and aching dull pain, it was worse upon standing and resting, was associated with prolonged morning stiffness. She denied fevers, chills, rashes, ocular inflammation, dry eyes or mouth, ulcers in mouth or nose, Raynaud's, numbness or tingling and photosensitivity. Her physical exam showed tenderness to palpation over the ankles with evidence of swelling and erythema. Due to concerns for inflammatory arthritis, patient underwent further workup which was significant for CRP 1.2, ESR 59, +ANA(1:320, homogenous pattern), C3/4 were normal. RF, CCP, dsDNA, Smith antibody, RNP antibody, SSA and SSB were negative. Stool bacterial PCR, urine chlamydia and gonorrhea were negative.

Due to her history, clinical findings and the positive markers of inflammation but negative infectious studies patient was diagnosed with reactive arthritis of unknown etiology. She was started on prednisone taper with no improvement of her symptoms, intraarticular steroid in both ankles were given with minimal improvement in symptoms as well.

Given that she didn't improve to treatment MRI of right and left knee were done and showed diffuse osteopenia. Further workup revealed high ALP to 249, low Vitamin D levels to 8, BETA crosslaps were increased to 1042, elevated PTH to 101, calcium level of 9.7 and phosphorus level of 3.3. She was diagnosed with symptomatic osteomalacia and was treated with vitamin D and calcium supplementation with resolution of her symptoms thereafter.

IMPACT/DISCUSSION: Osteomalacia is a disorder of decreased mineralization of the bone markedly at the sites of bone turnover. It can be asymptomatic in most of the cases where osteopenia is the disease sign seen on imaging. Osteomalacia can be symptomatic as well, resulting in generalized bone pains, joint pains, and muscle spasms, the pain is usually dull aching pain in weight-bearing areas and in severe cases fractures can occur as a result. The most common lab finding is an elevation in ALP and PTH, the patient might also have low serum Ca and P, low vitamin D levels as well as low urinary Ca excretion.

Malabsorption disorders, gastric bypass surgeries, celiac disease, liver disease, and chronic kidney diseases are all risk factors.

CONCLUSION: According to the literature review, symptomatic osteomalacia has been reported in dark- skinned pregnant women, the presentation is similar to nonpregnant women. It is important to diagnose osteomalacia is such a population to prevent fractures and other related complications.

DIAGNOSTIC DILEMMA IN A CASE OF LIMITED SCLERODERMA MIMICKING CELIAC DISEASE

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LEARNING OBJECTIVE #1: Recognize that scleroderma involving the gastrointestinal tract may mimic celiac disease even in the absence of small intestinal bacterial overgrowth (SIBO). Antibiotics are not required to manage these cases if the tests do no indicate features of a SIBO.

LEARNING OBJECTIVE #2: Although celiac disease may present with villous atrophy on duodenal biopsies, recognize the other causes of villous atrophy and chronic diarrhea; the so called mimickers of celiac disease.

CASE: We present an 82 year old female with a known history of limited scleroderma on symptomatic treatment who came to our clinic with a 6 month history of diarrhea. Physical exam was significant for digital Raynaud's and facial telangiectasia. Stool studies which included fecal leukocytes, ova, parasites, cultures, clostridium difficile and fecal elastase were negative. Duodenal biopsies taken on EGD showed villous blunting and increased intraepithelial lymphocytes (Marsh 3B-C lesion). Serology was positive for antigliadin antibodies but negative for tissue transglutaminase. She was then placed on a gluten free diet (GFD) without any resolution. Genetic testing for celiac disease (HLA -DQ2 and HLA-DQ8 alleles) were negative. Negative antienterocyte and anti-goblet cell antibodies ruled out autoimmune enteropathy. Irbesartan was stopped. Given the patients known history of limited scleroderma, SIBO was considered as a cause of the patient's symptoms. However, breath testing for SIBO was negative. She continued to have symptoms in spite of being on a GFD. Capsule endoscopy showed delayed passage of the capsule, duodenal villi atrophy with associated angioectasia. CT enterography

showed prominent distended small bowel loops and blunted folds of the proximal duodenum. With clinical features and imaging studies consistent with scleroderma, she was referred to rheumatology and was started on methotrexate.

IMPACT/DISCUSSION: While celiac disease is the most common cause of villous atrophy on duodenal biopsies, other causes have to be sought when celiac HLA typing is negative and the patient is non responsive to a GFD. Histological mimickers of celiac disease can be divided into 2 types, early which are characterized by increased intraepithelial lymphocytes without villous atrophy and late which have increased intraepithelial lymphocytes with villous atrophy. Differential diagnosis of late mimickers include common variable immune deficiency, giardiasis, SIBO, Crohn's disease, autoimmune enteropathy, Whipple's disease, tropical sprue and medications such as olmesartan. SIBO was a major differential in our study however the breath test was negative.

CONCLUSION: Patients with scleroderma involving the gastrointestinal tract can present with villous atrophy without SIBO.

DIARRHEA DILEMMA

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LEARNING OBJECTIVE #1:

1. To present a dilemma of Clostridium difficile diarrhea not responding to fecal transplant
2. Cyclospora cayetanensis diarrhea related to travel in US.

CASE: 72 yr male, had an episode of C. diff in 12/2018. He was initially treated with treated with oral vancomycin for 10 days. His symptoms persisted and he remained positive, so he was treated with oral metronidazole for 10 days. He was persistently symptomatic and positive for C. Diff. Hence was treated with fidaxomicin 200 mg BID for 15 days. He remained symptomatic and positive. Hence received second round of Fidaxomycin with taper. He had a fecal microbial transplant(FMT) on 2/20/19 and reported that he does not feel he retained this well, inspite of imodium.

About one month ago, he started having what he describes to be the same symptoms as previous episodes of C diff with 3-6 loose stools daily with malaise and abdominal pain. This represents dilemma for treatment of diarrhea, since there are no guidelines/recomendations for this situation. He was treated with repeat FMT and is doing well for last 6 months.

70 year immunocompetant woman returned from 4 day travel to New Orleans. She had eaten a lot of seafood. She reported 8-10 loose watery stools with nausea, malaise, anorexia since 4 days after return from her trip. Stool testing showed Cyclospora cayetanensis.

She was treated with trimethoprim sulfamethoxazole 800/160 2 times/day for 7 days and improved.

IMPACT/DISCUSSION: Diarrhea is a very common illness seen in medical practice. Clostridium Difficile diarrhea is becoming common. Oral vancomycin, metronidazole, Fidaxomycin are recommended to treat it. Fecal transplant is considered the treatment of choice in antibiotic resistance. The case above illustrates a frustrating situation when neither antibiotics nor fecal tranplant was working. With our increasing load of frail geriatric patients with multiple co-morbidities we will be seeing this dilemma more frequently in the future. Hence it is important to be aware regarding the management of such patients.

Cyclospora cayetanensis is transmitted via food and water. This actually represents a reportable public health problem. The treating team may not be aware about the public health repercussions and thus it is important to highlight here.

CONCLUSION: Professional standard of care for recurrent C. Diff infection after fecal transplant is not establsihed at present.

Cyclospora cayetanensis is seen in travellers in US and is a reportable public health hazard.

DIARRHEA SO BAD IT WILL MAKE YOUR TONGUE SWELL

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LEARNING OBJECTIVE #1: Recognize the importance of considering alternative diagnoses when diagnostic workup remains negative

LEARNING OBJECTIVE #2: Identify the clinical manifestations and diagnosis of gastrointestinal amyloid

CASE: A 70 year old male with prostate cancer treated with radiation was admitted with postprandial abdominal pain, distention, and intermittent nonbloody diarrhea. Vital signs were normal. Abdomen was soft, nontender, mildly distended. CBC with differential, CMP, and lipase were normal. Stool culture and testing for Giardia, Cryptosporidia, and C. difficile was negative. Contrasted CT abdomen & pelvis showed small bowel obstruction with multifocal areas of small bowel stricturing and thickening of the transverse colon and splenic flexure. With nasogastric tube decompression, partial small bowel obstruction resolved. Inpatient colonoscopy showed poor bowel prep and radiation proctitis. He was given trial of cholestyramine and discharged with GI follow up. One month later, his symptoms were unchanged. MR Enterography again showed multifocal inflammation and narrowing of small bowel, rectosigmoid colon and splenic flexure. EGD with gastric and duodenal biopsies was unremarkable. Repeat colonoscopy again showed radiation proctitis, with an area of narrowing and erythematous mucosa in sigmoid colon. Biopsies were unremarkable. Empiric trials of steroids (for possible inflammatory bowel disease) and two courses of antibiotics (for small intestinal bacterial overgrowth) failed to improve symptoms. He became frustrated with the lack of an underlying diagnosis and improvement in symptoms and was lost to follow up. Fortunately, he continued to follow with his primary care physician and began to complain of tongue swelling. Due to concern for amyloidosis, tongue biopsy and later bone marrow biopsy were performed. Both were negative for amyloidosis or malignancy.

Due to persistent suspicion for amyloidosis, Congo red staining was performed on previous stomach and colon biopsies with positive result. Mass spectrometry confirmed AL amyloidosis. The patient underwent autologous stem cell transplant and remains disease free with > 2 years follow up.

IMPACT/DISCUSSION: GI amyloidosis is uncommon but can present with GI bleeding, malabsorption, protein losing enteropathy, or GI dysmotility. If suspicion is high, Congo red staining should be requested on tissue. Treatment is autologous hematopoietic cell transplant for patients who are candidates, and chemotherapy for those who are not. Prognosis is poor with one perspective study showed median survival of AL amyloidosis with GI involvement to be 7.95 months and 15.84 without involvement. This case illustrates the importance of longitudinal care and a persistent search for the underlying etiology when the diagnosis remains unclear, when new clinical information arises, and/or there is a lack of clinical improvement with empiric therapy.

CONCLUSION: Negative biopsy does not always = normal

Reconsider the underlying diagnosis and results of past studies

DID OCTREOTIDE RESTORE THIS PATIENT'S LIFE?

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LEARNING OBJECTIVE #1: Octreotide can help patients prevent long term microvascular complications of DM – thus, providing high value care.

LEARNING OBJECTIVE #2: If employed early for refractory DGE, octreotide might reduce re- admissions for DKA. Thereby, markedly reducing the financial burden on the US health care industry.

CASE: A 50 year old female with poorly controlled DM was admitted for altered mentation, DKA and profuse, watery diarrhea. She had 11 admissions in the last 20 months for similar complaints, including 1 to the ICU. At presentation, she had 12-13 episodes of explosive diarrhea per day, without any blood and had lost 12-kgs in the last year. Over the last 4 years, patient failed OTC and outpatient management. Normal labs - stool electrolytes including Na, K and Cl, amylase, lipase, fecal occult blood, lactoferrin, fecal fat, HIV test, Wright stain for neutrophils and eosinophils. VIP < 50 pg/ml. Calprotectin < 16 mcg/gm. Serum IgA - 153 mg/dL; TTG IgA - 0.4 U/mL; TTG IgG < 1.0 U/mL. Gastrointestinal pathogen panel including C. diff was negative. Patient failed inpatient loperamide, metoclopramide and pancreatic enzyme replacement. An endoscopy and 8 colonoscopies were negative. A diagnosis of Diabetic gastroenteropathy (DGE) was made and she was put on a trial of octreotide 50 mCg subcutaneous injection Q8H. After 2 days, patient's diarrhea improved, her stool count went down to 4 and subsequently stayed in the range of 2-3 episodes/ day. She regained her appetite and gained 9-kgs within 2 weeks.

IMPACT/DISCUSSION: Although manageable, DM remains a global hazard, with an estimated increase in prevalence from 424.9 million patients in 2017 to 628.9 million by 2045. Dehydration secondary to diarrhea caused by chronic diabetic gastroenteropathy is one of the most common precipitating factors of DKA. DKA is a fatal but easily preventable complication of DM and is characterized by hyperglycemia, anion gap metabolic acidosis and ketonemia. In the US, based on CDC and NIS databases, DKA hospitalization rates increased by 54.9%, from 19.5 to 30.2 per 1,000 persons during 2009-2014, at an average annual rate of 6.3%. Since 2003, mean hospital charges for DKA went up from $18,987 per admission to $26,566 in 2014, costing $5.1 billion to the US health care industry.

The exact pathogenesis of DGE remains unknown. Involvement of enteric nervous system, causing an imbalance between excitatory and inhibitory neurons has been postulated. Involvement of motilin, a diarrhea causing hormone has also been implicated. Octreotide acts by affecting both pathways, thereby, reducing the overall gastrointestinal motility, with a relatively safe adverse effect profile.

CONCLUSION: Patient's remarkable improvement in stool frequency allowed us to discontinue her rectal tube. She was able to ambulate around the medical floor. This helps us to hypothesize that octreotide therapy improved her quality of life. Throughout her inpatient stay, her insulin requirement decreased by 40% with better glycemic control.

DIFFERENTIATING THE UNDIFFERENTIATED: A DIAGNOSIS TO CONSIDER IN INFLAMMATORY ARTHRITIS

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LEARNING OBJECTIVE #1: Define and diagnose Undifferentiated Arthritis [UA].

LEARNING OBJECTIVE #2: Treat Undifferentiated Arthritis to prevent progression to Rheumatoid Arthritis [RA].

CASE: 54 y/o male with no significant past medical history was hospitalized with worsening diffuse joint pain for two weeks. The pain started in bilateral shoulder joints, progressed to bilateral wrists, ankles and knees, and was associated with mild swelling and stiffness. He reported subjective fever and chills. He denied any recent travel, sick contacts, and was sexually active with his wife only. Exam was significant for tenderness, decreased strength and range of motion in bilateral shoulders, wrists, knees and ankles. Mild bilateral knee swelling was also noted. A full infectious, autoimmune and malignant workup was ordered, including CT scan of the abdomen/pelvis/chest and transthoracic echocardiogram, with no significant findings aside from elevated ESR [Erythrocyte Sedimentation Rate] and CRP [C-Reactive Protein]. Fevers (101-102) continued for a week while he was hospitalized. Patient chose to leave hospital despite recurrent fevers and no diagnosis. A diagnosis of Undifferentiated Arthritis (UA) was made in follow up with primary care and rheumatology. Patient was started on Methylprednisolone 8 mg daily and Methotrexate 10 mg weekly with folic acid. Within 4 weeks of starting therapy, he had resolution of his symptoms.

IMPACT/DISCUSSION: Undifferentiated Arthritis is an early inflammatory disorder that cannot be classified as a specific rheumatologic disorder. When treating a patient with arthritis, or painful inflammation and stiffness of joints, without other diagnostic findings to meet criteria for an alternate disorder, such as rheumatoid arthritis, crystal arthropathy, or infectious arthritis, it is important to consider the diagnosis of UA.

To diagnose UA, patients with symptoms of inflammatory arthritis must have at least 1 of the following on physical exam: at least 1 swollen joint or pain on range of motion of at least 1 joint. Workup includes laboratory testing [including auto-antibody and infectious testing], arthrocentesis [to rule out infectious arthritis or crystal disease], and plain radiography of affected joints [in which erosions convey a high risk of progression to RA]. UA can spontaneously resolve on its own (10-40%), or it can progress to RA (13-54%). UA should be identified as early as possible, as early treatment with Disease-Modifying Anti-Rheumatic Drugs, or DMARDS, with a short course (<6 months) of low-dose glucocorticoids can alleviate symptoms, as well as prevent functional impairment and progression to RA.

CONCLUSION: Consider UA in a patient with symptoms of inflammatory arthritis who does not meet diagnostic criteria for a defined rheumatologic disorder.

Patients with UA benefit from early treatment with a DMARD. In addition, combining multiple DMARDs or DMARDs with corticosteroids may be even more beneficial in alleviating symptoms and preventing progression to RA.

DIGITAL ISCHEMIA WITH MANY ANALOGS

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LEARNING OBJECTIVE #1: Recognize digital ulcers and Raynaud's phenomenon as common early manifestations of systemic sclerosis

LEARNING OBJECTIVE #2: Discuss interventions for these common systemic sclerosis skin manifestations and when to refer to a rheumatologist

CASE: A 46 year-old man with schizoaffective disorder presented to his primary care provider with months of persistent pain from necrotic lesions on the tips of his left 3rd and 4th fingers. Both digits had malodorous

eschars extending to the distal interphalangeal joints. The surrounding skin was swollen, erythematous and painful to palpation. There was sclerodactyly on his remaining fingers and thickening of the skin on his palms bilaterally but he had no skin changes elsewhere. He had a history of Raynaud's phenomenon and multiple digital ulcers. Seven months prior, his right 3rd finger was amputated after one of the ulcers became infected. He smoked cigars. He endorsed fatigue and mild gastroesophageal reflux disease but no diarrhea or dyspnea.

Antinuclear antibodies (>320, speckled pattern) and anti-centromere antibodies were positive. Anti-topoisomerase I (Scl-70) antibodies were negative. A CT angiogram of his chest did not show any thrombi or interstitial abnormalities. He underwent partial digit amputations which revealed gangrenous necrosis and acute osteomyelitis. Pathology specimens revealed vasculitis. He was diagnosed with systemic sclerosis, discharged on a calcium channel blocker, and given outpatient rheumatology follow-up.

IMPACT/DISCUSSION: One of the most common etiologies of digital ischemia is systemic sclerosis (SSc), a connective tissue disorder that is marked by fibrosis, vascular damage, and immunologic abnormalities with varying degrees of internal organ involvement. Prevalence estimates of SSc are 242 cases per million U.S. adults. Greater than 95% of these patients develop Raynaud's phenomenon and more than 40% develop digital ulcers. Digital ulcers, which have been associated with a worse disease course, can progress to ischemia via an interaction between vasospasm and vasculopathy. Since these digital manifestations often predate other disease symptoms by years, the diagnosis of SSc is often delayed, allowing progression to end organ damage. General internists play a pivotal role in recognizing initial symptoms associated with SSc, securing early diagnosis, and referring to a rheumatologist.

Non-pharmacologic modalities employed to prevent and reduce the burden of digital ulcers and ischemia include avoidance of precipitants like cold and stress, nicotine, hand injuries, and drugs that promote vasoconstriction. The first-line pharmacological treatment of SSc-related skin manifestations is calcium channel blocking medications.

CONCLUSION: Early detection of SSc via the identification of Raynaud's phenomenon and digital ulcers allows counseling on behavior modifications and early referrals to rheumatologists, which may preserve function and prolong patient survival.

DISCONTINUING DIAZEPAM: A CASE HIGHLIGHTING GAPS IN GENERALIST TRAINING THAT PERPETUATE HEALTH DISPARITIES FOR PATIENTS WITH DISABILITIES

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LEARNING OBJECTIVE #1: Identify current gaps in training and support for general internal medicine providers in the care of adults with intellectual and developmental disabilities (ID/DD).

LEARNING OBJECTIVE #2: Describe the need to develop resources to enable current generalist providers to care for adults with ID/DD.

CASE: AB, a 37-year old non-verbal female with quadriplegic spastic cerebral palsy, intellectual disability, and seizure disorder, was admitted to the medicine service at our tertiary referral center with increased seizure frequency, increased tone, fever, and agitation. Her mother reported that 1.5 months prior, AB developed persistent fevers and agitation, and had her first generalized tonic-clonic seizure since childhood, requiring two admissions to a local hospital. Despite adjustment of her antiepileptic medications, her symptoms persisted, and her mother sought care at our institution. On exam, AB was febrile, tachycardic, and mildly diaphoretic with diffusely increased tone. Lab testing and imaging showed no evidence of an infectious cause of AB's symptoms. On further history, her mother revealed that two months prior, AB's primary care provider retired and she switched to a new physician in their rural community. Upon meeting AB, this new provider expressed concerns that she was overly sedated (despite being at her neurocognitive baseline per her mother) and reservations about long-term benzodiazepine use. She initiated a rapid wean of AB's diazepam, decreasing it from a total daily dose of 25mg to 10mg daily. With this additional history and evaluation negative for other causes, AB's symptoms were attributed to this rapid decrease of her antispasmodic medication. Her diazepam was gradually increased with resolution of her symptoms, and she was connected with a primary care physician who has a specific interest in caring for adults with ID/DD.

IMPACT/DISCUSSION: This case highlights gaps in medical training and access to appropriate care that perpetuate health disparities for adults with ID/DD. The provider in this case was certainly not intending to cause harm, but appears to have been unaware of the role of benzodiazepines in managing spasticity for patients with cerebral palsy. This patient's course is emblematic of deficiencies in medical training that leave providers inadequately prepared to care for adults with ID/DD. Research has shown the vast majority of primary care providers received no formal training in caring for adults with ID/DD. It is therefore not surprising that adult medicine providers might lack familiarity with common medication regimens for cerebral palsy or awareness of differences in neurocognitive baseline for people with ID/DD.

CONCLUSION: Deficiencies in medical education and training in the care of adults with ID/DD have real- life and potentially serious impacts on patients. Addressing these deficiencies by providing resources to current providers and adapting training for future generalists has potential to reduce disparities and improve health outcomes for adults with ID/DD.

DISSEMINATED BLASTOMYCES

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LEARNING OBJECTIVE #1: Recognize a common presentation of disseminated blastomyces.

LEARNING OBJECTIVE #2: Determine the appropriate treatment of disseminated blastomyces.

CASE: A 58 year old male presented to the ED due to syncope. A chest CT demonstrated an acute pulmonary embolus and new mediastinal lymphadenopathy and bronchiectasis. He was started on anticoagulation for his pulmonary embolus and followed-up with his primary care provider 2 weeks later.

The patient's past medical history was unremarkable. His social history was notable for big-game hunting in the north central United States. He was not on any medications prior to anticoagulation. He had a 20-pack-year smoking history.

At his follow-up appointment, he had developed a new exophytic lesion on his left nare. Bacterial cultures grew coagulase-negative staphylococcus. The lesion was treated with topical antibiotics without resolution. Additional findings included progressive weight loss, night sweats, and mild confusion.

Additional testing revealed positive Blastomyces serology by immunodiffusion. Fungal blood cultures grew Blastomyces dermatitidis one week later. A brain MRI revealed small enhancing lesions. A diagnosis of

disseminated blastomyces with skin and brain involvement was made and the patient was started on liposomal amphotericin B and voriconazole.

IMPACT/DISCUSSION: Blastomycosis is typically found in states bordering the Mississippi and Ohio River valleys and the Midwestern U.S. Risk factors include exposure to contaminated soil and water sources. Most infections are asymptomatic although mild pneumonia may progress to severe pneumonia with necrotizing features or mass formation. The infection may disseminate to lymph nodes, brain, skin, prostate, and bone. Central nervous system involvement affects less than 1% of patients. Diagnosis is difficult because of the wide spectrum of presentations. Pulmonary involvement can closely mimic bacterial pneumonia; thus a high index of suspicion is necessary when pneumonia symptoms do not respond to antimicrobials or patients are from an endemic area. Diagnosis is suggestive with serology and confirmed by culture or typical appearance of yeast forms on biopsy or biologic fluids. Urine or serum antigen testing may assist in confirming a blastomyces diagnosis. Unfortunately, there is considerable antigen cross-reactivity with different fungal infections. Treatment consists of liposomal amphotericin B for four weeks and itraconazole for 6-12 weeks. Studies have shown that when the CNS is involved, voriconazole may be favored due to higher CNS concentration. This patient was treated with liposomal amphotericin B for four weeks and voriconazole for 12 months.

CONCLUSION: Clinicians should have a high-index of suspicion for Blastomyces in patients with recurrent pneumonias or from an endemic area.

Pulmonary symptoms are the most common manifestation of Blastomyces infection.

CNS involvement is rare and treatment includes liposomal amphotericin B followed by prolonged voriconazole due to higher CNS penetration.

DISSEMINATED HISTOPLASMOSIS AFTER VEDOLIZUMAB USE FOR ULCERATIVE COLITIS

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LEARNING OBJECTIVE #1: Recognize the importance of maintaining a broad differential, especially in patients taking immunomodulatory agents

LEARNING OBJECTIVE #2: Diagnose and manage disseminated histoplasmosis

CASE: A 41-year-old male with a past medical history significant for ulcerative colitis presented to the ED with fevers and chills in November 2019. He had been recently diagnosed with UC in July 2019, and was started on vedolizumab in the fall, although was only able to tolerate two infusions. He had no other past medical history. He lived his entire life in Michigan and had no recent travel outside the state. The patient was a construction worker and endorsed frequently chopping wood in the forest. A few weeks after the patient's last vedolizumab infusion, he presented to his PCP with fevers. Lab work revealed elevated AST/ALT and he was sent to the ED. He was started empirically on antibiotics given his recent vedolizumab use and suspicion for infectious process. Throughout his admission, the patient had cyclic fevers with temperatures reaching 102-103°F. Infectious workup ruled out atypical opportunistic infections. MRCP was performed given his transaminitis and was suggestive of possible small duct primary sclerosing cholangitis (PSC). Subsequent liver biopsy showed granulomas, encapsulated yeasts, and no evidence of PSC. Further testing revealed positive urine histoplasma antigen and positive blood beta-d-glucan. Disseminated histoplasmosis was suspected, and the patient was started on IV liposomal amphotericin B for one week. His fevers and transaminitis resolved. He was then transitioned to oral itraconazole for 3-6 months.

IMPACT/DISCUSSION: Histoplasmosis is a systemic mycosis endemic in the Ohio and Mississippi River valleys. Sources of exposure include farming, cutting down trees, and remodeling of old buildings. If immunocompromised, *H. capsulatum* can disseminate and cause a variety of symptoms including fever, fatigue, weight loss, and lymphadenopathy. Diagnosis requires a culture of *H. capsulatum*, detection of histoplasmosis antibody in serum, and the presence of histoplasmosis nucleic acid. In our case, however, diagnosis was made by the identification of granulomas and encapsulated yeasts on liver biopsy with positive antigen testing. According to the literature, only two cases of histoplasmosis after vedolizumab treatment have been reported. This is a rare case of disseminated histoplasmosis in a region not known to be endemic. In our patient, the history of immunomodulation therapy combined with a fondness of vigorous outdoor activities produced an optimal setting for the development of histoplasmosis. It is evident that a detailed social history becomes essential in the diagnosis of uncommon infections in immunocompromised individuals.

CONCLUSION: Maintaining a broad differential in immunocompromised patients is critical. Histoplasmosis can present in a variety of ways and should be considered in patients presenting with non-specific systemic symptoms.

DISSEMINATED LEPROSY PRESENTING AS MULTISYSTEM ORGAN-FAILURE IN AN IMMUNOCOMPROMISED ADULT

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LEARNING OBJECTIVE #1: Recognize factors and patient populations at risk for opportunistic infections such as leprosy

LEARNING OBJECTIVE #2: Identify a clinical history concerning for leprosy and potential treatment options

CASE: A 36-year-old female immigrant from Trinidad & Tobago with a history of diabetes mellitus and polyarteritis nodosa (PAN) presented to an outside hospital with chest pain, shortness of breath, and generalized fatigue. Patient was found to have pancytopenia marked by an absolute neutrophil count of zero. The patient was tachycardic to 138 in the setting of fever to 103 degrees Fahrenheit. Broad-spectrum antibiotics were initiated, and a bone marrow biopsy was performed with concern for mycobacteria. Patient was started on R.I.P.E. therapy and transferred to tertiary care center for escalation of care and further management.

Additional history revealed intolerance of Azathioprine for 2-3 months prior to presentation. Patient was maintained on oral prednisone for the past two years, with multiple unsuccessful attempts to taper because of worsening skin rash and pain. Her diagnosis of PAN was based on a biopsy of painful bullous lesions on her foot that regressed after starting steroid therapy.

Patient decompensated and developed renal and hypoxic respiratory failure. Skin exam showed erythematous-violaceous macules and patches distributed on her feet, legs, trunk. Biopsy of her skin lesions and repeat bone marrow biopsy was pursued. Patient had worsening respiratory failure that required intubation. Family meeting at that time resulted in comfort care approach with further invasive testing and procedures no longer pursued. The patient ultimately died of her illness.

Post-mortem analysis of her biopsied skin lesions and bone marrow revealed acid fast and Fite-positive organisms concerning for

disseminated mycobacterium. External testing confirmed the diagnosis of Leprosy with mycobacterim leprae DNA detected in biopsied samples and Mycobacterial peri-neural invasion was also noted on skin biopsy.

IMPACT/DISCUSSION: Leprosy is an infectious disease caused by Mycobacterium leprae and Mycobacterium lepromatosis involving the skin and peripheral nerves. It is largely a disease of the immunocompromised and the misfortunate. In the U.S., 205 cases of Leprosy were documented as recently as 2010. 75% of these individuals were known to be recent immigrants. Transmission of the disease is not fully known but is believed to be respiratory in nature by experts. Transmission is believed to be dependent on exposure, immune status, age, and contact with potential zoonotic reservoirs such as armadillos in the U.S.

CONCLUSION: Clinical presentation is classically persistent skin lesions refectory to standard treatments with sensory loss observed with in these lesions. Our patient exemplified this presentation with hypopigmented to reddish patches on her extremities with expected neuropathy. Severe disease, as in our patient's case, can present with prolonged exposure and can result in multi-system organ failure and death.

DISSEMINATED STRONGYLOIDIASIS IN A HLTV-1 POSITIVE PATIENT, A DANGEROUS COMBINATION

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LEARNING OBJECTIVE #1: Identify the early signs of disseminated strongyloidiasis

LEARNING OBJECTIVE #2: Recognize the impact of race when making clinical diagnosis

CASE: A63 year-old African American man with no past medical history, originally from the rural Pacific Coast in Colombia, presented with two months of diffuse abdominal pain, intermittent diarrhea and dry cough. Other symptoms included low-grade fever and a 40-pound weight loss. Denied rashes. Physical exam revealed a cachectic patient with pale conjunctivae, benign abdominal exam, no rash noted. Laboratory studies WBC 18,200 cells/uL with neutrophils predominant, normal eosinophil Hemoglobin 8.5 g/dL. Chemistry with albumin of 1.6 g/dL, negative HIV. CT abdomen and chest with diffuse inflammatory changes of the bowel wall, a right lower lobe consolidation and multiple pulmonary nodules. Upper GI endoscopy and colonoscopy were normal. Due to undiagnosis and concern for malignancy, an exploratory laparoscopy was done, showing distention of the proximal jejunum. Finally, patient underwent video-capsule endoscopy, which showed rhabditiform larvae, confirming the diagnosis of disseminated strongyloidiasis. Stool study showed rhabditiform larvae. Patient also developed ESBL Klebsiella pneumoniae bacteremia with secondary to pneumonia from hyperinfection. Further testing was positive for HLTV-1 (Human T lymphotropic virus 1). He was started on Meropenem and Ivermectin with full recovery.

IMPACT/DISCUSSION: Strongyloides stercolaris is estimated to infect about 100 million people worldwide, especially those coming from tropical and subtropical areas. It usually presents as a chronic asymptomatic disease. In immunosuppressed patient, hyperinfection or disseminated disease may occur. Definitive diagnosis of strongyloidiasis is made on the basis of detection of larvae in the stool, sputum or duodenal fluid. However, strongyloidiasis is difficult to diagnose since the parasite load is low and the larval output is irregular in majority of the patients. The disease can be overlooked in non-endemic areas.

Our patient presented with non-specific symptoms but with significant weight loss concern for possible gastrointestinal malignancy. However initial work up were completed with unclear diagnosis. Given his race, it should help raise concern for possible Strongyloides Stercoralis Hyperinfection Syndrome (SHS) and disseminated disease. Even though our patient has no eosinophilia and no rash noted. Patient was eventually found to have co-infection with HLTV-1 which is one of the most common risk factors for SHS. Patient in this group will have higher mortality associated with disseminated infection, and higher risk of developing HLTV-1 associated diseases, such as adult T-cell leukemia/lymphoma.

CONCLUSION: With increasing diversity in patient population, it is vital for internists to have a broader understanding of the epidemiology and background of patients, in order to have a high clinical suspicion in uncommon diseases.

DON'T CALL THE PSYCHIATRIST JUST YET; A CASE REPORT OF STIFF-PERSON SYNDROME

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LEARNING OBJECTIVE #1: Knowledge and awareness as well as high clinical suspicion are required for the diagnosis of Stiff-person Syndrome

LEARNING OBJECTIVE #2: Electromyography and serological testing for autoimmune antibodies are insightful for neurological workup when imaging is not

CASE: A 36-year-old female with a history of PTSD and chronic dystonia of unclear etiology presented with intermittent left-sided weakness, bilateral lower extremity numbness, truncal weakness, episodic tremors with the spasms of all limbs, dysphonia, and dysphagia. These symptoms were gradually worsening, jeopardizing her activities of daily living. Vital signs were normal. Physical exam revealed decreased power in limbs with normal bulk, tone, and reflexes when examined between episodes. MRI brain and spine were unremarkable. Workup including CSF analysis was negative for infection, multiple sclerosis, syphilis, Lyme disease, Huntington's disease, Wilson's Disease. EEG did not reveal epileptogenic activity. The patient was managed symptomatically and started on physical therapy and occupational therapy. She showed minimal improvement in her symptoms. Serology came back positive for anti-Glutamic acid decarboxylase (GAD) antibody confirming the diagnosis of Stiff Person Syndrome. Plasmapheresis was initiated resulting in gradual clinical improvement.

IMPACT/DISCUSSION: In recent years, neurological evaluation has been increasingly relying on imaging to aid diagnosis. While imaging provides insight for several pathologies, negative imaging results tend to mislead and provide false reassurance. This can lead to an increase in false psychiatric diagnoses and the underdiagnosis of rare neurological conditions.

Stiff-person syndrome, formerly called Stiff-man syndrome, is an exceedingly rare neurological disorder that has an estimated prevalence of about one case per million. It is first described in 1956. Most patients present between the ages of 20 and 50, and women are affected two to three times more than men.

The disease is characterized by progressively worsening muscle rigidity and stiffness with associated spasms. While the etiology remains unclear, about 80% of affected individuals have anti-GAD antibodies, as compared to about 1% of the general population. Other antibodies have also been recognized such as anti- amphiphysin antibody and anti-GABAa receptor-associated protein antibody. Electromyography with specific

features including spasmodic reflex myoclonus and co-contraction of antagonistic muscles helps confirm the diagnosis.

CONCLUSION: Stiff-person syndrome remains an underdiagnosed debilitating poorly understood neurological disease. Diagnosis is made based on history, physical examination, electromyography, and serological testing. Imaging generally does not aid in diagnosis.

DON'T FORGET HISTO: A CASE OF HISTOPLASMOSIS PRESENTING AS SMALL BOWEL OBSTRUCTION

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LEARNING OBJECTIVE #1: Recognize the presentation of gastrointestinal histoplasmosis

LEARNING OBJECTIVE #2: Understand susceptibility of patients on TNF-a blocking medications to histoplasma

CASE: A 56 year old male presented with persistent abdominal pain, nausea, and 50 pound weight loss. His medical history is significant for Crohn's disease, nephrolithiasis, peripheral vascular disease, and recent small bowel obstruction; surgical history is significant for bilateral lower extremity bypass grafts and abdominal surgery for bowel strictures at age 30. His Crohn's is managed by long term use of prednisone and infliximab. At presentation he was tachycardic, hypotensive, and had a lactate of 8.6. CT abdomen revealed a small bowel obstruction.

He was treated with aggressive IV fluid hydration, broad spectrum antibiotics, and high dose steroids. He initially improved but then acutely decompensated, and repeat CT abdomen showed bowel perforation. He underwent emergent exploratory laparotomy that noted extensive adhesions, obstruction, and perforation. The perforated tissue was removed. His bowel tissue was noted to be thickened and friable.

Pathology from the resected bowel showed mucosal ulceration, necrosis, transmural inflammation, and fungal histoplasmosis infection. Both urine and serum histoplasma antigen tests were negative. He was treated with Amphotericin B.

IMPACT/DISCUSSION: Histoplasmosis is a fungal infection endemic to the Ohio and Mississippi River Valley regions caused by inhalation of Histoplasma capsulatum. Though often asymptomatic or minimally symptomatic in immunocompetent adults, histoplasmosis can be severe in immunocompromised patients. Severe forms of disease usually present with disseminated or pulmonary histoplasmosis.

Gastrointestinal (GI) histoplasmosis is relatively common and affects around 70% of patients with disseminated disease. However, GI manifestations are clinically recognized less than 10% of the time. GI lesions include ulcerations or masses with predilection for the ileocecal valve and can lead to misdiagnosis of colitis.

TNF-alpha plays a critical role in host defense of histoplasma infection by activating macrophages and enabling their fungicidal capability. TNF-alpha blocking agents thus make a host more susceptible to disseminated histoplasmosis. Current literature recommends testing for histoplasmosis in patients with febrile illness and intestinal lesions prior to initiating TNF-alpha blocking medications. Testing for histoplasmosis with urine or serum antigen levels is recommended in endemic areas when diagnosis of Crohn's is not certain.

CONCLUSION: In endemic areas, histoplasmosis should remain on the differential in patients with GI symptoms, especially in those with immunocompromised states. GI histoplasmosis may present similarly to Crohn's disease. Special care should be taken to distinguish the two prior to initiation of TNF-alpha blocking medications.

DON'T WALK, RUN; PANTON-VALENTINE LEUKOCIDIN POSITIVE MRSA MAY REQUIRE AN ANTIBIOTIC BIG GUN

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LEARNING OBJECTIVE #1: Recognize the clinical features Panton-Valentine Leukocidin positive Staph Aureus (PVL+SA).

CASE: A 31-year-old man with type two diabetes mellitus that was untreated due to funding limitations presented to the emergency department with malaise, fever, nausea and a four-day history of an enlarging buttock abscess. The abscess was incised and drained. Intraoperative and blood cultures both grew vancomycin-sensitive MRSA. For several days, repeat blood cultures remained positive for MRSA despite therapy and source control. During this time he developed endophthalmitis and chorioretinitis in his left eye, requiring emergent vitrectomy with intraocular injection of ceftaroline. He also developed widespread intramuscular abscesses which were incised and drained when possible. Given treatment failure on vancomycin, treatment was escalated to daptomycin, linezolid, and eventually ceftaroline. The patient's clinical course raised suspicion for Panton-Valentine Leukocidin-positive MRSA. The laboratory test to confirm PVL positivity took 10 days to result.

IMPACT/DISCUSSION: The increase in morbidity and mortality associated with Panton-Valentine Leukocidin positive Staph Aureus (PVL+SA) has caused public health concerns worldwide. PVL is a prophage-encoded pore-forming leukocidin that is present in about 5% of S. aureus isolates and most community acquired MRSA strains. When present, the secreted toxin destroys white blood cells and contributes to recurrent skin and soft tissue infections. PVL+SA can cause severe invasive infections such as septicemia, osteomyelitis, endophthalmitis, and PNA even in previously healthy individuals. Necrotizing hemorrhagic pneumonia is the most serious clinical feature with a high mortality rate (> 60%). PVL+SA endophthalmitis is rapidly vision threatening and requires urgent vitrectomy with intraocular antibiotic treatment. To date, it is not clear why clinical outcomes of patients with PVL+SA vary; studies suggest a combination of bacterial gene expression and host factors. To minimize the infection risks to other patients in the hospital setting, clinicians can consider topical decolonization after the acute infection has resolved. **CONCLUSION:** The classic presentation of PVL+SA infections includes multiple soft tissue abscesses, necrotizing hemorrhagic pneumonia, and severe bacteremia. Suspect PVL+SA when standard therapy and source control fails to result in clinical improvement.

PVL testing in the US is often a send-out lab that can take weeks to return. In suspected PVL+SA, clinicians need to promptly escalate treatment to "big gun" antibiotics, namely linezolid, daptomycin, and ceftaroline if CNS Involvement is present.

DOUBLE TROUBLE: A CASE OF METFORMIN ASSOCIATED LACTIC ACIDOSIS AND EUGLYCEMIC DIABETIC KETOACIDOSIS

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LEARNING OBJECTIVE #1: Highlight a case of metformin associated lactic acidosis and euglycemic diabetic ketoacidosis

LEARNING OBJECTIVE #2: Review the diagnostic criteria for euglycemic diabetic ketoacidosis

CASE: An 84-year-old female with medical history significant for type II diabetes mellitus on metformin presented with episodes of diffuse muscle contractions and twitching arm movements. On admission she was found to have hypocalcemia, hypomagnesemia, acute kidney injury, and a mixed acid-base disturbance of high anion gap metabolic acidosis (due to lactic acidosis), metabolic alkalosis, and respiratory alkalosis.

Initial labs were notable for sodium 144 mmol/L, potassium 4.5 mmol/L, chloride 98 mmol/L, bicarbonate 15 mmol/L, BUN 48 mg/dL, creatinine 2.7 mg/dL (baseline 0.8), and glucose 125 mg/dL. On ABG, pH was 7.45, CO2 of 22 mmHg, O2 of 156 mmHg, bicarbonate of 15 mmol/L. Corrected anion gap was 33.7. On exam she had frequent muscle contractions of face and extremities. Calcium and magnesium were repleted with resolution of contractions. She was placed on a sodium bicarbonate drip, but anion gap remained high (28) and bicarbonate remained 15 in spite of lactic acid down trending. Urinalysis revealed trace ketones and concern arose for diabetic ketoacidosis causing a persistent anion gap. She was started on an insulin drip and D5W. In less than 24 hours, the patient's anion gap resolved.

IMPACT/DISCUSSION: Combined metformin-associated lactic acidosis and euglycemic ketoacidosis (MALKA) is a unique diagnosis. A diagnosis of euglycemic diabetic ketoacidosis (EDKA) can be made when there is a high anion gap metabolic acidosis, positive urine ketones, and serum ketones with a serum glucose < 250 mg/dL.[1] In our literature review there is one other case-series of MALKA. The pathophysiology of EDKA from metformin has not been fully explained. It is theorized that metformin causes inhibition of gluconeogenesis and stimulation of fatty acid oxidation which results in the underlying ketoacidosis.[2] In the setting of acute kidney injury it is likely this was a case of metformin associated lactic acidosis with concurrent euglycemic diabetic ketoacidosis. Metformin exerts it antidiabetic properties by decreasing hepatic gluconeogenesis and increasing peripheral glucose uptake.[3] It decreases the activity of pyruvate dehydrogenase and shunts towards anaerobic metabolism by increased inhibition of Complex 1 in the electron transport chain of the mitochondria.[4] This shift leads to increased lactate and with decreased clearance from the kidney causes the lactic acidosis.

CONCLUSION: This case was diagnostically challenging due to multiple metabolic derangements and mixed acid-base disorder. DKA masked by euglycemia must be considered when a patient is on oral antidiabetic medications. Untreated DKA is fatal, so a timely diagnosis and starting treatment early is crucial.

Treatment includes insulin and dextrose to reduce ketoacidosis and prevent hypoglycemia. Providers must consider MALKA in patients on metformin with an acid base disorder.

DOUBLE TROUBLE: CHOLANGITIS COMPLICATED BY SEPTIC ARTHRITIS IN A PATIENT WITH GOUT

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LEARNING OBJECTIVE #1: Recognize cholangitis as a cause of septic arthritis

LEARNING OBJECTIVE #2: Diagnose concomitant gout and septic arthritis, with recognition of gout as a risk factor for septic arthritis

CASE: A 69-year-old male attorney presented with four days of nausea, emesis, and bilateral ankle pain, left worse than right. Other associated symptoms included subjective fever and chills. He denied abdominal pain or diarrhea. Past medical history included tophaceous gout, bicuspid aortic valve with surgical replacement, chronic kidney disease, and type 2 diabetes mellitus. He had no prior orthopedic procedures. He consumed three shots of gin daily, but no tobacco or any illicit drugs. Medications included allopurinol, colchicine, aspirin, furosemide, insulin glargine, losartan, pravastatin, omeprazole and tramadol. His temperature was 36.9, blood pressure 132/62, pulse 79, respiration rate 16, and oxygen saturation 94% on ambient air. His ankles were warm, erythematous, and tender to palpation, with reduced active and passive range of motion, especially the left. His abdomen was soft and not tender to palpation. Laboratory evaluation revealed a white blood cell count of 8.7, normal serum aminotransferases, total bilirubin of 1.5, and alkaline phosphatase of 148. He was treated for suspected viral gastroenteritis and received oral prednisone for suspected polyarticular gout of the ankles. On the second hospital day, he developed a fever to 39.2. Peripheral blood cultures grew Escherichia coli. CT of the abdomen revealed choledocholithiasis and thickening of the common bile duct wall. Biliary stone removal was accomplished by endoscopic retrograde cholangiopancreatography (ERCP). His left ankle remained painful and erythematous. CT of the left ankle on the third hospital day revealed an acute pathologic fracture of the calcaneus and foci of gas near the hindfoot. Arthrocentesis revealed 146,000 white blood cells with 95% neutrophils, monosodium urate crystals, and cultures grew Escherichia coli. The left ankle was debrided. He completed a six-week course of ceftriaxone.

IMPACT/DISCUSSION: Septic arthritis requires prompt recognition given its potential to cause significant joint destruction. Bacteremia with hematogenous seeding of the synovial membrane is the most common mechanism, with gram negative bacilli identified as a causative organism in roughly 10-20% of cases of septic arthritis. Although cholangitis causing septic arthritis is uncommon, the risk is increased if a joint has pre-existing synovitis, such as by rheumatoid arthritis or crystalline arthropathy.

CONCLUSION: Cholangitis is a common cause of bacteremia, even in the absence of local pain. Gout increases the risk for septic arthritis, highlighting the need for prompt arthrocentesis to provide diagnostic and therapeutic clarity.

DO YOU HAVE A PROSTATE? EVALUATION OF HEMATURIA IN A TRANSGENDER WOMAN

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LEARNING OBJECTIVE #1: Recognize the clinical implications of prostate-sparing male to female gender affirmation surgery

LEARNING OBJECTIVE #2: Learn to evaluate hematuria in a transgender woman

CASE: A 71-year-old woman presented to her internist with a 1 day history of urinary symptoms including hematuria, urinary frequency, urgency and nocturia. No fever or back pain. Surgical hx was significant for male to female (MTF) gender affirmation surgery 15 years prior. Patient confirmed that the surgery spared prostate and that she had prostatitis in the past. Medications include estradiol transdermal patch.

BP 138/62 mmHg, HR 67. Afebrile. No CVA tenderness or suprapubic pain. Refused genito-rectal exam. Started on nitrofurantoin 100mg BID x 10 days and pyridium 100 mg/day. UA: SG 1.019. Dipstick: 2+ protein, 3+ blood, 2+ leukocyte esterase. Microscopy: 11 WBC/hpf, 8616 RBC, rare bacteria, and no epithelial cells. Urine culture: Serratia Marcescens >100,00 CFU/mL with resistance to nitrofurantoin and sensitivity to ciprofloxacin. Antibiotics changed accordingly.

Patient was referred for urological consultation. By this time, hematuria had resolved. DRE revealed a 20 g smooth symmetric prostate. Urine cytology: negative, with PSA <0.1 ng/mL. All symptoms resolved.

IMPACT/DISCUSSION: When approaching hematuria, common questions include an assessment of associated symptoms, age and gender. For example, the PPV of macroscopic hematuria for urological cancer in men is 22.1% and in women in the same age group it is 8.3%. One important detail to consider in the evaluation of hematuria is the presence of a prostate. Hematuria has a 1% PPV for prostate cancer. Thus, when a man presents with hematuria, prostate cancer must be considered. What about a MTF transgender woman with a prostate?

Radical prostatectomy is not routinely performed in MTF gender affirmation surgery. Therefore, hematuria in this population may be prostate cancer. However, the anti-androgenic effects of hormone therapy in transgender women may suppress the development of prostate cancer. A Dutch study of 2306 MTF transgender patients post orchiectomy treated with estrogen and anti-androgenic therapy found only one case of prostate cancer for a prevalence of 0.13%, compared to a control of 3.18% across 10 years in men without gender affirmation surgery. This demonstrates a marked difference in risk. The investigators suggest that since anti-androgens are used as therapy for active prostate cancer, feminizing hormones may guard against the development of prostate cancer.

CONCLUSION: While the risk of prostate cancer in MTF women may be reduced, it is not absent. The long-term administration of feminizing hormones and orchiectomy do not completely protect these patients from developing prostate cancer, as case studies show. In fact, if prostate cancer occurs, it may be more aggressive. Thus, the evaluation of macroscopic hematuria in anyone with a prostate, regardless of their gender, must include prostate cancer in the differential diagnosis.

DRESSED TO KILL; WHEN A RED RASH IS A HARBINGER FOR SEVERE DRUG REACTION

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LEARNING OBJECTIVE #1: Drug reaction with eosinophilia and systemic symptoms (DRESS syndrome) is a rare and debilitating hypersensitivity reaction. Pathogenesis is believed to involve a drug-specific immune response but is also linked to viral reactivation from the Herpesviridae family. We present a patient with DRESS syndrome with profound HHV-6 viremia who developed fulminant liver failure.

CASE: A previously healthy 21-year-old female recently started therapy with lamotrigine. Three weeks into treatment, she developed a sore throat and fever. Despite negative testing for Streptococcus, she was placed on penicillin. One week later, she presented with persistent fevers, new-onset rash, facial edema, and vomiting. She was febrile, severely tachycardic to 156bpm, tachypneic, and hypotensive. Initial lab work was significant for a moderate transaminitis (AST 382u/L, ALT 536u/L), a WBC of 21,600/mm^3 with an absolute eosinophil count of 600mm^3 and atypical lymphocytes at 950/mm^3. Physical exam showed a critically ill- appearing patient with lip desquamation without mucosal involvement and an erythematous, coalescing morbilliform rash over her trunk, back, and extremities. Lamotrigine and penicillin were discontinued. She received high dose steroids, showed rapid improvement over the next 48 hours and was discharged on prednisone. Four days later, she was readmitted and found to have severe transaminitis, peaking at AST 1609u/L and ALT 2020u/L. A CT scan showed hepatosplenomegaly and axillary lymphadenopathy. Serum HHV-6 quantitative PCR returned with >2,000,000 copies/ml. Liver biopsy immunohistochemistry stained positive for HHV-6. The patient improved with supportive care and a prolonged taper of prednisone.

IMPACT/DISCUSSION: In DRESS syndrome, symptoms typically start 2 to 6 weeks after the initiation of a new medication and usually include fevers, facial edema, and rash. Patients have a high likelihood of developing end-organ damage, most commonly manifesting as liver failure, though severe pulmonary and renal damage have been reported, with mortality reaching 20%. A drug-induced hypersensitivity reaction, commonly to anticonvulsant medications (e.g. lamotrigine), plays an integral role in the pathogenesis of DRESS syndrome. Viral reactivation, often from the Herpesviridae family, is an emerging component of disease pathogenesis and likely influences the overall illness severity. It is suspected that the viremia has direct cytotoxic effects and/or causes an immune response that results in tissue damage. Management of DRESS syndrome includes discontinuation of the offending drug and the addition of steroids in severe disease. Specific antiviral therapy is rarely used, in part due to the toxicity of the agents. Recovery involves a relapsing and remitting course which can often take weeks to months.

CONCLUSION: As illustrated in this case, DRESS syndrome was associated with HHV-6 viremia. Further research is needed to determine if this association harbors prognostic or therapeutic implications.

DRUG INDUCED LIVER INJURY AND PROFOUND HYPERBILIRUBINEMIA IN THE SETTING OF LGD-4033 USE

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LEARNING OBJECTIVE #1: Understand the potential mechanisms of hyperbilirubinemia in hepatocellular injury

LEARNING OBJECTIVE #2: Enhance understanding surrounding the dangers of over-the-counter supplements and improve health literacy in at risk populations

CASE: A 34-year-old male with history of opiate use disorder in remission who presented with painless jaundice that progressed over one month. Patient is a member of the military and was attempting to 'bulk up' prior to his deployment. He took 5 to 10mg daily of a supplement called LGD 4033 (LIGANDROL capsule), a selective androgen receptor modulator, for one month with subsequent discontinuation. He took no other medications. One week after stopping, he developed painless jaundice that progressed over the next month, prompting his admission to the hospital. He additionally reported decreased appetite, worsening pruritus, dark amber urine, and cognitive 'clouding'. At the time of presentation, he was hemodynamically stable. His exam showed no stigmata of chronic liver disease outside of jaundice and scleral icterus. His ALT was 110 IU/L, AST 54 IU/L, Alkaline phosphatase 104 IU/L, gGTP 50 IU/L, NH3 51 uMol/L, and total bilirubin was 28.3 mg/dL with direct bilirubin of 21.6 mg/dL. He had a CT abdomen and pelvis with contrast which showed mild splenomegaly but did not demonstrate any additional pathology. He underwent a right upper quadrant ultrasound which showed no evidence of cirrhosis or underlying liver disease. A liver biopsy was performed which showed inflammation and diffuse cholestasis consistent with drug induced liver injury, but no evidence for additional underlying disease. Additional work-up included an autoimmune panel, chronic liver disease panel, hepatitis serologies, and HIV screen which were negative. His

altered cognition improved with lactulose administration. He left the hospital in stable condition, but his bilirubin remained elevated (29.3 mg/dL) on the date of discharge.

IMPACT/DISCUSSION: DILI is frequently encountered in the clinical setting and is a primary cause of medication discontinuation. The mechanism of injury is not defined in all cases but in adults the end result is often inflammation and resultant cholestasis. Individual genetics and concurrent medications are likely to play important roles. Reports of LGD-4033 causing DILI are rare. Flores et al have shown as similar picture in two other patients taking LGD-4033. One randomized study examined the safety of LGD-4033 in 76 patients and did not report any adverse health outcomes. However this study was underpowered to detect rare adverse events such as DILI and the doses used in the study (0.1mg, 0.3mg, and 1mg daily for 21 days) are significantly lower than what is available in over the OTC preparations.

CONCLUSION: LGD-4033, as well as many other medication supplements, is a potential concerning cause of drug-induced liver injury. More studies are needed to be done to evaluate the safety of LGD-4033 in the general population.

DUAL ANTIPLATELET AND ANTICOAGULATION CAUSING HEAVY MENSTRUAL BLEEDING IN A PREMENOPAUSAL FEMALE; A CASE REPORT WITH LITERATURE REVIEW

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LEARNING OBJECTIVE #1: Assess the safety of dual antiplatelet therapy (DAPT) in combination with direct oral anticoagulants (DOACs) in premenopausal women.

LEARNING OBJECTIVE #2: Manage heavy menstrual bleeding (HMB) in patients who require DAPT for other medical indications.

CASE: 45-year-old female with history of multivessel CAD status post-CABG initially presented with unstable angina for which she underwent angiography with stent placement to the saphenous vein graft. 1-week later she returned with new-onset atrial fibrillation for was started on apixaban. Following week, she presented again with lightheadedness and heavy vaginal bleeding. She was found to have hemoglobin of 5.1g/dl. Her initial physical exam, labs and gynecological workup were negative. In view of active bleeding, apixaban was held. Aspirin and Plavix were however continued due to recent drug-eluting stent placement. She was managed acutely with uterine packing and 3 units of transfusion. Following the acute management, her uterine bleeding stopped, and hemoglobin stabilized. A multidisciplinary team including the patient was involved in decision making regarding long term management. A decision was thus made to stop apixaban, continue DAPT and add medroxyprogesterone. Her uterine bleeding was stopped, and hemoglobin was stabilized by next day. She was planned for elective hysterectomy after 6 months when it will be safe to stop DAPT.

IMPACT/DISCUSSION: Over the last decade, there has been an increase in the incidence of coronary artery disease (CAD) and atrial fibrillation in premenopausal women. Due to this, we are increasingly seeing them on DAPT in conjunction with DOACs. Landmark trials involving DOACs such as ROCKET trial, ARISTOTLE trial, and RELY trial have not included or studied premenopausal women. Recently published PIONEER-AF trial and AUGUSTUS trial that evaluates the safety and efficacy of DAPT and DOACs combination have also excluded this population group. Neither of these trials specified the number of premenopausal women in their study group and the mean age of the study group was >60yrs. Premenopausal women being at higher risk of blood loss as compared to males and post-menopausal women, further studies are needed to assess the safety of these drugs and their combinations in this population. If premenopausal women must be on DAPT and DOACs combination, detailed gynecological evaluation should be performed to identify treatable causes of HMB. Ethyl-estradiol and Medroxyprogesterone acetate both can be used to manage HMB. Our literature review showed that medroxyprogesterone acetate is less thrombogenic as compared to estrogen derivatives. Thus, it should be preferred in managing HMB in females with CAD, especially those who underwent coronary stenting.

CONCLUSION: Caution showed be exercised when prescribing DAPT and DOACs in combination, to pre- menopausal women. If DAPT and DOACs are needed for any indication, detailed gynecological evaluation should be performed and medroxyprogesterone can be used in conjunction to reduce the risk of HMB.

DYSPHAGIA LUSORIA: A DEVIOUS DYSPHAGIA

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LEARNING OBJECTIVE #1: Recognize a rare cause of dysphagia.

CASE: A 57-year-old woman with history of gastroesophageal reflux disease presented to the outpatient clinic with chronic intermittent epigastric pain, progressive dysphagia to solids over several years, and aching substernal chest discomfort with perceived fullness in her throat. Physical examination was unremarkable.

Prior investigations for abdominal pain included a negative cardiac workup. Esophagogastroduodenoscopy (EGD) six years ago revealed mild gastritis. Recent computed tomography (CT) of the abdomen/pelvis was negative for intra-abdominal pathology. A trial of dexlansoprazole and linaclotide provided minimal relief of symptoms. She was referred for repeat EGD given progressive dysphagia and epigastric pain. EGD was negative for gross lesions in the stomach and duodenum, but identified a moderate sized area of extrinsic compression involving the upper one third of the esophagus. Subsequent CT angiography (CTA) of the chest demonstrated an aberrant right subclavian artery arising off the aortic arch distal to the left subclavian artery and coursing posterior to the esophagus. Focal smooth compression of the left lateral thoracic esophagus was reported on barium swallow. Barium swallow failed to identify gastroesophageal reflux despite multiple provocative measures. Clinical presentation and diagnostic findings were consistent with dysphagia lusoria. She was referred to cardiovascular surgery to determine optimal method of treatment.

IMPACT/DISCUSSION: Dysphagia lusoria is a rare congenital vascular anomaly that involves compression of the esophagus by an aberrant right subclavian artery (ARSA) causing dysphagia. ARSA arises distal to the left subclavian artery on the aortic arch traversing posterior to the esophagus. The prevalence of dysphagia lusoria is estimated to be 0.4-0.7%. Sixty to 80% of patients are asymptomatic while the remaining cases result in tracheoesophageal symptoms. The most common presentation is solid-bolus dysphagia consistent with a mechanical obstructive pattern. Other reported symptoms are dyspnea, retrosternal pain, cough, weight loss and abdominal pain. Dysphagia, epigastric pain and retrosternal pain were symptoms seen in our patient. The mean age of symptom onset is 50 years with a slight female predominance. Motility

abnormalities, esophageal stiffening and atherosclerosis with subsequent hardening of ARSA can account for the possibility of a later onset. Dynamic barium swallow studies can be a useful diagnostic screening tool. Endoscopic diagnosis is rare, but if present can manifest as a pulsatile posterior indentation in the upper esophagus similar to our case. CTA chest and magnetic resonance imaging are used to assess disease severity. Surgical correction is reserved in patients with severe symptoms.

CONCLUSION: Our case represents an exceedingly rare diagnosis of a common complaint in an outpatient setting and stresses the importance of a robust differential diagnosis.

DYSPNEA AND HYPOPITUITARISM: A UNIFYING DIAGNOSIS

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LEARNING OBJECTIVE #1: Recognize the heterogeneity in presentation of sarcoidosis.

LEARNING OBJECTIVE #2: Identify the potential consequences of lesions affecting the hypothalamic- pituitary axis.

CASE: A 44-year-old African American man presented with subacute altered mental status, chest pain, and dyspnea. Mental status alteration was clarified as blunted emotion and forgetfulness; review of systems notable for 14-pound weight loss over two weeks, fatigue, headache, and vague report of blurred vision in right eye. Medical history was non-contributory. Vital signs were temperature 36.2 C, pulse 92, blood pressure 132/92, respiratory rate 30, and oxygen saturation 96% on ambient air. Exam demonstrated nasal flaring with clear lungs. He performed 2/3 delayed recall and could not identify the president but was otherwise oriented with no gross neurologic deficits. Labs revealed normal blood counts, ionized calcium mildly elevated to 1.31 mg/dL, ESR 46 mm/hr, CRP 17 mg/L, BNP 22 pg/mL, and negative troponin. Further studies found TSH level <0.01 mIU/L, morning cortisol 2.7 mcg/dL with normal ACTH stimulation test, prolactin level 31 ng/mL, urine osmolality 295 mg/dL, luteinizing hormone 0.5 mg/dL and free testosterone <0.1 pg/mL. Chest x-ray showed possible mediastinal lymphadenopathy, subsequently confirmed on chest CT. Brain MRI revealed homogeneous enhancement of pituitary gland and thickened stalk concerning for neurosarcoidosis involving the pituitary stalk, optic chiasm, hypothalamus, and basal ganglia. Mediastinal lymph node biopsy demonstrated non-caseating granulomatous inflammation with unremarkable flow cytometry, consistent with sarcoidosis. He was treated with corticosteroids and hormone replacement for thyroid, adrenal, and gonadal axes.

IMPACT/DISCUSSION: New diagnoses of sarcoidosis frequently stem from an initial presentation to a general internist and can be marked by heterogeneous and non-specific symptoms. This case presents a rare example of hypothalamic-pituitary involvement, reported in <1% of cases of sarcoidosis. Prior case reports exemplify variability in endocrine disorders that may result, and this case contributes to that literature. The thyroid, adrenal, and gonadal axes were predominantly affected, while this patient developed only mild hyperprolactinemia. He never developed diabetes insipidus, previously described as developing in the majority of pituitary sarcoid cases. Our patient ultimately required follow-up care with neurology, pulmonology, endocrinology, ophthalmology, and rheumatology, highlighting the interdisciplinary nature of sarcoidosis care and importance of the general internist in identifying sarcoidosis organ involvement to recruit appropriate specialty expertise.

CONCLUSION: - Sarcoidosis often manifests with heterogeneous presentation, often initially presenting to the general internist

- Hypothalamic-pituitary involvement is a rare presentation of sarcoidosis

- Type and severity of endocrine disorders are variable in neurosarcoidosis

DYSPNEA FROM STIFF LEFT ATRIAL SYNDROME

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LEARNING OBJECTIVE #1: Provide update on the potential complications of modern atrial fibrillation treatment

LEARNING OBJECTIVE #2: Introduce the role of invasive cardiopulmonary stress testing in the evaluation of dyspnea

CASE: 84-year-old male with atrial fibrillation s/p repeat ablations presented with 2 years of isolated worsening dyspnea on exertion.

On physical examination, his cardiopulmonary exam was unremarkable. Echocardiography revealed preserved ejection fraction with normal left sided chambers, but enlarged right sided chambers. CT chest showed intralobular septal thickening, cardiomegaly and scattered left atrial (LA) calcification consistent with post ablation changes. Spirometry and 6-minute walk test were unremarkable.

He was referred for invasive cardiopulmonary exercise stress testing (iCPET), which is a right heart catheterization during supine bicycle exercise at increasing workloads. At rest, he had pulmonary hypertension (PH) with a mean pulmonary artery pressure (mPAP) of 30mmHg and a normal pulmonary artery wedge pressure (PAWP) of 15mmHg with abnormally high V waves to 45 mmHg. His mPAP increased to 40mmHg at peak exercise and his PAWP increased to 25mmHg with V waves to 80mmHg. In the absence of significant mitral regurgitation, his large V waves were indicative of stiff LA syndrome. An increase in mPAP with increasing exercise load suggested exercise-induced PH. Given the high LA pressures during exercise, he was referred for a left atrial septostomy in order to decompress the pulmonary vasculature.

IMPACT/DISCUSSION: Atrial fibrillation (AF) is the most common arrhythmia and is estimated to occur in 2.7-6.1 million Americans and 9% of people aged 65 years or older. With the aging US population and the recent incorporation of digital technology in the early diagnosis of AF (Apple Heart Study 2019), the general internist will likely encounter and manage more AF than in previous years. The recent Castle-AF trial demonstrated that catheter ablation improves the composite outcome of all-cause-mortality and unplanned heart failure hospitalizations, compared to medical therapy, in patients with AF and symptomatic systolic heart failure. Referrals for catheter ablation are therefore now increasingly common. Refractory AF may require repeat ablations which can cause atrial scarring, decrease compliance and lead to isolated atrial hypertension, a phenomenon known as stiff LA syndrome. In this patient with dyspnea on exertion of unclear cause, iCPET can help make the diagnosis of a stiff LA.

There are no proven therapies for stiff left atrial syndrome. Diuretics can be considered in volume overloaded patients. Pulmonary vasodilators may precipitate pulmonary edema in patients with elevated filling pressures. Atrial septostomy could potentially be considered in select patients with the understanding that it may worsen right heart failure.

CONCLUSION: This case illustrates a very real complication of repeat AF ablations and highlights the role of invasive hemodynamic CPET in the diagnosis of stiff LA syndrome.

DYSPNEA IN MALNOURISHED PATIENT: AN UNUSUAL CAUSE

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LEARNING OBJECTIVE #1: To recognize poor nutritional status as one of the stressors that can cause Takotsubo cardiomyopathy

CASE: A 64-year-old African American female patient with medical history of COPD on home oxygen and an obstructing esophageal mass (negative for malignancy on tissue biopsy) requiring placement of a percutaneous gastrostomy tube for nutrition. She presented to our hospital with a 2-week history of progressively worsening post-feeding abdominal fullness and pain, resulting in refusal of any further enteral feeds.

Upon arrival to the hospital, her vital signs were normal and laboratory investigations were only significant for hypoalbuminemia 1.5 g/dl (normal 3.5-5 g/dl). Chest computerized tomography revealed apical emphysema and hyperinflation with a dependent right upper lobe opacity that was suspicious of aspiration pneumonitis. Empiric broad-spectrum antibiotics were discontinued shortly after presentation given negative culture data.

While in the hospital, she became acutely tachypneic and diaphoretic with impending respiratory failure requiring intubation. Her chest X-ray didn't show any new abnormalities. Electrocardiogram showed >2 mm ST-segment elevation in the precordial leads. Initial troponin I levels were 0.180 ng/mL and serial measurements showed rising values. Antiplatelet therapy was immediately administered in anticipation for an emergent left heart catheterization.

Coronary angiography was unremarkable. Left ventriculography showed an ejection fraction of 30% with hyperkinetic basal segments and akinesia of the apical segments, consistent with Takotsubo cardiomyopathy.

IMPACT/DISCUSSION: Takotsubo cardiomyopathy (TCM) is a transient wall motion abnormality of the left ventricular (LV) apex accompanied with emotional or physical stress that usually resolves completely within weeks. However, there are some reports of serious TCM complications, including hypotension, heart failure, ventricular rupture and torsade de pointes.

The patient described above was diagnosed with TCM after fulfilling all four of the Mayo Clinic's diagnostic criteria. As a newly recognized disorder, much remains unknown about TCM, especially etiology. Other aspects are also puzzling, such as why postmenopausal women are mostly affected and why the apex of the left ventricle is so impaired while the remainder is relatively spared. TCM is a rare but potentially fatal condition, initially indistinguishable from acute coronary syndrome.

Our patient did not have a clear trigger for her overt Takotsubo cardiomyopathy other than poor nutritional status and failure to thrive.

CONCLUSION: Poor nutritional status is one of the stressors that can induce catecholamine release, which is postulated to be behind the pathophysiology of TCM. Optimizing nutritional status should be targeted in such patients.

EARLY-ONSET COLORECTAL CANCER: A "CAN'T MISS" DIAGNOSIS

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LEARNING OBJECTIVE #1: Recognize the epidemiology of early-onset colorectal cancer

LEARNING OBJECTIVE #2: Identify the clinicopathological features of early-onset colorectal cancer

CASE: A 24 year-old woman presented with severe, stabbing, intermittent epigastric pain and 25lb unintentional weight loss over one year. She reported recurrent episodes of diarrhea alternating with constipation, narrow stools, and hematochezia for two months, with weakness and fatigue for several weeks. She had a history of menorrhagia. She was found to have fever, multiple aphthous ulcers in the oral mucosa, tenderness to palpation in the epigastrium and left-sided abdomen. A tender, firm mass was palpated to the left of the umbilicus. She had microcytic anemia (Hb 6.7g/dL) and leukocytosis. CT abdomen and pelvis revealed short segment wall thickening of the distal transverse colon with a 5cm peripherally enhancing lesion in the left mid-abdomen. She underwent exploratory laparotomy with transverse colectomy and pathology confirmed a high-microsatellite instability (MSI-H), BRAF negative, T3N2a, moderately differentiated colonic adenocarcinoma with mucinous features. She had no family history of colorectal cancer (CRC). She is currently undergoing chemotherapy.

IMPACT/DISCUSSION: CRC is the third most common cancer diagnosed annually and is the second leading cause of cancer-related death in the United States. According to data from the National Cancer Institute, while the overall incidence of CRC in the U.S. is decreasing (by 2.5% yearly for patients ≥50), there is a rise in early-onset CRC (EOCRC) in patients under 50 (by 2% annually). When young patients without a family history of CRC present with non-specific symptoms, they are often diagnosed with more common, benign conditions, which may not entirely explain their presentations.

Causes of increasing incidence of EOCRC are poorly understood, but may be related to early life exposures, obesity, physical inactivity, and a diet high in processed foods. 20% of patients with EOCRC have a family history, and 30% are found to have at least one pathogenic cancer susceptibility gene mutation. The remaining 50% of patients with EOCRC have neither family history nor mutations suggestive of hereditary syndromes. Most younger patients do not have tumors with MSI, and those that do tend to be associated with Lynch syndrome.

Patients with EOCRC are more likely to be diagnosed at more advanced stages and have poor prognostic histological features, such as mucinous and signet ring characteristics and poor differentiation. EOCRC is more often found in the distal colon or rectum. Current guidelines recommend earlier screening for higher risk population. However, 70% of cases of EOCRC are sporadic.

CONCLUSION: The incidence of EOCRC is rising and is often not associated with a family history. Therefore, clinicians should consider CRC in patients with suspicious features, despite their young age or lack of family history. Moreover, genetic counseling and testing should be recommended for all patients with EOCRC.

EASTERN EQUINE ENCEPHALITIS PRESENTING WITH ACUTE STROKE

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LEARNING OBJECTIVE #1: Recognize that EEE may present with stroke or focal neurological deficits

CASE: A 74-year-old male with history of past stroke presented with acute onset syncope and altered mental status. Patient returned to mental baseline for several hours before developing fevers and left-sided

weakness. Broad-spectrum antibiotics and acyclovir initiated due to concern for meningitis. CT head and CT angiography revealed new right vertebral artery occlusion and narrowing of the right MCA. Thrombolysis was given and he was transferred to a tertiary medical center for further management. The patient's hospital course was complicated by altered mental status and hypotension requiring pressor support, intubation, hyperventilation, and 3% saline due to concern for herniation. Repeat CT head showed extensive effacement of sulci on right side and flattening of right lateral ventricle.

Further workup included EEG, CSF studies, HIV and Lyme serologies, and New England Tick Panel. While EEG demonstrated evidence of right sided slowing and fast activity attenuation, remainder of studies returned negative except for Eastern Equine Encephalitis (EEE) IgM. Given confirmation of viral infection, antibiotics were discontinued. Vasopressors and sedation were weaned. Patient was started on IVIG and steroids without clinically significant response. MRI on HD8 showed worsening right hemisphere edema extending to deep brain structures and brainstem. Patient's care changed to comfort measures only with subsequent death on HD26.

IMPACT/DISCUSSION: Eastern equine encephalitis is a mosquito-borne *Alphavirus* found primarily in the Atlantic and Gulf Coast states and the Great Lakes region. Rates of EEE have increased this past year. As of December 17, 2019, the CDC reported 38 confirmed cases of EEE. Presenting symptoms are highly variable. The most common presenting symptoms of EEE infection include fever, headaches, nausea/vomiting, general malaise, and confusion.

There have been several reported cases with focal neurological deficits on exam, which may be mistaken for a stroke. Focal lesions on imaging in EEE are commonly documented. However, we note only one other case in which a possible stroke was seen on imaging. While our patient had risk factors for stroke, it raises the question of whether this viral encephalitis could have increased his risk for a cerebrovascular event. Past studies suggest increased risk of stroke following CNS infection, which has been attributed to resulting vasculitis. Such association has been observed in young adults with Herpes zoster. Additionally, there have been case studies of stroke in patients with West Nile Virus and HSV encephalitis. Thus, further assessment of stroke risk in association with EEE infection, should be considered.

CONCLUSION: Presenting features of EEE are variable and can include stroke. Thus EEE should be considered in patients with stroke and associated infectious symptoms.

EFFECTIVE MANAGEMENT OF SEVERE ILLNESS ANXIETY DISORDER UTILIZING COMPREHENSIVE PRIMARY CARE PLUS (CPC+) CARE COORDINATION

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LEARNING OBJECTIVE #1: Recognize the economic burden and underdiagnosis of Illness Anxiety Disorder.

LEARNING OBJECTIVE #2: Utilize integrated primary care models such as CPC+ Care Coordination in the management of Illness Anxiety Disorder.

CASE: A 29-year-old female with a history of tobacco use, depression, IVDU was evaluated in clinic with concerns for palpitations and chest pain. Social history was notable for unemployment, relationship strain, and low socioeconomic status. Over the course of nine months, she had 68 ED visits across four unique healthcare networks. Symptoms varied often and included several organ-systems. She sent frequent EMR messages to her many providers, was well-versed in medical terminology and sought innumerable costly work-ups due to concerns for grave deadly diseases all of which were negative. Patient was established in our primary care clinic and initiated with CPC+ care coordination which included weekly scheduled phone calls with nursing, consistent EMR chat messaging with ancillary staff and regular in-office visits. Impressively, ED visits were entirely eliminated in the two consecutive months post-program enrollment.

IMPACT/DISCUSSION: Illness Anxiety Disorder leads to significant health care use, costing the US health system an estimated $100 billion annually. The condition leads to disproportionately high rates of visits to physicians, specialty consultations, laboratory tests, and surgical procedures. Management strategies focus on brief but frequent regular visits, however, this treatment strategy can be overwhelming and impractical in a traditional primary care clinic.

CPC+ is a unique public-private multiplayer practice transformation model led by the Centers for Medicare and Medicaid Services (CMS). The model de-emphasizes fee-for-service and increases payment to support practice improvement and capacity building. One of the most promising care models is the patient-centered medical home (PCMH) which prioritizes behavioral health needs in the primary care setting. Care coordinators who oftentimes as in our case are nurses are increasingly featured in patient-centered medical home models. In our case, the utilization of CPC+ Care Coordination led to a dramatic reduction in costly health care utilization. Unfortunately, a search of our institution's healthcare network of over three million patients revealed that only 90 patients had been formally diagnosed in the EMR with Illness Anxiety Disorder in the past six months demonstrating that this condition although largely recognized is highly underdiagnosed.

CONCLUSION: Illness Anxiety Disorder is estimated to be present in up to 7% of primary care patients and is underdiagnosed and difficult to manage. Utilization of an integrated primary care system such as CPC+ Care Coordination can result in positive outcomes and enormous health care savings.

ELECTRONIC VAPING-ASSOCIATED LUNG INJURY (EVALI) AMONG THREE YOUNG ADULTS: A CASE SERIES FROM DELAWARE

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LEARNING OBJECTIVE #1: Recognize EVALI frequently presents with nonspecific gastrointestinal and respiratory symptoms and remains a diagnosis of exclusion

LEARNING OBJECTIVE #2: Utility in obtaining and trending biomarkers such as CRP, ESR, bilirubin, and procalcitonin

CASE: Three previously healthy individuals aged 18-20 years, each presented individually after a few days of non-specific gastrointestinal and pulmonary symptoms (nausea, vomiting, cough, dyspnea). Each endorsed electronic vape use of THC-containing products with frequency ranging from daily to thrice weekly. On admission, each patient was tachycardic, dehydrated, and required supplemental oxygen. UDS was positive for cannabinoids in each case. Initial chest x-rays were concerning for multifocal pneumonia and lab work was significant for leukocytosis with neutrophil predominance. All patients were initially started on empiric antibiotics for community-acquired pneumonia. Severely elevated C-reactive protein (>230mg/L) and elevated total bilirubin were observed in each case. Two patients who were tested for

procalcitonin had elevated levels. CT chest with contrast confirmed the presence of bilateral ground-glass opacification and consolidations. Exhaustive infectious, autoimmune, and vascular workups were negative. One patient required direct admission to the ICU where steroid therapy was initiated immediately. The other patients initiated steroid therapy on Days 4 and 5 of hospitalization. After clinical improvement and biomarker downtrending, each patient was discharged on Day 6 of hospitalization with a prolonged steroid taper.

IMPACT/DISCUSSION: To date, over 2,500 hospitalizations and/or deaths have been reported to the CDC. Vitamin E acetate within THC-containing vape products is the leading suspected cause of EVALI. This case series illustrates the salient features of EVALI that are reported nationwide including recent history of vaping THC-containing products and the respiratory and gastrointestinal symptomatology. Bloodwork and imaging findings were consistent with those reported in literature. CRP, procalcitonin, bilirubin, and ESR were initially elevated and downtrend with steroids. We suggest trending inflammatory markers and procalcitonin as biomarkers in supporting a diagnosis of EVALI, which can distinguish the efficacy of antibiotics versus steroid therapy. Hyperbilirubinemia has not yet been published in literature. Each patient was initially started on empiric antibiotics but did not show improvement until steroids were initiated.

CONCLUSION: Despite many recent advances in our understanding of EVALI, there is still a paucity of information known. Classic symptoms include both respiratory and gastrointestinal. Workup typically reveals neutrophilic leukocytosis and a bilateral diffuse process on imaging. CRP, ESR, LFTs including bilirubin, and procalcitonin should be obtained upon admission and trended with different therapies. Diagnosis remains that of clinical indication and corticosteroids remain the mainstay of treatment.

ELEVATED ANA AND CHRONIC URTICARIA: CLINICAL SUSPICION FOR AUTOIMMUNE DISEASE

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LEARNING OBJECTIVE #1: Recognize the presentation of chronic spontaneous urticaria and its association with autoimmune disease.

LEARNING OBJECTIVE #2: Describe the management approach to elevated ANA in patients with non- specific symptoms for potential autoimmune conditions.

CASE: MK is a 22 year old female with a history of contact dermatitis who presented to the clinic with an erythematous, pruritic rash affecting her chest, abdomen, thighs, and wrists of three weeks duration associated with one week of rhinorrhea, sore throat, productive cough, and swollen neck glands. She denied fever, shortness of breath, chest, abdominal, or joint pain, sick contacts, or changes to detergents or soaps. On exam, a scattered morbilliform rash was present on the chest and abdomen without lesions or ulcerations. Nasal exam revealed moderately erythematous and inflamed turbinates; bilateral cervical lymphadenopathy was present. A rapid strep test was positive, and the patient was administered intramuscular benzathine penicillin. Laboratory analysis revealed a highly elevated antinuclear antibody (ANA) titer (1:1,280) with a homogenous, speckled pattern; subsequent analysis showed an identical ANA pattern and negative: anti- double-stranded DNA, anti-Smith, anti-thyroglobulin, and anti-thyroid peroxidase. ESR, CBC, RPR, protein/creatinine ratio, and urinalysis were all within normal limits. On follow-up presentation, faint urticaria were noted on the patient's maxilla bilaterally; the patient was given the diagnosis of chronic spontaneous urticaria (CSU).

IMPACT/DISCUSSION: The diagnosis of an autoimmune disease requires a high degree of clinical suspicion— combining an array of laboratory tests in the context of relatively non-specific patient signs and symptoms. Elevated ANA titers are associated with numerous autoimmune conditions, including systemic lupus erythematosus (SLE), scleroderma, and Graves' disease. Though roughly one-third of all healthy individuals display elevated ANA at an accepted laboratory level (1:40), certain patients may test positive up to decades before the development of an autoimmune disease. CSU is characterized by recurrent urticaria or angioedema for at least six weeks; the condition affects roughly one percent of the general population and is seen in women twice as often as men. Similarly, autoimmune conditions are increasingly diagnosed in patients with CSU and often up to a decade after initial presentation. Elevated ANA is also more prevalent in CSU patients than in the general population. Accordingly, both patients with CSU and elevated ANA should be carefully monitored for the development of signs or symptoms associated with autoimmune disease; those with elevated ANA should have this value trended over time.

CONCLUSION: Appropriately diagnosing autoimmune disease is a challenge due to the combination of non-specific symptoms and laboratory markers. An elevated ANA in otherwise healthy patients with CSU warrants close clinical monitoring for a concurrent or impending autoimmune disease.

ELUSIVE CAUSE OF ACUTE MITRAL REGURGITATION AND DISSEMINATED INTRAVASCULAR COAGULATION: ENTEROCOCCUS FAECALIS INFECTIVE ENDOCARDITIS ONLY DIAGNOSED BY MITRAL VALVE SURGERY

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LEARNING OBJECTIVE #1: Recognize the presence of infective endocarditis (IE) which could be an extreme diagnostic challenge only diagnosed by cardiac surgery.

CASE: A 70-year-old woman complaining dyspnea for 5 days caused by acute mitral regurgitation (MR) was transferred to our hospital. On admission, she had acute heart and respiratory failures and disseminated intravascular coagulation (DIC). Although infective endocarditis was suspected, repeated blood cultures and transesophageal echocardiography (TEE) could not reveal any findings of infective endocarditis. Because the etiology of her condition was not determined by various detailed examinations, mitral annuloplasty, required to treat her mitral regurgitation, was performed for definitive diagnosis and treatment revealing the presence of vegetation on the mitral valve. *Enterococcus faecalis* was detected by cultures of mitral valve and blood after the surgery.

IMPACT/DISCUSSION: The unusual presentations of our case, complicated acute MR and DIC, made the diagnosis extremely elusive. The modified Duke criteria have been used universally to diagnose IE. Positive blood cultures and confirmation of the presence of vegetation by echocardiography are the decision-making points of these criteria. Although three consecutive sets of blood cultures are useful bacteriological tools, 10–30% of IE patients could have negative blood cultures. The two major causes are antibiotic treatments prior to examinations and the involvement of fastidious organisms, which are difficult to culture. TEE is the most useful imaging modality for detecting vegetation with sensitivity of 86%, specificity 97%, positive predictive value (PPV) of 89% and negative

predictive value of 96%. Despite the lack of prior antibiotic therapy, our case did not definitively fulfill the modified Duke clinical criteria on the basis of negative results of 8 sets of blood cultures (8 bottles) and twice repeated TEEs. In such cases, it is mandatory to take cardiac valve operation into consideration as a definitive diagnostic tool. It is reported that 0.9% of patients who were diagnosed as having non-infectious endocarditis and underwent cardiac valve operation were diagnosed with IE after operation. Actually on the present case, we could make the correct diagnosis of IE only by performing surgical operation on the mitral valve, which made it possible to detect vegetation and perform bacterial culture on the valve, growing *E. faecalis.*

CONCLUSION: IE on native mitral valve complicated with acute MR and DIC without underlying systemic disorders, which fails to fulfill definitively the modified Duke criteria, is rare and difficult to be diagnosed correctly. In such case, cardiac surgery could be the only instrument to make a definitive diagnosis.

ENCEPHALOPATHY IN A PATIENT WITH DIABETES

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LEARNING OBJECTIVE #1: Recognize epilepsy as a mimicker of dementia

LEARNING OBJECTIVE #2: Be able to re-evaluate the initial diagnosis when symptoms do not respond to interventions as expected

CASE: A 63 year old woman with type 2 diabetes presented to the emergency department with gait instability, slurred speech, blurry vision, polyuria, and polydypsia after discontinuing her medications five days prior. Physical exam was notable for dysarthric speech with inappropriate response to questions (such as responding "Yes" to "what day is it?") and intermittent inability to follow commands. Her labs were notable for glucose of 698, anion gap 11, sodium 128, and a CT of her head showed no acute abnormalities. She reported resolution of her symptoms after 8 u regular insulin. She was placed on basal bolus and returned to baseline mental status with improved glycemic control.

However, as the patient was preparing for discharge, she again began intermittently answering questions inappropriately despite a blood sugar of 291. On further history, her daughter stated that her mother had seemed less able to care for herself recently. She expressed concern for dementia, and a SLUMS performed at bedside was 7. Further behavioral abnormalities were noted including answering "yes" to every question asked, intermittent schizophasia, and drawing motions in the air. Given the intermittent nature of her symptoms, a long term electroencephalogram was performed and revealed 2-3 temporal lobe seizures per hour. These completely resolved after initiation of levetiracetam. MRI showed only microangiopathic disease, and a repeat SLUMS was 23.

IMPACT/DISCUSSION: Encephalopathy is often a challenging diagnosis for clinicians with many potential causes including structural, metabolic, and psychiatric. We initially thought the cause of this patient's encephalopathy was straightforward hyperglycemia related to non-adherence to diabetes medications. However, prior to discharge her encephalopathy recurred despite improvement in her hyperglycemia. At this point, a repeat history and physical exam led to recognition that her decreased ability to care for herself had occurred over too long a time period to be due to HHS alone and broadening of the differential diagnosis. This case demonstrates the importance of repeated history and physical examination for avoidance of anchoring.

Temporal lobe epilepsy presents most commonly as complex partial seizures. These may manifest externally as staring spells and may be associated with amnesia both before and after the seizure episode, which may explain this patient's apparent recent cognitive decline. Mesial temporal lobe seizures may also manifest with automatisms which in rare cases include vocalization, as with this patient.

CONCLUSION: Because temporal lobe seizures have varied manifestations and are associated with amnestic episodes, they may be mistaken for dementia

Frequent reassessment of the initial diagnosis should be undertaken if the aspects of the clinical picture do not fit with what is expected

EN LAS MANOS DE DIOS: CREATING SPIRITUAL ALIGNMENT WITH LATINO PATIENTS

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LEARNING OBJECTIVE #1: Integrate techniques to apply cultural curiosIty in exploring patient's unique palliative care needs

LEARNING OBJECTIVE #2: Describe techniques for effectively engaging spiritual care providers to enhance patient care at the end of life

CASE: A 66-year-old Spanish-speaking woman with end-stage renal disease on hemodialysis and intra- abdominal tuberculosis was admitted for medical management of a small bowel obstruction. She developed septic shock and required intubation in the intensive care unit. After several days with ongoing decline, the medical team recommended compassionate extubation. The patient's family was strongly opposed to this, citing "hope for a miracle from God". The medical team worried this represented family denial of the severity of her illness and terminal prognosis, and palliative care was consulted.

The patient's family avoided engaging in discussions around goals of care and continued praying for a miracle. A Spanish-speaking palliative care clinician worked closely with a chaplain to share the family's hope for a miracle, creating spiritual alignment with the family. The family was then able to accept that compassionate extubation would not prevent God from granting a miracle. Two days later, the family agreed to compassionate extubation and the patient died shortly thereafter.

IMPACT/DISCUSSION: By 2050, Hispanics/Latinos (Latinos) are expected to comprise over 25% of the U.S. population (US Census Bureau, Projections for the United States: 2017 to 2060). Compared with non-Latino white patients, Latino patients have less access to palliative care and use hospice services less commonly (NHPCO Facts and Figures 2018). Patients from Latino communities frequently cite religion and spirituality as an important strategy for coping with serious illness and as a key factor in healthcare decision- making. Yet, healthcare professionals may not recognize this role of spiritual care near the end of life. In our patient's case, the integration of palliative care and a hospital chaplain into the team to provide spiritual support for the family was critical in creating spiritual alignment. Research has shown that for patients with community spiritual support, receiving spiritual support from a hospital chaplain or medical team was associated with higher rates of hospice, fewer aggressive interventions, and fewer patient deaths in the

intensive care unit (Balboni JAMA 2013). We will outline ways to ask about spirituality and include strategies and language to create partnerships with chaplaincy, patients, and families.

CONCLUSION: The need for culturally sensitive palliative care for Latinos is growing. Palliative care clinicians should become facile with engaging Latino patients and families around spiritual care concerns to provide effective and compassionate care at the end of life.

EOSINOPHILIC GRANULOMATOSIS WITH POLYANGIITIS: ATYPICAL FEATURES IN THE PRESENTATION OF A RARE DISEASE

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LEARNING OBJECTIVE #1: Atypical presentation of Eosinophilic granulomatosis with polyangitis

CASE: A 58-year-old man, with a history of skull base chondrosarcoma treated with multiple transsphenoidal resections, presented with worsening dyspnea and subjective fever for 1 week. He endorsed nasal congestion and frequent sinus infections which started 6 months after his last surgery, all treated with steroids and antibiotics. He was a former smoker. On admission, he denied having chest pain, hemoptysis, rashes, hearing difficulties, joint pains or myalgia, but did note unquantifiable weight loss and anorexia. He endorsed peripheral neuropathy of a year's duration. Vitals revealed low-grade fever, tachycardia, tachypnea and hypoxia with an oxygen saturation of 82% on room air. On exam, he appeared in distress and had scattered rales and wheezing on lung auscultation. Significant labs included a WBC count of 11,500/microL, of which 18.7% were eosinophils with an absolute eosinophil count of 2100/microL. Further work-up revealed positive ANCA (Antineutrophil cytoplasmic antibodies) and PR3 and negative serologies for *Coccidioides sp.*, *Legionella sp.*, and *Aspergillus sp*. A nasopharyngeal swab for viral PCR, Quantiferon test, and blood and sputum cultures were negative. High resolution chest CT showed apical and lingular ground glass opacities with mild bronchiectasis. Histopathology of bronchoscopic sample showed 24% eosinophils and was negative for malignancy. He was started on oral prednisone at a dose of 40 mg daily, inhaled corticosteroids and supplemental oxygen. He showed improvement and was discharged with close pulmonology follow up. Two weeks after discharge, he was seen in the office and was feeling well and had normal spirometry results. We tapered his prednisone gradually. Two months later, he was taking 10 mg of prednisone daily and had increased symptoms of dyspnea. His prednisone was increased to 20 mg and he again had prompt improvement. Authorization for anti-IL5 (benralizumab) therapy was submitted. We expect to start treatment shortly.

IMPACT/DISCUSSION: EGPA is a potentially life-threatening disease with multi-organ involvement. Cardiac complications are responsible for 50% of deaths. It is interesting to note that our patient had never suffered from asthma in the past. His recent transsphenoidal surgery complicated his acute presentation with progressive respiratory symptoms. He had no cardiac, gastrointestinal or skin involvement but met 5 of the 6 ACR criteria as required for diagnosis. As seen in ours, ANCAs are positive in about 40% of cases. Early diagnosis and treatment can prevent organ damage and should be tailored based on the presence of poor prognostic factors. Gold standard remains high-dose corticosteroids +/- cyclophosphamide. Biologics like rituximab or benralizumab are promising alternatives. Late relapses are uncommon and treatment can be discontinued in most patients.

CONCLUSION: Early diagnosis and treatment of atypical presentation of EGPA can prevent organ damage.

EPIDIDYMO-ORCHITIS: HOW A COMMON PEDIATRIC CONDITION PRESENTS IN ADULTS

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LEARNING OBJECTIVE #1: Recognize the presentation of epididymo-orchitis in adults

LEARNING OBJECTIVE #2: Assess a patient's risk factors when they present with unilateral testicular swelling

CASE: A 65-year-old man with a history of multiple systems atrophy, BPH, type 2 diabetes, and asthma presented with several days of lethargy. He had subjective fevers, decreased urine output, and worsening cough. A review of systems revealed a one-week history of unilateral testicular swelling and pain in the setting of a chronic Foley.

In the ED, the patient was febrile to 102.6F, tachycardic to 133bpm, tachypneic to 20 respirations/minute, hypertensive to 162/68, and saturating 96% on room air. He was toxic-appearing, diaphoretic, with increased work of breathing and waxing and waning mental status. Further examination revealed mild diffuse expiratory wheezing and an enlarged tender scrotum with left sided swelling. His cremasteric reflex was intact bilaterally.

Laboratory studies revealed a leukocytosis 44K, Cr 1.35, and lactate 3.64. UA revealed large amounts of leukocyte esterase and 67 WBCs with negative bacteria/nitrites. Scrotal ultrasound demonstrated increased left testicular vascularity consistent with left-sided orchitis. CT abdomen pelvis revealed bilateral hydroceles with increased vascularity of the left testicle supporting ultrasound imaging.

The patient decompensated, becoming hypotensive to 90/60s and requiring hemodynamic support in the MICU. He slowly began to improve with broad antibiotic coverage. His blood, urine, and sputum cultures grew no organisms after several days. His presentation was most consistent with septic epididymo-orchitis secondary to infect enteric gram-negative organism and he was discharged home on PO Levaquin.

IMPACT/DISCUSSION: Epididymo-orchitis is infrequently encountered. Male patients will typically endorse unilateral testicular pain/swelling and may complain of hematuria, dysuria, and increased urinary frequency. Orchitis in men >35 years old is most commonly due to urinary tract pathogen with STIs more commonly in men <35 years old.

The diagnosis of epididymo-orchitis is made clinically. Physical exam reveals tender, swollen, or indurated epididymis, erythematous scrotum or edematous testicle, with an intact cremasteric reflex. Diagnostic workup depends on the suspected cause. Testicular ultrasound is important to rule out testicular torsion. In the case of epididymitis, ultrasound reveals increased blood flow to the affected testis.

In rare cases, epididymo-orchitis can present with sepsis. The condition has been more prominently documented in the pediatric population with few cases in older adults.

CONCLUSION: Patients presenting with sepsis should be carefully evaluated. While exceptionally rare, sepsis can result from untreated epididymo-orchitis.

Risk factors for epididymo-orchitis include a history of recurrent UTIs, prolonged sitting, and BPH.

Treatment should be guided based on the suspected organism after obtaining a detailed sexual history.

EPIPLOIC APPENDAGITIS: A COMMON AND OFTEN OVERLOOKED CAUSE OF ABDOMINAL PAIN

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LEARNING OBJECTIVE #1: Recognize the role of a broad differential diagnosis in seemingly common cases of abdominal pain.

LEARNING OBJECTIVE #2: Assess the need for conservative versus surgical management of epiploic appendagitis.

CASE: A 46-year-old man with a history of GERD and prior appendectomy presented to clinic with 3 days of constant, non-radiating abdominal pain, worsened with deep inspiration and standing upright. There were no associated factors including fever, nausea, anorexia, changes in bowel movements, or NSAID use. Physical exam was relevant for normal vital signs, tenderness to deep palpation of the bilateral lower abdominal quadrants, and absence of peritoneal signs. Initial differential diagnosis included diverticulitis, pancreatitis, cholecystitis, and infectious or ischemic etiologies. CBC, CMP, urinalysis, and lipase all returned within normal limits. CT of the abdomen/pelvis with contrast showed a 4.2 x 1.3 cm fatty lesion anterior to the descending colon in the left lower quadrant with surrounding inflammatory changes, consistent with epiploic appendagitis. The patient was treated with NSAIDS and was pain free after 3 days.

IMPACT/DISCUSSION: Epiploic appendagitis is an acute inflammation and infarction of an epiploic appendage, a 2-3 cm pericolic adipose-filled serosal sac on the outer colon. Infarction is most often due to thrombosis of the tortuous central draining vein that predisposes to torsion. Infarction leads to fat necrosis, associated with an acute dull, constant, non-radiating left lower quadrant pain without rebound tenderness or accompanying symptoms. Though the exact incidence is unknown, predisposing factors include obesity, strenuous exercise, and male gender. As the differential diagnosis usually includes acute appendicitis, diverticulitis, and nephrolithiasis, cases are typically incidentally diagnosed by a CT scan and less frequently by abdominal ultrasound. Characteristic findings include a 3 cm low attenuation paracolic ovoid mass with adjacent fat stranding and peritoneal wall thickening. Blood and urine lab values are unremarkable. Conservative management with NSAIDs or a short-course of opiates is anecdotally recommended. Surgery, either laparoscopic or exploratory laparotomy, is reserved for those with worsening symptoms such as fevers, increasing pain, or recurrent vomiting. This occurs almost exclusively in the presence of one of the rare complications including abscess, gangrenous necrosis, obstruction, or intussusception. Nearly all cases resolve completely within 3-14 days without elevated risk of recurrence.

CONCLUSION: Epiploic Appendagitis is a self-limited process caused by inflammation and infarction of a normal outpouching of pericolic fat, reported in 5% of patients with suspected diverticulitis and 1% of patients with suspected appendicitis. Patients can be managed conservatively in the outpatient setting, but due to its broad differential diagnosis, many undergo unnecessary hospitalization, antibiotic administration, and surgical intervention.

EXTRA-NODAL NATURAL KILLER/T CELL LYMPHOMA (ENKTCL) MIMICKING FACIAL MYOSITIS AND ORAL HERPES

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LEARNING OBJECTIVE #1: Discuss a rare complication of Epstein-Barr virus (EBV) Infection

LEARNING OBJECTIVE #2: Discuss non-infectious etiologies of oral lesions

CASE: A 43-year-old Guatemalan female presented with months of sore throat. Flexible laryngoscopy showed bilateral arytenoid and false vocal fold erythema and edema. She was treated with a proton pump inhibitor and intermittent steroids for months. Six months prior to presentation, she developed right sided facial swelling and ophthalmoplegia. MRI scan showed edema of multiple facial and extraocular muscles. Right temporalis muscle biopsy showed inflammatory myositis. Extensive autoimmune and neoplastic work up was unrevealing. Given imaging findings, she was diagnosed with inflammatory myositis and was started on high dose prednisone. She then developed fever, leukopenia and multiple painful oral ulcers. Her oral swab was positive for Herpes simplex virus (HSV) I PCR, so she was started on acyclovir and fluconazole given appearance of thrush on exam. Despite appropriate therapy, the patient's soft palate ulcerations did not resolve, prompting biopsy of the lesions, as HSV resistant acyclovir is extremely rare. Biopsy showed extra nodal natural killer/T cell lymphoma – nasal type. Further work up included high Epstein-Barr virus (EBV) DNA viral load at 2.4 million and PET – CT scan showing very high fluorodeoxyglucose uptake in sites of presumed myositis such as the face, suggesting lymphomatous involvement.

IMPACT/DISCUSSION: Extra nodal Natural killer/ T cell lymphoma (ENKTL) nasal type (NT) is a rare disease with a predilection in East Asia and Latin America. It is associated with EBV infection in immunocompetent hosts. Presentation commonly includes nasal obstruction, midfacial edema. Palatal ulcers are the most specific sign for this disease. Due to the infiltrative progression presenting as right facial swelling, it remained a diagnostic challenge.

Lastly, her oral ulcers were initially treated as HSV infection given positive HSV PCR, without clinical response. Acyclovir resistant HSV is reported in only 0.3% of immunocompetent hosts, and 4-7% of immunocompromised hosts, making treatment failure in this patient less likely. The atypical location, large size of the lesion and lack of clinical response to acyclovir prompted ulcer biopsy and serum EBV viral load, which led to the final diagnosis of ENKTL.

CONCLUSION: - ENKTL is a rare disease that is closely related to EBV infection. Although EBV infection typically causes either asymptomatic or moderate clinical disease, this case is a reminder that it can present as a life-threatening lymphoproliferative process.

- ENKTL may present as an infiltrative process that mimics rheumatological and infectious processes.
- This case prompts clinicians to ask critical questions and look for alternative diagnosis in the face of treatment failure of common diseases or lack of clinical improvement on current therapies.

FACTOR VIII INHIBITOR: FACTORS TO CONSIDER

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LEARNING OBJECTIVE #1: Diagnose bleeding diathesis with isolated prolonged partial thromboplastin time (PTT) with mixing studies

LEARNING OBJECTIVE #2: Etiology of acquired factor inhibitor should be examined to guide treatment

CASE: A 76 year old female with history of rheumatoid arthritis (RA) presents with spontaneous bruising of the left arm and left leg that progressively enlarged over a few days and were accompanied by moderate pain. Initial workup revealed hemoglobin of 5.8 g/dL with PTT of 94 seconds and normal PT and INR. Mixing studies did not correct. Factor VIII activity was <1% and factor inhibitor level at 9 BU. At outside hospital, she was started on methylprednisolone, cyclophosphamide and given prothrombin complex concentrate and was transferred to our institution. At our institution, she was given Obizur (recombinant antihemophilic factor) with correction of PTT and normalization of factor VIII activity in a day. She received prednisone and cyclophosphamide and was discharged with stability of the intramuscular hematomas. She was seen in hematology clinic a month later and was found to be stable with no new evidence of bleeding. Factor VIII activity sustained within normal limits and PTT closer to the normal range. She was started on a taper of prednisone and cyclophosphamide. Notably, she has a longstanding history of RA with discontinuation of therapy in over a year for unclear reasons but has been previously treated with methotrexate and tocilizumab.

IMPACT/DISCUSSION: Acquired factor VIII inhibitor and subsequent factor VIII activity deficiency is a rare cause for a bleeding diathesis. Autoimmune diseases (RA being the most common) has been described as a risk factor. However, there is still paucity of literature to describe the mechanisms guiding the development of disease in some patients with RA and not others. A study has shown that a current use of tocilizumab for treatment of RA is associated with factor VIII deficiency when compared with treatment with other biologics. However, there is no literature examining the effect on factor VIII levels long-term after medication discontinuation such as in our patient. Secondly, it is unclear whether lack of RA control, such as in our patient, contributes to inhibitor development. There has been a case of disease development with Systemic Lupus Erythematosus flare which improved with control of the autoimmune disease, suggesting that it is a possible mechanism to ponder.

This case challenges our understanding of the factors contributing to development of factor VIII inhibitor and bleeding sequalae. It is possible to speculate that uncontrolled RA and the prior of use of a biologic agent are associated with factor deficiency and have put the patient at a greater risk of disease development

CONCLUSION: Acquired Factor VIII inhibitor can take place in context of rheumatoid arthritis. However, the details of the autoimmune disease activity and its treatment may provide further insights into the etiology of the disease and potentially its treatment

FACTOR XA INDUCED HEPATOBILIARY DYSFUNCTION IN AN EASTERN ASIAN MALE

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LEARNING OBJECTIVE #1: Recognize Factor Xa Inhibitors as potential risk factors for liver injury

LEARNING OBJECTIVE #2: Distinguish whether Factor Xa Inhibitors confer increased risk of acute liver injury in Eastern Asian people

CASE: 72-year-old Chinese Male presents with jaundice, pruritis and elevated liver enzymes six weeks after starting Apixaban following a stroke. Due to hyperbilirubinemia, the patient was switched to Rivaroxaban, an alternate Factor Xa Inhibitor, yet his liver enzymes continued to increased. The patient was admitted to our hospital for further testing. Rivaroxaban was held during his course, along with Atorvastatin and Metformin which the patient took for Hyperlipidemia and Diabetes Mellitus respectively. The patient denied any history of alcohol or drug abuse and all hepatitis testing was negative. Labs showed an elevated Alk phos of 759, AST 204, ALT 475 and a T. Bilirubin of 16.7 (D. Bilirubin of 13.4). CT of his abdomen and MRCP was negative for acute hepatobiliary pathology. One week following discontinuation of Rivaroxaban, the patient's liver enzymes substantially decreased and continued to decrease until back to near baseline four weeks later.

IMPACT/DISCUSSION: We believe that the most likely cause for our patient's acute liver injury was Factor Xa Inhibitors. There was a direct correlation between the initiation of Apixaban and this patient's elevated liver enzymes. Furthermore, the patient's liver enzymes subsequently decreased to near normal levels after permanently discontinuing any Factor Xa Inhibitors. Factor Xa induced liver injury has been recognized as a possible but rare complication of this medication class, due to a mechanism that is not fully understood. The literature has shown that some patients with liver injury due to one Factor Xa inhibitor have tolerated an alternate Factor Xa Inhibitor without recurrence of liver injury. However, our patient continued to have elevated liver enzymes despite being switched to an alternative Factor Xa Inhibitor. This finding raises the concern for a possible increased susceptibility of acute liver injury in Eastern Asian Males on Factor Xa Inhibitors.

CONCLUSION: Factor Xa inhibitors are approved for the prevention of clot formation in non-valvular atrial fibrillation and for treating deep venous thromboembolism and pulmonary embolism. This class of medications are known CYP3A4 and CYP2J2 inhibitors vulnerable to drug-drug interactions and are known to be risk factors for GI bleeding. Although not a common finding, these medications are possible risk factors for acute liver injury, as seen in our patient. Our case serves to raise awareness of the potential risk of acute liver injury in Factor Xa Inhibitors and to open the door for further studies on whether there is an increased risk of liver injury in Eastern Asian people.

FASCINATING FISTULA: A RARE CASE OF CHOLEDOCHODUODENAL FISTULA FROM PEPTIC ULCER DISEASE

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LEARNING OBJECTIVE #1: Identify a rare complication of peptic ulcer disease

LEARNING OBJECTIVE #2: Recognize clues for diagnosis of choledochoduodenal fistula

CASE: A 90 year old man with ischemic cardiomyopathy presented with subacute diffuse abdominal pain, melena, and poor appetite. He was afebrile, not tachycardic nor hypotensive. Abdominal exam revealed mild diffuse tenderness with a positive Murphy's sign. Initial workup revealed a hemoglobin of 9 from a baseline of 12 g/dL, leukocytosis of 12.5, alanine aminotransferase 153 IU/L, aspartate transferase 307 IU/L, and normal bilirubin levels. Fecal occult test was positive. Computed Tomography (CT) abdomen/pelvis was performed, which noted gallbladder distention concerning for possible cholecystitis as well as small amount of pneumobilia. Ultrasound revealed a distended gallbladder filled with sludge without stones, trace pericholecystic fluid, and wall thickening at 5.3 mm, equivocal for cholecystitis. Blood cultures were positive for *E.coli*. Patient underwent esophagogastroduodenoscopy that revealed a

duodenal ulcer with evidence of a recent bleed. Pantoprazole infusion and antibiotics were initiated. Hemoglobin remained stable. He was taken for a laparoscopic cholecystectomy on hospital day 3. It was converted to an open cholecystectomy due to discovery of perforated ulcer with food particles and purulence in the gallbladder neck. Choledochoduodedal fistula secondary to perforated D1 ulcer was discovered. He underwent repair and closure of the duodenal stump. Repeat cultures were negative, his pain resolved, and he was ultimately discharged to subacute rehab.

IMPACT/DISCUSSION: We present a rare case of concomitant acalculous cholecystitis and choledochoduodenal fistula from perforated duodenal ulcer discovered intraoperatively with the only imaging clue being pneumobilia.

In the United States, peptic ulcer disease (PUD) affects about 4.5 million each year. Its main complications include bleeding and perforation. A rare complication is fistulation with choledochoduodenal fistula being exceedingly rare. It is, however, difficult to diagnose due to its overlapping symptoms and imaging limitations.

Although not specific to fistulation, pneumobilia on ultrasound and computed tomography as well as contrast extravasation into the biliary tree in a barium swallow study can elucidate the diagnosis. Often, fistula is only discovered intraoperatively or during endoscopic retrograde cholangiopancreatography. This often leads to delayed diagnosis.

CONCLUSION: Fistula formation is a rare complication of PUD

Concurrent gallbladder disease with known PUD should raise suspicion of possible fistulation, which may impact imaging selection and may necessitate operative management

FATAL CASE OF TYPE B LACTIC ACIDOSIS IN METASTATIC COLORECTAL CANCER

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LEARNING OBJECTIVE #1: Recognize the clinical presentation of Type B Lactic Acidosis.

LEARNING OBJECTIVE #2: Distinguish Type B Lactic Acidosis from other causes of elevated lactate.

CASE: A 60-year-old female with a past medical history of relapsing and remitting colorectal cancer with a history of metastasis to the liver s/p hepatic resections and ablations presented to the hospital for abdominal pain and hypotension after a recent paracentesis. The patient received treatment with cetuximab and pembrolizumab two weeks prior to presentation. Patient's BP was noted to be 77/48, which responded to 2L IVF normal saline. Labs on admission were significant for leukocytosis (29.4) AKI (Cr 1.23, baseline 0.78) hyponatremia (122) and hyperkalemia (6.0). LFTs were normal and the lactate level was 14.5. Peritoneal fluid analysis was initially concerning for spontaneous bacterial peritonitis (SBP) with 474 PMNs, but with RBC correction did not meet criteria for SBP. She remained hemodynamically stable. Despite finding no source of infection, this patient was started on cefepime, flagyl and vancomycin. A CT A/P with contrast was obtained which showed significant increase in tumor burden with extensive mesenteric and peritoneal deposits with omental caking throughout abdomen and pelvis. No new liver lesions noted. Her serum lactate continued to rise despite treatment of possible infection and hemodynamic stability. Antibiotic coverage patient was broadened from cefepime to meropenem. All cultures remained negative. Patient was started on a bicarbonate drip with no improvement. She continued to clinically deteriorate despite hemodynamic stability, with lactate reaching 23.6 and pH reaching 7.11. Calculations showed a pure anion gap (31) metabolic acidosis with appropriate respiratory compensation. In the setting of Type B lactic acidosis, her bicarbonate drip was stopped. Due to poor prognosis, the patient was made DNR-CC and passed 5 days after admission.

IMPACT/DISCUSSION: Lactic acidosis has been divided into two distinct categories: Type A & B. Type A, the most common, is associated with clinical evidence of tissue hypoxia with acidosis resulting from overproduction or underutilization of lactate. Type B has no evidence of inadequate tissue oxygen delivery. It represents a rare and deadly complication of a malignancy, usually hematologic. This is due to the Warburg effect, or the observation that most tumor cells favor anaerobic glycolysis instead of oxidative metabolism, even in the setting of normal oxygen concentrations. Although Type B lactic acidosis is not common outside of hematologic malignancies, this case illustrates that it can be seen in solid tumor cancers. Type B lactic acidosis remains an appropriate consideration when analyzing lactic acidosis in all cancer patients.

CONCLUSION: Type B lactic acidosis should be considered in cancer patients presenting with hemodynamic stability and elevated lactate levels. As it a poor prognostic indicator, goals of care discussions should be initiated early.

FATAL FUNGUS. A STORY OF SOCIAL ISOLATION

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LEARNING OBJECTIVE #1: Recognize the presentation and diagnostic challenges of subacute cutaneous mucormycosis

LEARNING OBJECTIVE #2: Identify social isolation's impact on mortality in the geriatric population

CASE: The patient was an 81 year-old socially-isolated man with a history of well-controlled diabetes and complex cardiac history who presented to the hospital with a large necrotic wound on his forehead. The wound started as a minor abrasion from a fall, which developed into a 3x5 cm erosion with overlying eschar.

Dermatologic evaluation with outpatient biopsy showed fat necrosis with adjacent mixed acute and chronic inflammation and dermal fibrosis. He was presumptively diagnosed with pyoderma gangrenosum. For the following 6 months, his wound fluctuated in size, but progressed despite trials of mycophenolate, prednisone, and mupirocin ointment. He was admitted to the hospital with new facial redness. At the time, he denied pain, headache, or vision changes. He was afebrile and his exam showed a 9x11 cm erosion with eschar on his forehead with accompanying right facial edema. Initial labs revealed a leukocytosis of 26,000 mm3. CT head indicated mild right frontal and periorbital soft tissue swelling without abscess or postseptal orbital extension.

A repeat punch biopsy showed numerous fungi within the dermis and subcutis, consistent with mucormycosis. Infectious disease was consulted and IV amphotericin was started. Debridement in the operating room revealed mucormycotic invasion down to the bone. A xeroform wet dressing was applied to cover the skull, but skin grafting was deferred given his perioperative cardiac risk. After 3 weeks of IV amphotericin, he was switched to oral posaconazole due to worsening creatinine. During his 4th week of hospitalization, his clinical status rapidly deteriorated, requiring intubation and hemodialysis. His medical power of attorney transitioned him to comfort care. He was palliatively extubated and shortly passed after a prolonged 2-month total hospitalization.

IMPACT/DISCUSSION: Although mucormycosis is typically rapidly progessive and found in immunocompromised states, there are rare circumstances of subacute presentation over several months' duration and it may occur in well-controlled diabetic and immunocompetent patients. Additionally, social isolation, particularly in the geriatric population, is positively correlated with increased mortality. In this case, it may have delayed correct diagnosis and was an independent risk factor for mortality.

CONCLUSION: Although typically associated with acute deterioration, cutaneous mucormycosis may present with an indolent course.

Mucormycosis should be considered in necrotic wounds that fail to heal with prescribed treatments.

Early recognition of atypical presentations is important.

Social isolation may impact timely diagnosis and management, particularly in geriatric patients

FEELING LOUSY A CASE OF CHRONIC LICE INFECTION LEADING TO END-ORGAN DAMANGE

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LEARNING OBJECTIVE #1: Diagnosis of lice induced anemia

LEARNING OBJECTIVE #2: Assess populations at risk for lice induced anemia.

CASE: A 53-year-old male presented with subacute progressive generalized fatigue. His past medical history included a hospitalization 7 years prior for syncope, where his workup was notable for heavy lice infestation, severe iron deficiency anemia (hemoglobin [hgb] 6.8 g/dL), and an esophagogastroduodenoscopy which revealed a small healed ulcer in the duodenum. His hgb at outpatient follow-up was 13 g/dL.

On this admission, he was covered with lice on triage and washed with pyrethrin shampoo. Initial workup demonstrated stable vitals, hgb was 3.2 g/dL (MCV 59.8 fl), lactate was 14.4 mmol/L, venous pH was 7.33, bicarbonate was 13 mEq/L, anion gap was 19, creatinine was 1.6 mg/dL and troponin I within normal limits. Serum ferritin was 2.6 ng/mL, total iron was 15 mcg/dL, total iron binding capacity was 331 mcg/dL, transferrin saturation was 4%, and B12 was 505 pg/mL. He received 4 units of packed red blood cells during his hospitalization with resolution of his presenting symptom, and his labs on discharge were hgb 8.8 g/dL, lactate 1.7 mmol/L, and creatinine 1.0 mg/dL. There were no signs of gastrointestinal bleeding during the hospitalization.

The patient was independent with activities of daily living, held odd jobs, and demonstrated decision-making capacity, though he remained apathetic regarding his life-threatening lice infection. He denied toxic habits or psychiatric history, supported by chart review of his previous hospitalizations and rare clinic visits. New York City Adult Protective Services were contacted to assist in de-lousing the patient's apartment, and the patient was discharged home.

IMPACT/DISCUSSION: This is the first case report of a patient with a prior history of lice-induced anemia, presenting again (7 years apart) with end organ damage, as demonstrated by lactic acidosis and acute kidney injury from severe anemia secondary to repeated heavy lice infestation. Given his stable hemodynamics, laboratory findings, and the presumed etiology of his anemia, we suspected he had chronic systemic hypoperfusion and presented after he was no longer able to compensate for his fatigue. It has been estimated that about 3,000 head lice would result in a loss of 0.7mL of blood a day [6] or 1.8L over 7 years. However, there are no published estimates of the number of lice that could infest someone, and no estimates of the potential blood loss from body louse (which are larger and presumably feed more). Although the patient did clinically well with transfusions, his isolated apathy towards his home hygiene was troubling in the absence of intoxication or active psychosis. Unfortunately, all that could be provided was counseling and supportive referrals.

CONCLUSION: Severe and chronic lice infestation can, in rare cases, result in iron deficiency anemia.

In psychiatric, undomiciled, and patients with poor hygiene, lice infestation should be considered a potential etiology of iron deficiency anemia.

FEVER, ARTHRALGIA, RASH, OH MY! AN UNUSUAL PRESENTATION OF ADULT-ONSET STILL'S DISEASE

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LEARNING OBJECTIVE #1: Recognize the clinical features of persistent papular pruritic adult-onset Still's disease (AOSD).

LEARNING OBJECTIVE #2: Develop a treatment plan for patients with AOSD.

CASE: A 31-year-old female with no significant past medical history presented to the ED with three weeks of high fever, sore throat and shortness of breath. She tested negative for influenza but positive for EBV and was discharged with a diagnosis of mononucleosis. She then developed worsening fatigue, dyspnea, lower extremity edema, decreased urine output, knee pain and a persistent pruritic rash of her arms, chest and face. She again presented to the ED complaining of pleuritic chest pain. She denied recent travel, sick contacts or substance abuse. She was febrile to 102.4, tachycardic to 133, and saturating in the low 90s. CT PE showed no signs of pulmonary embolism but was remarkable for bilateral pleural effusions and a circumferential pericardial effusion. Bedside TTE revealed no signs of tamponade. Initial labs were remarkable for a moderate microcytic anemia, leukocytosis of 29K and negative mononuclear spot. Further investigation revealed an elevated ferritin (36915), elevated haptoglobin (519), low reticulocyte count (0.4), normal iron studies, elevated inflammatory markers (ESR 118 and CRP 45) and normal triglycerides. Blood cultures, UA, HIV and remote hepatitis panel were negative. Parainfluenza was positive, but did not explain her overall clinical picture. ANA, dsDNA, C3, C4, C-ANCA and P-ANCA were negative. UPEP was normal but SPEP revealed an M spike. Skin biopsy revealed dyskeratosis with intraepidermal and subcorneal abscesses consistent with AOSD. She was started on 60 mg of IV solumedrol daily and improved clinically within 24 hours of starting steroids. Bone marrow biopsy showed no evidence of dysplasia or malignancy. She was transitioned to anakinra 100 mg daily and oral prednisone 60 mg daily with plans for an outpatient taper.

IMPACT/DISCUSSION: AOSD is an inflammatory disease that typically presents with a triad of fever, arthralgia and a characteristic rash. This is a clinical diagnosis made using the Yamaguchi criteria, which should only be applied once infection, malignancy and other autoimmune disorders have been ruled out. The typical rash in AOSD is a transient, salmon-pink, maculopapular rash predominantly found on the proximal limbs and trunk. However, unusual cutaneous manifestations have been reported including a persistent papular and pruritic form. Patients are treated with immunosuppression including corticosteroids and biologics. It is vital that general internists are aware of AOSD and its various presentations to prevent delays in treatment.

CONCLUSION:

- AOSD is a diagnosis of exclusion. The Yamaguchi criteria should only be applied once infection, malignancy, and other autoimmune disorders have been ruled out.
- Though the typical cutaneous finding in AOSD is a transient salmon-pink skin rash, atypical cutaneous manifestations may present including a rare persistent papular pruritic rash.

FEVER, TACHYCARDIA AND HYPOXIA: SEPSIS OR HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS (HLH)?

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LEARNING OBJECTIVE #1: Include HLH in differential diagnosis among patients with suspected sepsis but unresponsive to antibiotics treatment

LEARNING OBJECTIVE #2: Familiarize with diagnostic criteria for HLH

CASE: A 35 year-old 26-week pregnant female presented with fever and body aches that were not resolved by tamiflu. Her fever was 103.6 F, heart rate 120 bpm, and SaO2 98% on room air. Infectious disease workup was negative and chest X-Ray was normal. She was given fluid resuscitation, ceftriaxone then zosyn for presumed sepsis. Her labs were significant for transaminitis, leukopenia, and thrombocytopenia with bandemia. Extensive infectious workup including anaplasma and rickettsa were normal. Her fetus was safe but the patient's symptoms continue to worsen. Two days after admission, the patient quickly developed severe hypoxemic respiratory failure and required intubation. In addition to another infectious disease workup, the patient underwent extensive rheumatology and hematology workup, which was notable for positive sIL2 and 1601 ng/dL ferritin. Peripheral blood smear was nonspecific. Her repeat abdominal ultrasound showed splenomegaly up to 15.5 cm. A bronchoscopy was unrevealing. The diagnostic criteria of HLH was met. The patient received Intravenous immunoglobulin (IVIG) and dexamethasone, resulting in significant improvement. Three days after initiation of IVIG, her fever subsided and she was extubated.

IMPACT/DISCUSSION: So far, the understanding of adult hemophagocytic lymphohistiocytosis is still lacking. The common etiology of HLH is infection, autoimmune disease, spontaneous or iatrogenic immunosuppression, and post organ transplant. In this case, the etiology of HLH remains unconfirmed. The patient delivered a healthy baby and continues to be followed by hematology and rheumatology. She remains healthy to date. The extensive infectious disease workup was unrevealing, and the fact that her fever subsided shortly after IVIG speaks against infection induced HLH. Whether pregnancy played a role of triggering HLH is unclear as well.

The teaching points of this case are:

1. Recognition of HLH in adults is necessary given its rapid evolution and dismal outcomes if left unrecognized
2. Differentiating between sepsis and HLH is critically important as they are both life threatening but with completely different treatment approaches.
3. The diagnostic criteria of adult HLH requires five of the following: fever > 38.5 C, splenomegaly, two out of three peripheral cytopenia (hemoglobin < 9 g/dL, platelet < 100, 000/microL, absolute neutro count <1000/microL), hypertriglyceridemia and/or hypofibrinogenemia, hemophagocytosis, low NK cell activity, ferritin > 500 ng/mL, and elevated soluble IL-2 receptor alpha.

CONCLUSION: Adult onset hemophagocytic lymphohistiocytosis (HLH) is an aggressive and life-threatening syndrome with a dismal outcome of up to 80% of mortality. Understanding of the disease is limited, however, and the list of triggers associated with secondary HLH is extensive but not well studied.

FEVER IN THE TRAVELING PATIENT

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LEARNING OBJECTIVE #1: How to work up fever in traveling patients

LEARNING OBJECTIVE #2: Recognize the importance of sending diagnostic tests for dengue and complications

CASE: identify mimics of dengue

IMPACT/DISCUSSION: 41 year old F admitted with fever after traveling to Yemen and Dubai. While in Yemen, developed fevers, malaise, severe back pain. Exposure: ate "street food", no known mosquito bites, needle exposures, sexual encounters. Hospital in Yemen r/o malaria (high prevalence in area). Discharged w/ supportive measures. Subsequently traveled to Dubai w/ continued fevers, severe joint pain, mental fogginess, &difficulty breathing. Noted 2 relatives who traveled w/ her who went to the ICU for similar symptoms and received platelet transfusions. Presented to our ED with continued malaise, joint paint and mental fogginess. Physical Exam: unremarkable. labs: WBC 17.8(55% lymph), Plt 135, transaminitis. 1 week later +IgG, IgM Dengue antibodies. negative: blood cultures, Chikungua, HIV, Lepto, EBV

Diagnosis: Based on clinical suspicion in a febrile traveler in a dengue—endemic area (use CDC healthmap which includes recent outbreaks) and a combination of ≥2 clinical findings. Clinical findings include: Nausea/vomiting, rash, joint pains, a +tourniquet test, leukopenia. Our patient was in a dengue endemic area (CDC map also showed Dengue outbreaks during the time she visited) w/ hx of fever, severe joint paint, and nausea. mimics: Chikungua, Zika, need to r/o w/ antibody testing for these infections as well (all spread through infected Aedes species Mosquito).

Some patients will go on to develop "severe dengue" with warning findings after 24-48 hours after fever clears such as: severe bleeding, transaminitis, impaired consciousness, fluid accumulation, ARDS. These patients need acute recognition and transfer to ICU care. Our patient continued to improve w/ supportive Tylenol. She received empiric Ceftriaxone to cover for potential Typhoid (dengue antibodies take around a week to come back)

Treatment: No anti-viral treatment exists. Supportive measures which includes hydration and Tylenol. Prevention: Educating patients prior to traveling to Dengue endemic areas. Importance of mosquito repellant. Patient who develops Dengue, may be eligible for vaccine. Despite prior infections, pts can still get re- infected with other strains, which puts them at an increased risk of developing severe Dengue.

CONCLUSION: Dengue can be quickly recognized based on clinical suspicion and utilizing CDC healthmap with antibody testing distinguishing from mimics (Zika, Chikungua)

Dengue is treated with supportive measures, but the clinincian must be warry of "warning symptoms" that can predict which patients will develop severe dengue and need ICU level care

We can reduce transmission through education and recommending vaccination to those with a history of prior infection to reduce the chance of severe dengue occuring with re-infection with different strains.

FINDING FINGERS POINTING TO LIVER DISEASE

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LEARNING OBJECTIVE #1: Recognize malignancy as a cause of arterial thromboembolism

LEARNING OBJECTIVE #2: Identify the differential diagnosis of arterial thromboembolism

CASE: A 66-year-old man presented with acute gangrene of the digits. There was no history of trauma. Past medical history included recently treated hepatitis C, hypertension, and tobacco abuse with a 120-pack year smoking history. He was a cachectic male with dusky skin. Digits two through on the right hand four were cold bilaterally, with black discoloration noted distally on the second digit. Radial pulse was 2+ bilaterally. TSH, A1C, ABI and WBI were within normal limits. Autoimmune workup, including ANA, anticardiolipin, and beta2-glycoprotein I antibodies, returned negative. EKG and telemetry monitoring did not reveal any arrhythmias.

Transesophageal echocardiogram had no evidence of valvular disease or vegetations. Pathology report from a skin biopsy of the right index finger noted thromboembolism with medium-sized vessel vasculitis. Malignancy workup began with a CT chest, which incidentally revealed three large hypoechoic liver masses, the largest measuring 9.6 x 7.5 cm, in addition to mediastinal and hilar lymphadenopathy. A diagnosis of hepatocellular carcinoma was made by IR guided liver biopsy.

IMPACT/DISCUSSION: Any patient presenting with an arterial thromboembolism (ATE) without history of recent trauma or intervention to the presenting limb should have a thorough cardiac workup as the majority of arterial embolisms that travel to the extremities originate in the heart. Initial evaluation should include the following: EKG and telemetry monitoring to assess for atrial fibrillation, echocardiogram to assess for valvular disease, endocarditis, myxoma, and left ventricular dysfunction, and risk stratification with hemoglobin A1C, lipid panel, and TSH. If no source of ATE is identified, further workup should focus on causes of hypercoagulable states. Antiphospholipid syndrome should be excluded with testing for anticardiolipin and beta2-glycoprotein I antibodies. Malignancy should be considered as a possible etiology with age appropriate cancer screening as early stage cancer carries a significantly increased risk of ATE. In our patient with 120-pack year smoking history, malignancy workup began with lung cancer screening. As with our patient, thromboembolism could be the initial presentation of a malignancy.

CONCLUSION: While cancer is frequently associated with venous thromboembolism, this case highlights the association of arterial thromboembolism and new-onset malignancy.

FIRST, DO NO HARM; THE TREATMENT OF HYPERTENSIVE URGENCY IN THE AMBULATROY SETTING

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LEARNING OBJECTIVE #1: Recognize adverse effects of acutely lowering blood pressure (BP) with oral clonidine in the setting of Hypertensive Urgency (HU)

CASE: 61 year old female with HTN, prior CVA without residual deficits, stage 3 CKD presents to nephrology clinic for follow-up. Her BP was 190/129. She denied headaches, facial droop, nausea/vomiting, changes in speech or vision, chest pain, dyspnea, abdominal pain, or lower extremity edema. She endorsed running out of her usual antihypertensive regimen (lisinopril 20 mg daily) one week prior to her appointment. The rest of her pysical exam was unremarkable with normal cranial nerve examination, no murmurs, or gallops, no bruits; lungs were clear to auscultation bilaterally, and no lower extremity edema. No outpatient labs/imaging were obtained. Patient received 0.2mg clonidine PO in the clinic and refills of her lisinopril prescription. During the drive home, the patient started developing slurred speech and right-sided facial drooping at which point the husband brought her to the emergency department (ER). Upon arrival in the ER, she was found to have a BP of 98/70. Head CT showed no acute intracranial abnormalities. The patient was then given IV fluids, aspirin and admitted to the hospitali. She was diagnosed with diffuse cerebral ischemia from a 100 mmHg drop in systolic BP. MRI demonstrated microhemorrhages in the cerebral hemisphere, cerebellum and brainstem likely secondary to hypertensive vascular disease. She was discharged 3 days later on her home dose of lisinopril with improvement of her symptoms and continued secondary stroke prophylaxis.

IMPACT/DISCUSSION: Hypertensive urgency (HU), defined as acute severe uncontrolled hypertension without end-organ damage, is a commonly seen in the outpatient setting. Despite its association with long-term morbidity and mortality, guidance regarding immediate management is sparse. This case highlights that pharmacologic rapid lowering of blood pressure with clonidine can precipitate ischemic stroke symptoms. Through arteriolar constriction and reflex vasodilation, cerebral autoregulation maintains a constant cerebral blood flow within a wide range of perfusion pressures, ensuring that the brain is protected from higher mean arterial pressures. While this process is protective, over time the autoregulatory system becomes impaired, especially in patients with prior stroke or with end-stage kidney disease. This places patients at risk for cerebral and/or cardiac ischemia with even slight drops in blood pressure. To our knowledge this is the first reported case of stroke symptoms after administration of oral clonidine. Similar side effects were reported with sublingual nifedipine in the 1980s that lead to an FDA ban of the medication in HU.

CONCLUSION: This case questions the safety of acute oral antihypertensive loading to treat HU; this common practice should be reconsidered. Longer-term management of individuals who have experienced HU continues to be an area requiring further study.

FLUOROQUINOLONE INDUCED AORTITIS

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LEARNING OBJECTIVE #1: Understand the differential for causes of aortitis

LEARNING OBJECTIVE #2: Recognize complications of fluoroquinolones

CASE: A 65 year old male with a history of psoriasis previously on Humira and right-sided facial, neck, and pre-septal cellulitis one month earlier that was complicated by group A streptococcal bacteremia who presented with several days of progressive neck pain. The patient had significant clinical improvement on two

weeks of IV penicillin for cellulitis and bacteremia, and his antibiotics were switched to Augmentin and levofloxacin approximately two weeks prior to his presentation. On presentation he was noted to be febrile, had no purpura, and had similar blood pressures in all extremities. His labs showed a WBC of 16, ESR 77, CRP 15.3, and normal renal function. He had a CT-Neck, which showed wall thickening of the ascending thoracic aortic and aortic arch with surrounding mediastinal inflammation. Further imaging did identify abdominal aortic inflammation. Blood cultures were negative, TTE was without vegetations, and RPR, HIV, and IGRA were negative. He was switched back to IV penicillin from levofloxacin and Augmentin, and had quick clinical improvement with resolution of neck pain and fevers. Approximately two weeks later, a repeat CT-Chest showed significantly decreased wall thickening and surrounding inflammation of the thoracic aorta, and the CRP and ESR had normalized.

IMPACT/DISCUSSION: Aortitis is a potentially life threatening finding. The differential for causes of aortitis is broad and includes infectious causes such as staphylococcus, syphilis, mycoplasma, and salmonella; systemic vasculitides such as Takayasu, GCA, Behcet's, IgG4 disease, and small vessel vasculitides; and idiopathic causes. In some cases, a clinically isolated aortitis can be the first manifestation of a systemic vasculitis and thus requires long term monitoring. In this case the negative workup for infectious causes, lack of other features suggestive of a systemic vasculitis, and clinical improvement with drug withdrawal suggests a fluroquinolone induced aortitis.

To date this is the first reported case of suspected fluoroquinolone induced aortitis. Fluoroquinolones have known adverse risks to collagenous structures and can lead to tendinopathy and retinal detachment through unknown mechanisms. The aorta is also a collagen rich structure, and systemic reviews have shown an association with fluoroquinolones and an increased an risk of aortic aneurysms and aortic dissections prompting the FDA to release a safety warning in 2018. The radiologic and clinical findings present in this case may suggest a pathway to explain the association between fluoroquinolones and the increased risk of aortic aneurysms and dissections.

CONCLUSION: This case of suspected fluoroquinolone induced aortitis is the first known to date, and suggests a pathway between fluoroquinolones and the increased risk of aortic aneurysms and aortic dissections.

FLU TO DOCTORS: DON'T YOU EVER TAKE ME FOR GRANTED!

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LEARNING OBJECTIVE #1: To acknowledge how severely Influenza can impact health

LEARNING OBJECTIVE #2: To recognize importance of vaccination and related prevention of illness progression

CASE: A 61-year-old man with asthma and drug abuse was brought by ambulance to emergency department after being found with altered mental status by his wife. Patient had upper respiratory infection symptoms and poor oral intake for five days. He did not receive Influenza vaccine this season. On arrival, patient was confused, hypothermic and in respiratory distress thus was intubated for acute respiratory failure. Physical exam was significant for confusion and ecchymotic skin on abdomen. He later became hypotensive requiring vasopressors. Initial labs revealed Platelets 138, Potassium 6.4, Creatinine 5, pH of 7.01, PCO2 77, Lactic acid 11. AST 1,700, ALT 2,800 and Influenza A positive. CT Abdomen revealed pneumoperitoneum, bowel ischemia as well as bilateral pleural effusions.

Patient was admitted to ICU with multiorgan failure secondary to Influenza and bowel perforation. He was treated with vasopressors, fluid resuscitation, broad spectrum antibiotics and Oseltamivir. Goals of care discussion was held because of very poor prognosis.

IMPACT/DISCUSSION: 36,000 deaths per year are attributed to Influenza; majority are due to underlying conditions or superimposed bacterial infections. It is not completely understood how Influenza predisposes an individual to develop bacterial infections. One proposed mechanism is exposure of respiratory epithelium during viral replication, making it easier for bacteria to adhere. Influenza impairs antibacterial body mechanisms by increasing neutrophil apoptosis, monocyte and neutrophil dysfunction that suppresses chemotaxis and phagocytosis.

Extrapulmonary complications such as multiorgan failure have been described in influenza infections, and have been attributed to high-level viral replication and cytokine dysregulation. Studies had revealed that pro-inflammatory cytokine levels correlate with patient's outcome.

According to CDC, during 2017-2018, vaccination prevented 3.2 million influenza-associated medical visits, 91,000 influenza-associated hospitalizations, and 5,700 influenza-associated deaths. A 2018 study showed that among adults hospitalized with flu, vaccinated patients were 59% less likely to be admitted to ICU if they received the vaccine. In ICU patients with flu, vaccinated patients spent fewer days in the hospital.

In our case, we must keep in mind that patient's severity of presentation can be attributed to Influenza. The fact that he did not get vaccinated might have put him at higher risk of developing further multiorgan failure.

CONCLUSION: During Influenza season, all patients with upper airway respiratory symptoms, fever, sepsis or septic shock should get tested for the flu, most importantly, since prevention is key, patients should be vaccinated to prevent devastating consequences before is too late.

FLYING HIGH: HOW AN AMBULATORY ICU TOOK A NOVEL APPROACH FOR A HOMELESS PATIENT IN NEED OF DAILY INSULIN

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LEARNING OBJECTIVE #1: To consider innovative collaborations between primary care, emergency medicine, and endocrine teams to provide high intensity outpatient care for Type 1 diabetics at risk for complications from independent insulin dosing.

CASE: A 60 year old homeless male with a history of diabetes mellitus type 1, depression and substance use disorder who was hospitalized frequently for hypoglycemia due to intentional insulin overdose. He had a history of abusing acid, opioids, and marijuana. He was admitted frequently for hypoglycemia related to insulin abuse. Several of these episodes were due to reported suicide attempts. On other occasions he overdosed because he reported enjoying the sensation of hypoglycemia similar to abusing other illicit substances. His case was complicated further as he became homeless and was placed into a transitional housing program. He was transferred to the high utilizer clinic at Denver Health Medical Center in September 2018 due to his frequent admissions. His primary care provider (PCP) attempted to manage his diabetes with self-dosing of insulin for approximately a month with persistent episodes of hypoglycemia.

Given his high risk for complications the decision was made to have him come into the clinic each day of the week for insulin dosing administered by clinic staff. He presented to the emergency room on the weekends for daily dosing. His PCP worked with endocrinology to adjust his dosing, and communicated with the emergency department regularly regarding any changes. He agreed to the plan and has been compliant with daily dosing. His admissions have declined from greater than ten in 2018 to two in 2019.

IMPACT/DISCUSSION: Management of type 1 diabetic patients can be complicated even under the best circumstances. This case presents a highly complex scenario of a homeless patient with a history of insulin abuse who was considered too high risk to continue self-dosing. Despite these issues he continued to display capacity and did not wish to live in an assisted living facility. In order to help him maintain his independence and prevent further complications his PCP created an innovative outpatient management plan through collaboration with endocrinology and emergency medicine. It has proved successful by significantly reducing hospitalizations over the past 12 months, and can provide a model for managing insulin-dependent diabetics at risk of insulin overdose in the outpatient setting.

CONCLUSION: 1. Diabetic mellitus type 1 patients with a history of insulin abuse can be very difficult to manage in the outpatient setting

2. Collaboration between internal medicine and other specialties can lead to improved outpatient care for this vulnerable population

FOCAL, YET ATROPHIC, MYOSITIS!

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LEARNING OBJECTIVE #1: Recognize and diagnose Focal myositis (FM), a rare disease process.

LEARNING OBJECTIVE #2: Manage acute and longterm Focal Myositis

CASE: A pleasant 59-year-old female with PMHx of hypertension, hyperlipidemia, and diabetes mellitus type 2, presented to the hospital due to right leg pain. Her pain started 3 weeks after a cerebrovascular accident and had been worsening for 3 months. On physical exam, there was tenderness on the right anterior thigh, and right knee was warm and had reduced flexion. There was no right knee effusion. Lab studies revealed elevated CPK at 372, sedimentation rate of 95, and aldolase of 10.7, while autoimmune panel was negative. MRI of the right femur without contrast revealed diffuse edema involving the subcutaneous and deep compartments more prominently involving the anterior compartment, indicating myositis. There was no focal area of fluid collection. A muscle biopsy was taken and patient was started on empiric steroids and discharged after improvement in pain severity. Final biopsy pathology returned a few weeks later revealing skeletal muscle with features of neurogenic atrophy and Type 2 myofiber atrophy, along with abnormal immunohistochemical staining for MIIC Class I antigens and membrane attack complex C5b-9.

IMPACT/DISCUSSION: This case demonstrates the workup and management of a very rare case of focal myositis with neurogenic atrophy, and serves as a reminder to clinicians to keep a broad differential. An isolated rapidly growing mass within a muscle can cause major pain and be a source of significant stress to our patients. Signs and symptoms of a systemic inflammatory process should be clinically assessed. Laboratory and imaging studies that are routinely and commonly done for an inflammatory musculoskeletal process should be considered. Although focal myositis is likely to show marked hypertrophy of muscle fibers, more rare pathology shows features of neurogenic atrophy, as seen with our patient. Biopsy with positive immunohistochemical staining supports the diagnosis.

CONCLUSION: Most patients have a slow, spontaneous and favorable recovery. Treatment with corticosteroids should be reserved to those with severe pain. Follow up is recommended and necessary to monitor improvement and rule out another non-focal inflammatory myositis.

FOOD FOR THOUGHT

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LEARNING OBJECTIVE #1: Diagnose copper and micronutrient deficiencies in vulnerable populations in settings that are not typical presentations of such disorders.

CASE: 59 year old white woman with a history of Roux-en-Y gastric bypass, depression and vitamin B12 deficiency presented with multiple falls, hallucinations, insomnia and confusion from a skilled nursing facility. Routine labs in the ED revealed a UTI with normocytic anemia and leukopenia. Delirium was attributed to the UTI and patient was started on a course of antibiotics. CT scan of the head was normal. Multiple anti-psychotics were suspended. Serum Iron panel, Vitamin B12, and folate levels were normal. Delirium, however, continued to worsen. Patient underwent a MR brain and LP for CSF analysis; both were normal. Clinical and biochemical indicators of severe protein calorie malnutrition and failure to thrive, along with dysphagia prompted a duo tube placement for tube feeding; later on a GJ tube was placed. Further work-up for anemia, leukopenia and neurological symptoms revealed undetectable serum levels of copper and Vitamin C. Zinc level was normal. A further thorough clinical exam revealed clinical signs of scurvy. Patient was started on IV Copper replacement therapy and oral Vitamin C supplementation. After almost 2 weeks, patient's symptoms started improving. On day of discharge the patient was completely normal, AOx3, without any hallucinations, confusion or insomnia.

IMPACT/DISCUSSION: Patients with history of Roux-en-Y gastric bypass are more likely to have multiple macro and micronutrient deficiencies. This risk is further increased by lack of financial resources to eat a healthy nutritious diet or afford necessary dietary supplements. Copper deficiency is not generally associated with mental status changes, but in combination with the patient's UTI and other nutritional deficiencies, it played a significant role in the delirium. Our patient was only 59 years old, yet she experienced delirium with her UTI, which is more typical in older population. The patient's severe malnutrition had resulted in her being debilitated to the point of being at a skilled nursing facility for a while prior to admission. However, with the correct diagnosis and treatment, her debility resolved quickly.

CONCLUSION: * In patients with gastric surgeries and protein calorie malnutrition, especially if they have limited income, it is very important to diagnose and assess for micronutrient and vitamin deficiency.

* In settings of acute delirium assess for multiple contributing factors to the delirium, including both instigating factors (like a UTI) and chronic underlying factors (like malnutrition) that contribute to causing delirium.

* Hallmarks of copper deficiency are hematological and neurological: anemia, leukopenia, normal platelets and myeloneuropathy.

FORMS OF ELDER ABUSE AND A PROVIDER'S ROLE

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LEARNING OBJECTIVE #1: Recognize categories of elder abuse.

LEARNING OBJECTIVE #2: Understand the importance of reporting elder abuse and adequately addressing challenging ethical cases.

CASE: A 93 year-old man lives with his adult daughter and son-in-law. This living arrangement works for several years, until his health slowly deteriorates and he begins to lose capacity due to progressive cognitive impairment, at which point he appoints his daughter as his proxy.

He is seen by his health care team in his bedroom on the second floor of the family home. The internist has several significant concerns, most notably that his daughter refuses to install durable medical equipment in the family home, including a chair lift, and that he lacks access to food, water, or the restroom while his family is out during the day. The man essentially becomes trapped upstairs as he progressively becomes unable to ascend or descend stairs without assistance. The internist files an elderly protective service (EPS) case. EPS investigates the reports and improvements are made which, per his desire, allow the patient to remain safely in the home—after which the case is closed.

IMPACT/DISCUSSION: Physicians are often faced with challenging situations when caring for the elderly. Attempting to navigate these situations to help patients often requires assisting in socially complex situations that affect patients' health.

While physical abuse is often easily seen, it is equally important to recognize and assist elderly patients when we suspect other forms of abuse. First, we must recognize that isolation, sexual abuse, neglect, misuse and stealing of property, and emotional harm and bullying are all potential forms of elder abuse. Then, we must know what to do with that information. In order for internists to promote the health and wellbeing of this vulnerable population, they must understand how adult and elderly protective services function in their state. For example, in Louisiana, willful lack of reporting by a mandatory reporter can be punishable by law.

Data have shown that at least 10% of adults in the United States aged 65 and older will experience some form of elder abuse in any given year. Consequences of unaddressed abuse can be disastrous. In this particular case, this patient was exposed to abuse in the form of isolation and caregiver neglect. His healthcare team appropriately recognized the abuse and assisted in intervening while maintaining a therapeutic alliance.

CONCLUSION: Unfortunately, the EPS case did not solve all the patient's issues. However, just because complex situations are not "cured" with a single intervention does not absolve the physician's duty to intervene. Without the crucial initial steps of recognizing and reporting elder abuse, vulnerable elderly patients are at an even higher risk for poor outcomes. Thus, recognizing elder abuse and understanding one's role are important in furthering our ability to meet patient challenges, especially in the setting where they may not be able to advocate for themselves.

FRANCIS BACON SYNDROME

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LEARNING OBJECTIVE #1: Recognize the clinical manifestations of disseminated Aspergillus

LEARNING OBJECTIVE #2: Develop an approach for ring-enhancing CNS lesions in immunocompromised individuals

CASE: A 56-year-old man presented after a lung mass was found on CT scan. He noted five days of worsening right-sided weakness and limited vision in his right eye. Past medical history included neurosarcoidosis diagnosed two months prior when he presented with neurologic findings, for which he was being treated with infliximab, methotrexate, and dexamethasone. He was a non-smoker, and he sprayed chemicals on crops for a living, resided in a rural area but no contact with animals. He did not have any significant travel history. Family history was remarkable for malignancy in three relatives, including gynecologic cancer, leukemia, and renal cell carcinoma. He had 4/5 weakness and decreased vibratory sensation of the right lower extremity. He had conjunctival injection and a fixed, mid-dilated pupil of the right eye. There were innumerable rim-enhancing lesions up to 4 cm in size on brain MRI. CSF analysis revealed very high protein without many cells and was negative for Cryptococcus. Blood serologies were unrevealing. Fungitell was strongly positive, and galactomannan was negative. His lung mass was biopsied, which showed fungal hyphae. During admission, the patient developed chemosis of his right eye. His right eye continued to worsen, and he progressed to a point where he was unable to see out of his right eye. Cultures from his eye and lung mass both grew Aspergillus

IMPACT/DISCUSSION: Increasingly, patients are being treated for conditions with immunosuppressant medications, and the risks associated with these medications are something the general internist needs to understand. Aspergillus is a fungus with a broad spectrum of disease, ranging from noninvasive to rapidly fatal in disseminated infections. Disseminated aspergillosis remains a major cause of morbidity and mortality. While disseminated aspergillosis most commonly affects the lungs, the eye is the second most common infection site. Aspergillus endophthalmitis results in a rapid onset of pain and visual loss, and cultures of vitrectomy specimens are frequently required for diagnosis.

In immunocompromised patients, the differential diagnosis of CNS ring-enhancing lesions is broad and includes cerebral toxoplasmosis, primary CNS lymphoma, and CNS fungal infections. For our patient, this differential diagnosis also included worsening of his neurosarcoidosis and malignancy, given his family history. Because our patient had rapid development of both lung and CNS involvement, we were able to focus on infectious etiologies of his presentation, which ultimately led us to a diagnosis of disseminated Aspergillus.

CONCLUSION: Medications that suppress the immune system are being used to treat an increasing number of conditions and the general internist must employ a systematic approach to determine if new symptoms are a progression of the original disease or an effect of its treatment.

FROM FUNDOSCOPY TO BRAIN TUMOR: UNUSUAL CASE OF ATYPICAL MENINGIOMA WITH VISUAL HALLUCINATIONS

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LEARNING OBJECTIVE #1: Effective utilization of fundoscopy can aid in early diagnosis of slow growing meningiomas in minimally symptomatic patients.

LEARNING OBJECTIVE #2: Physicians need to be mindful that classical presentation of elevated intracranial pressure may not be present until very late into disease process.

CASE: 56 year old sales person with past medical history of stable age related bilateral macular drusens presented with three year history of sudden attacks of short lived painless visual disturbance involving left eye. He described flickering lights and wiggly lines lasting for a few seconds before normal vision returned. His visual symptoms resolved spontaneously and he was otherwise healthy with no other complaints. Physical exam was initially unremarkable but fundoscopy revealed new mild bilateral optic disk swelling. Patient underwent MRI orbits which showed no acute pathology, however MRI brain with IV contrast interestingly uncovered a 6.1-cm enhancing mass overlying the right parieto-occipital region with vasogenic edema, regional mass effect and subfalcine herniation. The patient was urgently evaluated by neurosurgery and proceeded with gross total resection. Pathology report confirmed stage II atypical meningioma with parenchymal invasion. At this time patient is nine months status post resection, asymptomatic, with serial MRI Brain scans demonstrated interval recurrence of residual meningioma, likely warranting the need for adjuvant radiation therapy in the future.

IMPACT/DISCUSSION: Clinical presentation of meningiomas can vary widely, depending on size of tumor, location, and temporality. Patients with late presentation may complain of nausea, vomiting, focal neurological deficits, seizures, or in advanced cases can exhibit features of obstructive hydrocephalus including papilledema and classic early morning headache. However, the majority of meningiomas are asymptomatic due to slow growth, often discovered incidentally on neuroimaging studies or at autopsy. In our case the presence of optic disc swelling and visual hallucinations were due to posterior intracranial space occupying lesion affecting the optic tract/radiation, resulting in gradually elevated intracranial pressure. Fundoscopy is a quick and very effective exam in detecting meningioma. Unfortunately this is frequently overlooked by many physicians, leading to delayed diagnosis and treatment.

CONCLUSION: This case explores delayed presentation of atypical meningioma with transient visual hallucinations in an otherwise healthy patient. Effective utilization of fundoscopy can aid in early diagnosis of slow growing meningiomas in minimally symptomatic patients. Internists need to be mindful that classical presentation of elevated intracranial pressure may not be present until very late into disease process.

FROSTBITE ARTHRITIS IN A 33 YEAR OLD MALE

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LEARNING OBJECTIVE #1: Long-term complications of frostbite include tissue atrophy, scarring, peripheral neuropathy, and rarely, arthritis. Here we present a case that illustrates the importance of recognizing unique causes of arthritis.

CASE: 33 y/o undomiciled M originally from Kenya with a history of recurrent pancreatitis and alcohol abuse who presented with acute pancreatitis. During this admission, the patient was noted to have morning stiffness (lasting about 1 hour) and pain in bilateral hand PIP and DIP joints. Of note, two years before his presentation, he had sustained frostbite injury to the bilateral hands, after which he started having swelling and pain in his fingers. A physical examination was notable for enlargement of the proximal interphalangeal (PIP) joints and distal interphalangeal (DIP) joints of the second to fifth digits bilaterally with sparing of the thumbs. X-ray of hands revealed marginal erosive changes in bilateral (L > R) DIP and PIP joints, with sparing of the MCP joints and the joints of the thumbs. Extensive labwork including ANA, dsDNA, RF, C3 and C4, and antiphospholipid serologies was unremarkable. Patient subsequently received Magnetic resonance imaging (MRI) of the hands with and without contrast which showed multifocal bilateral DIP and PIP arthropathy, synovitis, as well as areas of osteonecrosis including medullary bone infarction and avascular necrosis at the articular surfaces. He was started on a trial of Prednisone with symptomatic improvement.

IMPACT/DISCUSSION: Only a few previous case reports spanning over multiple decades have described the development of arthritis following frostbite. Our patient had features of erosive arthritis that were not immediately explained by more common diagnoses such as osteoarthritis or spondyloarthritis. However, the sparing of the MCP joints and the joints of the thumb in the patient is a unique clinical and radiological finding in the diagnosis of frostbite arthritis. Although there were no apparent changes in these joints on X ray in our patient, the MRI showed small areas of osteonecrosis in the left third and fifth metacarpals and right first proximal phalanx, suggesting these joints are also affected but to a lesser extent. Previous reports have indicated that the time interval between frost injury and radiographic changes suggestive of erosive arthritis can be apparent within six months. However, in one case report, the patient's hands were essentially free of symptoms for seven years before he developed stiffness in PIP joints. Our patient was unique in that he had developed some initial pain and swelling but presented with persistent symptoms about two years after the initial exposure. With regards to management, the use of NSAIDs or steroids at low dose, which provided relief to our patient, has been suggested, but the standard management has not been established.

CONCLUSION: The above case demonstrates the importance of obtaining an adequate history when finding new, unexplained erosive arthritis in a patient.

FUNGAL ENDOCARDITIS: ENVIRONMENTAL RISK FACTORS AND CHALLENGING DIAGNOSIS OF A FATAL DISEASE

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LEARNING OBJECTIVE #1: Recognize risk factors associated with development of fungal endocarditis

LEARNING OBJECTIVE #2: Diagnose the etiology of culture negative endocarditis by thorough clinical history and review of histopathology

CASE: A 41-year-old man was admitted to the hospital with acute onset dyspnea and chest pain. He had been discharged from a drug rehabilitation program two days prior and reported relapse with intravenous (IV) heroin.

On arrival, he was afebrile, tachypneic and profoundly hypoxemic. Exam revealed decreased breath sounds at the right base, a systolic murmur at the right upper sternal border, a diastolic murmur at the apex, and pitting edema. There was no evidence of peripheral embolic phenomena. Labs showed a WBC count of 17 $x10^3$/mcL and a lactate of 8 mmol/L. Multifocal consolidations and pleural effusions were apparent on chest radiograph.

He was empirically treated with cefepime and doxycycline for presumed pneumonia, intubated, and initiated on vasopressors. Bacterial blood cultures had no growth. Transthoracic echocardiogram revealed moderate- to-severe aortic insufficiency (AI) with several highly mobile vegetations on the aortic valve (AV).

On hospital day 6, he underwent AV replacement for severe AI. Cultures of the explanted valve had no growth, but tissue pathology uncovered coccobacilli and acute angle branching hyphae consistent with *Aspergillus*

spp. Upon further questioning, he reported using discarded cigarette filters as syringe filters to inject heroin.

Dual coverage with amphotericin B and voriconazole was initiated. After recovery, he started suboxone and long-term voriconazole. Unfortunately, he relapsed and was re-admitted with S.aureus bacteremia.

IMPACT/DISCUSSION: The diagnosis of Aspergillus endocarditis is challenging due to the high frequency of negative blood cultures and lack of infectious signs such as fever in debilitated hosts. Thus, there is high associated mortality due to delays in diagnosis, high incidence of large embolic events, and ineffectiveness of fungal therapy alone. Providers must maintain a high index of suspicion for the disease in order to promptly diagnose and improve the chances of survival.

All diagnostic avenues including detailed history and direct evaluation of tissue should be pursued to clench the diagnosis. In this patient, the use of cigarette filters for IV injection is the suspected source of fungemia, as tobacco and marijuana are known to harbor Aspergillus spores.

Effective treatment of Aspergillus endocarditis involves initial surgical intervention and prolonged antifungal therapy. Given the high risk for fungal relapse, lifelong antifungal therapy is often recommended, and opioid use disorder should be treated to minimize reinfection risk.

CONCLUSION: IV drug use is one of the greatest non-surgical risk factors for fungal endocarditis

Detailed history can provide clues to the microbiologic etiology of the infection

While fungal endocarditis connotes a grave prognosis, early initiation of appropriate medical and surgical management can improve survival

GALLBLADDER AGENESIS AND CYSTIC DUCT ABSENCE IN AN ADULT PATIENT DIAGNOSED INTRAOPERATIVELY: CASE REPORT AND REVIEW OF THE LITERATURE

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LEARNING OBJECTIVE #1: Gallbladder agenesis (GA) is a rare congenital malformation. Majority are asymptomatic. However, symptomatic patients present with clinical picture similar to biliary colic. Work up usually shows contracted gallbladder (GB) on ultrasound (US), and HIDA scan shows non-visualization. Magnetic Resonance Cholangiopancreatography (MRCP) can be helpful in the diagnosis, however, the diagnosis without the latter can only be established intraoperatively. Management should be conservative treatment with antispasmodic drugs.

CASE: 35-year-old female presented to the emergency department (ED) with nausea, vomiting, & worsening right upper quadrant (RUQ) abdominal pain after meals. Stable vitals, tender RUQ. WBC of 12,000, normal liver function test (LFT), and US reported "contracted GB, cholelithiasis, 4.2 mm wall thickeness & no ductal dilation." Surgical consultation was promted by the diagnosis of acute cholecystitis. She was taken for laparoscopic cholecystectomy; however, no GB was found (figure 1). Confirmed by intraoperative Indocyanine Green Cholangiography (Figure 2). The procedure was aborted. Postoperatively, CT scan showed absent GB. HIDA scan showed non-visualization of the GB after 4 hours. Gastroenterologist performed upper enoscopy, that showed gastritis. Upper GI with small bowel follow-through study showed mild delayed gastric emptying & contrast in the colon in 45 minutes

IMPACT/DISCUSSION: GA is a rare congenital malformation 1st described in 1701 by Lemery. Incidence of 10–65 per 100,000. Commoner in females, 3:1 ratio. 70% sporadic. 1st literature review in 1988 by Bennion et al, who categorized GA into 3 types: a) Patients with multiple fetal anomalies, usually die of other congenital defects. b) Asymptomatic, discovered at autopsy. c)Symptomatic, usually with biliary disease picture. GA is attributed to failure of the CBD bud to proliferate/canalize to develop into cystic duct and GB in the 5th gestational week.

The challenge still presents as to diagnose GA before undergoing unnecessary operation. Symptomatic patients with "constricted GB" and hyperechogenic shadows seen on US, are misinterpreted as gallstones. These US findings was previously described as possible duodenal wall and gas shadows by Hammond. HIDA scan confirms the false positive diagnosis of acute cholecystitis, by "non-visualization" of the GB, which is in fact, absent. Malde in 2010 presented an algorithm when it is impossible to visualize GB under US or described as contracted chronic cholelithiasis, to perform additional investigations: MRCP, CT, ERCP, and endoscopic US. MRCP is preferred for diagnosis of GA and it is non-invasive test. We think that other three methods should be chosen if MRCP could not be performed.

CONCLUSION: When US shows contracted GB, additional imaging is required considering the diagnosis of GA. MRCP is the test of choice. Management is usually conservative with smooth muscle relaxants without the need for surgical operation.

GASRTROINTESTINAL BLEEDING DUE TO DIEULAFOY'S LESION

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LEARNING OBJECTIVE #1: To diagnose a rare but potentially life-threatening etiology for upper GI bleeding

CASE: 70 years old male with history of CAD, HF with preserved EF and bladder cancer in remission who presented to the Emergency Department with active hematemesis. He reported four prior episodes of hematemesis earlier that day with severe epigastric and right upper quadrant abdominal pain. His recent history included two previous admissions for active hematemesis during that year.

His vital signs were significant for tachycardia and hypotension. On exam, patient was in moderate distress, actively producing hematemesis. Abdominal exam was significant for a soft, ventral hernia without evidence of incarceration, epigastric and right upper quadrant tenderness without rebound tenderness or guarding, and hypoactive bowel sounds. The remainder of the exam was unremarkable. Labs were significant for hemoglobin of 8.5 g/dL, from baseline of 12 g/dL. He was given 1 unit of blood due to the blood loss and started on pantoprazole as well as ondansetron and morphine for the nausea and pain. He also underwent an urgent esophagogastroduodenoscopy (EGD) and CT abdomen/pelvis. EGD showed a fundal stomach with an actively bleeding and a Dieulafoy's lesion which was controlled with the application of hemostatic clipping. The remainder of the esophagus, stomach, and duodenum were normal. The procedure effectively resolved the patient's hematemesis. CT abdomen/pelvis showed focal robust inflammatory changes at the right hemicolectomy anastomosis, likely responsible for the patient's continued abdominal pain, which improved over his hospital course.

IMPACT/DISCUSSION: This case demonstrates a rare cause of upper gastrointestinal bleeding that is nevertheless associated with high morbidity and mortality if left untreated or missed. Therefore, prompt identification and treatment are warranted. Dieulafoy's lesion (DL) is a relatively uncommon, but potentially life-threatening condition that accounts for approximately 1-2% of acute gastrointestinal (GI) bleeding. Dieulafoy's

lesions are abnormally large submucosal arteries that are at risk of protrusion through the mucosa and spontaneous bleeding. 75% of these lesions appear at the lesser curvature of the stomach within 6 cm of the gastroesophageal junction. These lesions were described by Sir Paul Georges Dieulafoy who studied three young men who died of gastric hemorrhage in 1898 The etiology of these lesions remains unclear. However, they are mainly seen in elderly men with cardiovascular disease, alcohol abuse, diabetes mellitus and kidney disease and those taking NSAID's and warfarin. Endoscopic therapy has shown high rates of success in achieving hemostasis, and in this case, hemostatic clipping effectively controlled the patient's bleeding.

CONCLUSION: Dieulafoy's lesion (DL) is a relatively uncommon, but life-threatening etiology of upper GI bleeding. Esophagogastroduodenoscopy can successfully stop the bleeding.

GASTRIC VOLVULUS: A RARE DIFFERENTIAL IN A YOUNG PATIENT WITH EPIGASTRIC PAIN

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LEARNING OBJECTIVE #1: Identify gastric vovulus as one of the differential in patient with worsening abdominal pain.

LEARNING OBJECTIVE #2: Early imaging and surgical consult if gastric volvulus is suspected

CASE: Patient is a 31 year old obese male with past medical history of hypertension and gastric esophageal reflux disorder(GERD) who came in the clinic for complaints of episodic abdominal pain and recurrent vomiting since the last 2 weeks. Vomiting was intermittent, occurring usually after few hours of eating, non- bloody and non-bile stained. He denied any dysphagia and odynophagia. Pain was intermittent, moderate to severe in intensity on bilateral upper abdominal pain unrelated to food. He denied any hematemesis. He never had EGD or colonoscopy. Remote history of reported hiatal hernia. His vitals were stable, and his work up revealed normal basic metabolic panel and normal CBC. Chest X- ray was done showing supradiaphragmatic air-filled stomach/hiatal hernia. Ct scan was done showing the rotated supradiaphragmatic gastric fundus.

The body, antrum and pylorus along with duodenal bulb was seen herniating into the chest, consistent with mesentero-axial volvulus without obstruction. Surgery was consulted and he underwent laparoscopic repair of the paraesophageal hernia with Nissen fundoplication and laparoscopic gastropexy. Intraoperatively, 2/3rd of the stomach was found herniated which was healthy with no signs of ischemia.

IMPACT/DISCUSSION: Gastric volvulus is a lesser known condition characterized by the abnormal rotation greater than 180^0 of the stomach either in organoaxial axis or in mesenteroaxial axis or both. It is one of the rare entities causing gastric outlet obstruction and is fatal if missed from incarceration and strangulation. It is usually seen at the age 50 and in children less than 1 year old. It can be primary, without any underlying condition or secondary, in association with disorder of diaphragm, stomach or liver. Volvulus can occur in two different axis namely organoaxial, where the stomach rotate around the axis joining the gastroesophageal junction and the pylorus and mesenteroaxial where the stomach rotates around the axis perpendicular to the longitudinal axis running perpendicularly from lesser curvature to the greater curvature. First described in 1866 as a postmortem finding, only about 100 such cases reported in literatures. The mesenteroaxial type, which is seen in our patient, only encompasses 29% of the total incidence and the majorities reported are chronic volvulus and seen more in young adults and children unlike in our patient where it was acute in onset.

The presentation usually depends on the speed and the degree of obstruction. Diagnosis is made through imaging. Barium swallow and abdominal CT have been found equally effective. Surgical repair remains the major modality for treatment.

CONCLUSION: Gastric volvulus is a rare diagnosis, often missed unless suspected. Given the subtle presentation and acuity of the complications, the degree of suspicion for gastric volvulus should be high.

GASTRODUODENAL CROHN'S DISEASE : AN UNCOMMON PRESENTATION

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LEARNING OBJECTIVE #1: Recognize that upper gastrointestinal involvement occurs in less than 15% of all cases of Crohn's disease (CD), with duodenal involvement occurring in only 0.5-4% of these patients.

LEARNING OBJECTIVE #2: Recognize gastroduodenal obstruction as a presenting feature of CD.

CASE: A 73-year-old man presented with nausea, vomiting and epigastric pain for 4 days. His history was significant for stricturing CD of the ileum, for which he had been on maintenance therapy with budesonide and methotrexate. Prior history was negative for any bowel excision surgeries. On arrival, he was afebrile with stable hemodynamics. Abdominal exam revealed hyperactive bowel sounds and mild tenderness to palpation in the epigastric region. Laboratory workup was within normal limits. An upper GI series revealed focal strictures of the third and fourth portions of the duodenum, each measuring 1.5 and 1 cm in length respectively. He was started on treatment with IV fluids, steroids and PPI. He underwent an EGD with push enteroscopy, which revealed erosive esophagitis, gastric antral erythema, a clean-based circumferential pyloric ulcer and six duodenal strictures associated with intermittent areas of ulceration. Balloon dilation of the strictures was performed. Histopathologic evaluation of gastric and duodenal biopsies revealed chronic active inflammation and villous blunting, which was consistent with CD. His condition improved over the next two days and he was able to tolerate a diet. He was then discharged in a stable condition. Six weeks later, he followed up in our GI clinic, when he complained of recurring symptoms of nausea and heartburn. A repeat EGD showed significant pyloric and duodenal ulceration associated with multiple strictures, which had to be dilated again, leading to symptom resolution. Methotrexate was discontinued, and he was started on infliximab. He has been tolerating it well for a few weeks now, and is scheduled to undergo another EGD in four weeks.

IMPACT/DISCUSSION: Gastroduodenal involvement in CD can present with clinical features mimicking peptic ulcer disease and gastric outlet obstruction. Recent studies have shown that use of TNF inhibitors such as infliximab led to good results in complicated disease involving the duodenum. PPIs have been known to provide symptomatic relief. Endoscopy and surgery continue to be the mainstay of treatment. Most patients either require frequent endoscopic stricture dilation or end up getting a bypass surgery with gastrojejunostomy. In such a situation, endoscopic dilation

serves as a safer and less invasive alternative to surgery, without causing complications such as short gut syndrome, anastomotic leak, stomal ulceration and nutritional derangements.

CONCLUSION: CD should be considered as a differential diagnosis in patients with gastroduodenal strictures/obstruction. These patients often require TNF inhibitors and are resistant to steroids. Endoscopic dilations will be frequently required.

GASTROINTESTINAL BLEED DUE TO CANNABIS PROPAGATING EFFECTS ON WARFARIN

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LEARNING OBJECTIVE #1: Cannabis can affect warfarin metabolism and INR levels.

LEARNING OBJECTIVE #2: Cannabis use with warfarin can lead to gastrointestinal bleeding.

CASE: A 76-year-old female with a past medical history of saddle embolus requiring thrombectomy, DVT and atrial fibrillation on warfarin. She had difficulty maintaining a therapeutic Initial International

Normalized Ratio (INR), with values ranging from 1.5 to 5.0 for a few weeks, with several adjustments of her warfarin dose. She had used marijuana for sleep. She was admitted for voluminous bloody stool with clots. She denied chest pain, coffee ground emesis, hematemesis or dyspnea. Vitals on admission: temperature 36.8 Celcius, blood pressure 80/50mmHg, heart rate 65bpm, respiratory rate 18, oxygen saturation 100% on room air. She denied taking her antihypertensive medications that day. Labs on admission: hemoglobin 10g/dl, hematocrit 30.9%, white blood cell count 6.7K/UL, platelets 269K/UL, BUN 24mg/dL, creatinine 1.01mg/dL, prothrombin time 30.5 seconds, activated partial thromboplastin time 37 seconds. Hemoglobin decreased to 6.8 on hospital day 1, initial lactic acid was 3.8 and increased to 4.6mmol/L. Her INR was 2.5, and she was transfused 2 units fresh frozen plasma to normalize her INR with a goal of less than 1.6. Her INR then reduced to 2.0 and received another 2 units of FFP, and she was started on pantoprazole. Computed tomography angiogram showed active right colonic gastrointestinal hemorrhage. She became hypotensive due to gastrointestinal hemorrhage and was started on norepinephrine which was subsequently titrated down with blood pressure stable off pressors. She underwent embolization of a small branch of the mesentery with resolution of hematochezia. Her warfarin was discontinued and she was started on apixaban prior to discharge. In total she received 7 units PRBCs, 4 units plasma and 1 unit platelets.

IMPACT/DISCUSSION: The interaction between various herbs and warfarin,[1] including cannabis has been reported in previous case reports. Studies have shown that delta-9-tetrahydrocannabinol (THC), which is the main psychoactive cannabinoid in cannabis, may inhibit the cytochrome P450 enzyme CYP2C9. Thus, cannabis use may lead to an increased risk of drug to drug interaction with the substrates of this enzyme.[2] There is a paucity of published cases citing elevated INR levels with recreational use of cannabis.[3] With the rising use marijuana and other cannabis based products for medicinal use, the resultant increase of INR in patients on warfarin may lead to unexpected bleeding. Here we present a case of a patient that was admitted for lower gastrointestinal bleed who was using marijuana for sleep.

CONCLUSION: Our patient presented with gross hematochezia on warfarin with limited use of cannabis for sleep. With the use of cannabis in a myriad of formulation, we aim to bring light to the notion that cannabis may possibly be responsible for difficulty in maintaining a therapeutic INR in patients on warfarin, as well as lead to gastrointestinal bleeding.

GAVE AS A RARE CAUSE OF AN ACUTE GI BLEED IN A 35 YEAR OLD MALE

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LEARNING OBJECTIVE #1: Assess GAVE as a cause of an acute GI bleed in young males

LEARNING OBJECTIVE #2: Recognize that even though GAVE is associated with cirrhosis and connective tissue disease, it can also present in absence of the two

CASE: A 35 year-old South Asian-American male with a history of hiatal hernia, GERD, and esophageal spasms was admitted for symptomatic anemia. Patient was complaining of fatigability and dizziness for a few days. He denied bleeding gums, easy bruising, epistaxis, hematemesis, hematuria, melena or hematochezia. Past medical history included palpitations and right femoral neck fracture, and home medications included B12, Lovenox, Fluticasone, and Oxycodone. Past surgical history was significant for a recent right femoral neck fracture repair. Family history was unremarkable and patient is a nonsmoker and nonalcohol drinker. Upon examination, he was pale with stable vital signs, had an unremarkable abdominal exam, but positive fecal occult blood test. At the time of presentation, laboratory data was significant for low hemoglobin (6.6 g/dL) and hematocrit (38.2), normal platelets, and normal WBC count. Previous hemoglobin of 15 g/dL less than a month ago. Patient received blood transfusion. Recent esophagogastroduodenoscopy in July and colonoscopy in April were unremarkable. Patient had high haptoglobin, erythrocyte sedimentation rate, c-reactive protein, INR, prothrombin time, and D-dimer. Normal liver enzymes and normal appearance of liver on abdominal ultrasound. Upper endoscopy was performed, revealing moderate gastric antral vascular ectasia without bleeding in the gastric antrum consistent with GAVE. Negative ANA and centromere antibody. His hematocrit remained stable during his admission. Proton pump inhibitor was initiated and patient was discharged home in stable condition.

IMPACT/DISCUSSION: GAVE aka "watermelon stomach" is a rare cause of chronic gastric hemorrhage and iron deficiency anemia. The name "watermelon stomach" is originated from the endoscopic appearance of rows of red stripes of ectatic mucosal vessels radiating from the pylorus of the stomach in the antrum. GAVE usually causes low-grade GI bleed, and less commonly acute bleeding. GAVE can also be associated with cirrhosis and connective tissue disease (Payne). It has also been reported to be common in patients with scleroderma, calcinosis, esophageal dysmotility, and sclerodactyly (Ward). Median age 74, with 80 % of patients being women. The diagnosis of GAVE is based on endoscopic appearance, and can be confirmed by biopsy. Our case is unique due to patient's young age, male gender, and absence of any underlying liver or connective tissue disease.

CONCLUSION: GAVE is a rare but an important cause of upper GI bleeding. Diagnosis of GAVE can be overlooked in young males but should be considered in obscure GI bleeding. Endoscopic therapy using APC is the main treatment option.

GIVE ME SOME SUGAR: LATE-ONSET HYPOGLYCEMIC EPISODES AFTER BARIATRIC SURGERY

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LEARNING OBJECTIVE #1: Identify nesidioblastosis as a cause of hypoglycemia after bariatric surgery

LEARNING OBJECTIVE #2: Differentiate nesidioblastosis from other causes of post-gastric bypass hypoglycemia

CASE: A 47 year old male with a history of Roux-en-Y gastric bypass (RYGB) 2014 presented with nighttime hypoglycemia. He reported 2-3 months of awakening from sleep disoriented almost nightly with blood glucose in the 30s-40s. Symptoms resolved with juice or glucose tablets, which he started taking 2-3 times daily. He also endorsed mild abdominal pain and nausea without emesis or diarrhea, and unintentional 20-lb weight loss during this time. He denied any fevers, localizing illness, or recent stressors. His diet recently became vegetarian and consisted of many simple starches. He drank 16-18 alcoholic drinks a week.

A1c, serum glucose, insulin, and C-peptide were normal. TSH and random cortisol were normal. Endocrinology was consulted and diagnosed him with post-RYGB nesidioblastosis. He was told to decrease carbohydrate intake and have small frequent meals throughout the day. He was later started on acarbose for persistent symptoms.

IMPACT/DISCUSSION: Nesidioblastosis was seen primarily in infants, but adult-onset associated with bariatric surgery is increasingly reported in the literature. Nesidioblastosis, or non-insulinoma pancreatogenous hypoglycemia syndrome (NIPHS) is hyperplasia of pancreatic beta islet cells, thought to be due to increased growth factor production in response to high nutrient loads presented to the distal jejunum. Cohort studies suggest a conservative estimate of 0.2-1% prevalence in post-gastric bypass patients. NIPHS presents 0.5-8 years after bypass surgery. The differential for post-gastric bypass hypoglycemia also includes insulinoma, dumping syndrome, and medications. Initial labs include serum glucose, insulin, and C-peptide levels. Sulfonylurea, insulin antibody, and glucagon stimulation tests can also be ordered. Imaging and arterial calcium stimulation testing may identify larger insulinomas. Definitive diagnosis is histological, but the clinical presentation, history, and laboratory/imaging work-up can help exclude other likely causes. Mild to moderate NIPHS can be managed with dietary changes and acarbose. Severe or refractory NIPHS is treated with partial pancreatectomy (usually >70%), which can often result in permanent diabetes mellitus.

Bariatric surgeries have been rising in popularity given the rapid effectiveness and associated improvement in metabolic syndrome. However, this case underscores an important complication of bariatric surgery that both patients and physicians should be cognizant of.

CONCLUSION: 1. NIPHS should be considered on the differential for post-bariatric surgery hypoglycemia

2. Presentation, history, labs, and imaging can help to differentiate NIPHS from other common causes of hypoglycemia
3. Treatment is dietary +/- acarbose for mild to moderate cases, and partial pancreatectomy (usually >70%) for severe or refractory cases

GIVING BREATH TO OTHERS

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LEARNING OBJECTIVE #1: - Recognize the clinical advantages to the patient of integrated mental health (IMH) in an internal medicine clinic.

LEARNING OBJECTIVE #2: - Recognize the advantages of a collaborative approach to treatment that includes the clinical social worker, consulting psychiatrist, and primary care provider.

CASE: The patient is a 35-year-old African American male, who relocated for his wife's job. He left behind his support system and was unable to find work in his field. PCP referred patient for mental health treatment following ER visits for cardiac symptoms thought to be related to anxiety.

Patient described symptoms of major depressive disorder and anxiety with panic. His childhood was notable for poverty, neglect and trauma. Trauma history was significant for engagement in gang violence. Protective factors included parental love and support.

The patient's primary concern was panic symptoms followed by difficulty securing employment. This difficulty led to feelings of worthlessness as he had previously gained self-worth through his work. Treatment focused on psychoeducation regarding diagnosis and exercises for affective regulation and managing panic attacks. Immediately following the first session, the consulting psychiatrist recommended Lexapro which the PCP promptly prescribed.

With notable improvement, he found the motivation to return to school to pursue a career as a respiratory therapist. At our final session he remarked: "I recognize that my experience growing up often put me in a position of watching people 'lose their breath' (e.g. die) as a result of gun violence, my chosen profession as a respiratory therapist allows me to give breath to others."

IMPACT/DISCUSSION: Before IMH treatment the patient:

- Had two ED visits predicated by psychosomatic factors
- Was positive for depression and anxiety with panic attacks
- Was unemployed

After IMH treatment the patient:

- Has not had any ED visits
- Is no longer positive for depression and anxiety with panic attacks
- Is pursuing a professional degree

An integrated multi-disciplinary care team in primary care:

- Provides seamless care as all mental health and internal medicine providers are collaboratively managing the patient.
- Empowers the PCP to maximize the benefits of psychotropic medications by leveraging the consulting psychiatrist's expertise.
- Enables the therapist and psychiatrist to leverage the PCP's rapport with the patient.

How does this case add to the literature?

- IMH improves access and patient retention by providing psychiatric treatment through the PCP in the medical home.
- IMH improves care efficiency from the perspective of the patient, PCP, psychiatrist, and therapist.

CONCLUSION: - Due to established rapport with PCP and immediate availability of IMH, patient quickly overcame inertia and readily accepted IMH treatment.

- IMH breathes new life into collaborative care in the primary care setting by making it faster and easier for the treatment team to provide whole person care.

GRANULOMATOSIS WITH POLYANGIITIS PRESENTING AS ACUTE RENAL FAILURE

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LEARNING OBJECTIVE #1: Recognize the highly variable presentation of granulomatosis polyangiitis (GPA)

LEARNING OBJECTIVE #2: Understand the cornerstone of therapy for GPA

CASE: We present the case of a 69-year old female with a history of hypertension who presented for evaluation of persistent congestion, shortness of breath and cough of 1 month's duration after failing multiple courses of outpatient antibiotics. On presentation to another facility, she was afebrile with increased oxygen requirements. Labs revealed anemia and acute kidney injury. Multiple lobar infiltrates were noted on chest x-ray. She was started on treatment for pneumonia. Over the next 2 days she experienced respiratory decompensation with worsening anemia, requiring intubation for hypoxic respiratory failure. Bronchoscopy revealed diffuse pulmonary hemorrhage. C-antineutrophil cytoplasmic antibody (C-ANCA) was positive, anti-glomerular basement membrane antibody was negative and creatinine continued to worsen. Upon transfer to our facility, she underwent treatment with emergent plasma exchange with pulse-dose steroids. Renal biopsy revealed necrotizing, crescentic glomerulonephritis. The renal biopsy was pauci-immune on direct immunofluorescence, confirming the diagnosis of granulomatosis with polyangiitis (GPA). Although her renal disease quickly necessitated hemodialysis, she experienced improvement in her respiratory symptoms and was extubated. She was transitioned to oral prednisone and monthly intravenous cyclophosphamide and unfortunately continues to require intermittent hemodialysis.

IMPACT/DISCUSSION: Granulomatosis with polyangiitis is an ANCA-associated inflammatory disease of small blood vessels. The symptoms of GPA are extremely variable and can include multiple sites/organ systems. Respiratory and upper airway symptoms including rhinosinusitis, cough, shortness of breath, and hemoptysis are most common symptoms, though hemoptysis is only present in two-thirds of patients. Patients also present with systemic symptoms of fatigue, weight loss, fever, and arthralgias.

Prompt recognition of GPA is essential as studies estimate two-year mortality rates up to 90% in untreated patients. The cornerstone of therapy is glucocorticoids combined with immunosuppressive agents. Most regimens prefer the use of cyclophosphamide or rituximab, although methotrexate can be used in less severe cases. One trial (CYCLOPS) showed that monthly IV cyclophosphamide had higher relapse rates but lower rates of adverse events when compared to oral daily dosing of cyclophosphamide. In select populations, including patients with rapid worsening of kidney function and pulmonary hemorrhage, there is evidence that supports the use of plasma exchange in addition to steroids and immunosuppressive therapy.

CONCLUSION: Our patient highlights the variable presentation of GPA, often leading to a delay in diagnosis. As in this case, patients with severe disease may benefit from a combination of steroids, immunosuppressive therapy, and plasma exchange.

GRAVE EFFECTS FROM DELAYS IN CARE OF THYROID EYE DISEASE

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LEARNING OBJECTIVE #1: Recognize clinical characteristics of thyroid eye disease (TED)

LEARNING OBJECTIVE #2: Diagnose TED in the absence of typical hyperthyroidism

CASE: A 54 year old man with 40 pack year smoking history presented with vision loss.

His sympoms began nine months prior with watery eyes, and were attributed to allergies. His vision deteriorated, and he was referred to Ophthalmology. Due to insurance issues, he did not re-present for another six months. He reported a shadow over the center of his left-eye visual field. Visual acuity was 20/30 on the left and 20/25 on the right. Exam was notable for bilateral lid retraction, conjunctival injection, and exophthalmos; 24 mm on the right and 29 mm on the left. Left eye had red desaturation and an afferent pupillary defect. There was no goiter.

He was hospitalized due to concern for TED with left optic nerve compression. Orbital CT showed asymmetric extraocular muscle enlargement and crowding of the left orbital apex. He had a TSH of 7.44 uIU/mL, T4 of 8.0 ug/dl, Free T4 of 1.12 ng/dl, and rT3 of 17 ng/dl. Antibody serology was positive for: thyroid peroxidase (anti-TPO) at 17 IU/ml, TSH receptor (TRAb) at 24.6%, and thyroid stimulating immunoglobuin (TSI) at 450% baseline. Thyroid ultrasound was unremarkable.

The patient was treated with 3 days of intravenous steroids with drastic improvement. He was discharged on levothyroxine, and underwent a total thyroidectomy one month later. Post-operative visual acuity was 20/25 on the left, and 20/20 on the right.

IMPACT/DISCUSSION: TED is an autoimmune disease of orbital and pre-orbital tissue that commonly occurs with hyperthyroidism, where TSI mimics TSH by binding to thyroid hormone receptors, leading to increased hormone production. Increased thyroid receptor activation and increased IGR-1R activity lead to exopathalmos due to stimulation of orbital fibroblasts.

This case illustrates the 10% of atypical presentations where TED occurs without hyperthyroidism. The elevated TSH was likely due to transient hypothyroidism in the setting of Graves' disease rather than Hashimoto's thyroiditis, in keeping with the patient's TSI and prior heat intolerance. Elevated TSIs occur in 80-90% of Graves' disease but in only 10-20% of Hashimoto's thyroiditis. Anti-TPO antibodies occur in 50-80% of Graves', and 90-100% of Hashimoto's.

CONCLUSION: The patient's lack of insurance, low health literacy, and difficulty navigating the system contributed to his delayed, sight-threatening presentation. Early interventions with social work support may have prevented his deterioration and 3 day hospitalization.

Despite atypical hormone levels, this clinical presentation was classic of TED, with eyelid retraction, seen in 91% of patient's, and proptosis, seen in 62% of patients. Lastly, this case highlights the importance of counseling of smoking cessation, as it is one of the strongest risk factors associated with TED. In patients with Graves' disease, the number of cigarettes smoked after diagnosis had a greater association with TED than lifetime use.

HAILEY HAILEY DISEASE

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LEARNING OBJECTIVE #1: Recognize the rash and inheritance pattern of Hailey-Hailey disease (HHD)

LEARNING OBJECTIVE #2: Management of Hailey Hailey disease

CASE: A 54-year-old man presented with groin pain, fevers, and urinary urgency for 3-4 days. Medical history included HHD with 20 years of painful blisters in his axilla, groin, and antecubital and popliteal fossae

often complicated by abscesses. Medications were chronic suppressive doxycycline, tramadol and topical clobetasol. His maternal great-grandmother, grandfather, mother, and sister all had HHD. On exam, heart rate was 106, afebrile. He had a tender, fluctuant, erythematous left hemi-scrotal mass, hyperpigmented macules and erythematous papules with hemorrhagic and serous crusts forming plaques on the axilla, groin, buttocks, and antecubital and popliteal fossae. Labs showed a leukocytosis of 24.5 and creatinine of 3.42 (baseline 1.5). Imaging showed a 7 cm heterogeneous fluid collection in the left hemi-scrotum suggesting an abscess. After incision and drainage and broad-spectrum antibiotics, he rapidly improved. He was discharged on ciprofloxacin followed by resumption of doxycycline. At Dermatology clinic follow-up he was started on naltrexone for severe HHD.

IMPACT/DISCUSSION: Discussion: Hailey-Hailey disease, or familial benign chronic pemphigus, is a rare autosomal dominant disease. It is due to haploinsufficiency of the enzyme ATP2C1, (folded from the protein hSPCA1), which disrupts intercellular desmosomes causing acantholysis. Age of onset is 20-40 years. It symmetrically affects flexural areas, sparing mucosa. Flaccid vesicles on erythematous skin progress to macerated, exudative plaques of erosions with crusts. Postinflammatory hyperpigmentation is common. 70% have linear white bands on the nails. Colonization and infection with bacteria (*Staphylococcus*, *Streptococcus*) and fungi (dermatophytes, *Candida*) is common. Sweat, friction, UV radiation and infection are exacerbating factors. Diagnosis is via exam, history, and biopsy with a "dilapidated brick wall" appearance. A lack of oral lesions and intercellular antibodies distinguishes it from autoimmune pemphigus. Average time to diagnosis is 8 years, as it may be misdiagnosed as intertrigo, dermatitis, or inverse psoriasis. Therapy involves controlling exacerbating factors, infection and inflammation. Standard treatment is topical and systemic antibiotics and/or steroids, and Botulinum toxin or glycopyrrolate may reduce sweating. Severe cases can be treated with low-dose naltrexone, methotrexate, cyclosporine, tacrolimus or acitretin. Recalcitrant cases are treated with surgical or laser therapy. It has a chronic relapsing and remitting course. Patients have a normal life expectancy but with impaired quality of life.

CONCLUSION: The rarity and presentation of Hailey-Hailey disease can cause significant delay in diagnosis and treatment. Internists may benefit from familiarity with its manifestations and complications.

HASHIMOTO'S HYPOKALEMIA

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LEARNING OBJECTIVE #1: To recognize hypothyroidism as a precipitant of rhabdomyolysis in the setting of hypokalemia

CASE: A 43-year-old man with history of hypothyroidism and hypertension presented with diffuse muscle cramps and weakness of his extremities. The symptoms initially started one week prior to admission while he was working his construction job and became progressively worse. On admission, he was hypertensive to 190/90 with physical exam notable for difficulty with extension and flexion of his extremities and digits. His initial creatine kinase (CK) was greater than 37,000, potassium was 2.7, urine pH was 6.5, and creatinine was 1.3. Aggressive fluid repletion was initiated. Thyroid stimulating hormone (TSH) was found to be 96, with a free thyroxine (FT4) of 0.3 and anti-thyroid peroxidase antibodies over 1000, so levothyroxine was initiated. CK improved by about 5,000 per day. He also required daily potassium repletion during this time. On follow- up one month later, CK levels were within normal range, TSH and FT4 improved to 0.5 and 1.7, respectively, and the patient no longer required potassium supplementation.

IMPACT/DISCUSSION: Hypothyroidism commonly presents with cold intolerance, weight gain, and myopathic symptoms such as fatigue, cramps, and myalgia. Mild elevations in creatine kinase are not uncommon, however rhabdomyolysis can be a rare but serious complication of severe hypothyroidism. It is diagnosed by a level of creatine kinase that is at least five times the upper limit of normal. Typically, the onset occurs with a precipitating factor such as use of statins, trauma, alcohol abuse, or an electrolyte abnormality. In this case, hypokalemia induces necrosis in muscle tissue by causing vasoconstriction leading to impaired blood flow to muscles. Distal renal tubular acidosis, a cause of hypokalemia, has been associated with autoimmune conditions such as Sjögren syndrome, systemic lupus erythematosus, and autoimmune hypothyroidism. While the pathophysiology has not been fully elucidated, it is thought to involve the production of auto-antibodies against intracellular carbonic anhydrase II or acid-base transporters of alpha- intercalated cells in the distal nephron. Aggressive fluid repletion may not suffice to prevent these patients with rhabdomyolysis from developing renal failure, and such patients require additional potassium supplementation and initiation of thyroid replacement therapy.

CONCLUSION: In patients with rhabdomyolysis caused by hypokalemia, hypothyroidism should be considered since treatment of the underlying cause is important in preventing the progression and serious complications of rhabdomyolysis.

HEART-TO-HEART: THE CURE TO CHEST PAIN

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LEARNING OBJECTIVE #1: To recognize the social stigma associated with substance use and how it affects provider perception

CASE: A 57-year-old man presented to the ED for 2 weeks history of exertional chest pain, usually relieved upon rest. His symptoms progressed to persistent chest pain. He initially hesitated in seeing a medical provider and only decided to come to the ED at the repeated behest of his partner. Past medical history was notable for CAD with stents placed at age 33. Patient was not taking any medications. He reports 50 pack year smoking history and uses crack cocaine weekly. EKG showed inverted T waves in the inferior leads. Troponin was 3.63. Toxicology screen was notable for cocaine and cannabinoid. Patient was started on dual anti-platelet agents and heparin. Upon initial discussion, patient was not interested in further cardiac intervention. The provider also felt that medication adherence would be a challenge. The preliminary plan was to discharge him only on medical therapy. As I was preparing for his discharge in the afternoon, my attending physician requested that I continue his heparin: to my surprise, the patient had decided to pursue a cardiac catheterization. The decision was the result of the patient and the attending conversing about the patient's priorities. The attending connected the patient's symptoms to his heart disease and his high-risk habits. That sparked a realization in the patient to take his health more seriously. That same afternoon, his cardiac catheterization showed 99% stenosis of his left main coronary artery and complete occlusion of his right coronary artery. Patient pursued a bypass surgery thereafter.

IMPACT/DISCUSSION: Despite efforts in medical education to train learners in recognizing implicit biases, overcoming these biases in practice proves to be a challenge. In particular, substance use disorder (SUDs) elicits negative attitudes, to which physicians are not immune (Yang 2017, Fingerhood 2015). In a 1998 survey, over 70% of people perceived that individuals with cocaine use

disorder were "not very" or "not at all" able to make treatment decisions (Pescosolido 1999). The negative attitude leads to making certain assumptions and discrimination.

This is important to recognize because many assumptions about our patient in the case were made by providers—that he would not be interested in a cardiac catherization and that he would not adhere to therapy, both of which were untrue. These assumptions nearly prevented him from life-saving interventions.

How we could address these assumptions is through open and honest conversations with the patient, often enlisting help from stakeholders. Implicit biases are difficult to overcome but learning to recognize it in the arena of patient care and combatting it with more time at the bedside is crucial.

CONCLUSION: One way to combat stigma against patients with SUDs is compassionate care at the bedside.

HELPING THOSE WHO NEED IT MOST

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LEARNING OBJECTIVE #1: Identify characteristics of help-rejecting patients

LEARNING OBJECTIVE #2: Identify strategies to care for help-rejecting patients

CASE: This is a 60 year old woman with past medical history of anxiety and depression with prior suicide attempt in 2017 who presented to clinic in August to establish care. Her primary complaint was "paralyzed panic" and anxiety, which started after her mother, for whom she cared, died in February. She resided in her mother's apartment for the past 1.5 years and left the apartment only 4 times during that time span. She reported a long history of antidepressant use, including fluoxetine, sertraline, bupropion, and most recently escitalopram, however has been off all medications since June because they "numbed" her. She endorsed passive SI but denied present plan or intent. She was referred to social work, who provided a psychiatry appointment the following week. She declined because she had "a bad felling" about the psychiatrist. She was referred to a local mental health center and walk-in clinic, but expressed concern about the quality of care at the local center. Finally, the hospital's mobile crisis team met the patient at her home, but she declined to engage with them. During an interval follow-up appointment one month later, patient expressed that she would be willing see the clinic's psychiatrist, however declined once again when staff called her to set up an appointment.

Psych history:

Depression – with prior suicide attempt by hanging in 2017

No psychotherapy in the past

Anxiety

No family history of depression or suicide

Meds: None

Social History:

Former smoker

No other substances

Married to husband and has 1 daughter

No domestic violence history

IMPACT/DISCUSSION: Help rejecting patients are difficult patients to treat. They can be identified as those who seek help and advice but reject any help that is offered. Tendencies include portraying their problems as unsolvable, feeling hopelessness toward their problems, and behaving passively when attempting to alleviate their troubles. Providers caring for help-rejecters are placed in difficult situations. After repeated attempts to help these patients, providers may become hopeless and frustrated themselves. For that reason, it is important to recognize help-rejecting traits. Rather than proposing solutions that are likely to be rejected, care for help-rejecting patients may be re-framed. Strategies may include acknowledging the problem, asking what the patient has done to address the problem, and asking what solution the patient proposes for the future. In this case, patient was provided with monthly appointments to discuss concerns. Initially, every effort was made to plug the patient in with social work and psychiatric services. After repeated rejections, patient was provided the telephone number of her insurance company help line and told to call when she was ready to ask for options outside the NYP health system. She made an appointment, has seen a psychiatrist twice, and has started on medication.

CONCLUSION: See impact/discussion

HEMATEMESIS IN A NEWLY DIAGNOSED HIV PATIENT

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LEARNING OBJECTIVE #1: To recognize intestinal diffuse large B cell lymphoma as a serious potential complication in patients with advanced human immunodeficiency virus (HIV) infection who present with gastrointestinal symptoms.

CASE: A 25-year-old male patient without significant medical history presented to our hospital with epigastric pain and hematemesis of 1-week duration.

Upon arrival to the hospital, his vitals were unremarkable except for sinus tachycardia in 120s. His labs showed Hemoglobin of 5.5 g/dl (normal range 12.5-16.5 g/dl). His HIV test was positive with viral load of > 200,000 and CD4 count < 50. He also had an evidence of past infection with hepatitis B (HBsAg negative, HBcAb positive, HBsAb positive). The patient was given blood transfusions and volume resuscitation after which his hemoglobin and hemodynamics stabilized.

A computed tomography angiogram was done and showed thick walled 6.4 cm complex collection involving the second segment of the duodenum with no evidence of active extravasation. No embolization was performed. An esophagogastroduodenoscopy showed large, circumferential, partially obstructing, non- bleeding duodenal ulcerated mass in the second portion of the duodenum. The mass was biopsied and revealed diffuse large B cell lymphoma. Left iliac crest bone marrow biopsy was performed and showed normocellular marrow without any evidence of lymphoma.

He was started on chemotherapy for his localized tumor and continued to be on Biktarvy for his HIV and to protect him from hepatitis B reactivation commonly associated with rituximab treatment. Patient tolerated chemotherapy well without any evidence of tumor lysis syndrome or duodenal perforation.

IMPACT/DISCUSSION: Patients with human Immunodeficiency virus (HIV) infection are at higher risk for different types of malignancies when compared to general population. The incidence of Non-Hodgkin lymphoma is much higher in individuals with HIV infection compared to general population with diffuse large B cell lymphoma being the most common subtype.

The gastrointestinal tract is the most common site of extranodal involvement in non-Hodgkin's lymphomas, and the stomach is the most common involved organ. However, HIV-associated duodenal lymphomas are very rare.

Up to our knowledge, there are very few reported cases of duodenal diffuse large B cell lymphoma in HIV patients.

Early diagnosis and treatment with chemotherapy and antiretroviral medications are crucial to improve survival in such patients.

CONCLUSION: Duodenal non-Hodgkin's lymphomas are rare. However, such lymphomas have higher incidence in patients with HIV. Prognosis and survival of these patients largely depend on early recognition and treatment.

HEMOGLOBIN SE DISEASE PRESENTING AS HIGH-ALTITUDE MASSIVE SPLENIC INFARCTION

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LEARNING OBJECTIVE #1: Identify HbSE disease as a hybrid hemoglobin variant and its potential to cause detrimental outcomes including vaso-occlusive crisis (VOC).

LEARNING OBJECTIVE #2: Manage sickle VOC infarcts with supportive therapy and have a conservative approach to anticoagulation and surgical intervention.

CASE: A previously healthy 55-year-old woman of South Asian descent, presented after four days of worsening left upper quadrant pain (LUQ) that started acutely while she was atop a Swiss mountain. In the emergency department, her initial vital signs and labs were notable for tachycardia, leukocytosis (21,900/mm^3), anemia (11.7 g/dL), and thrombocytopenia (122,000/μl). Subsequent workup was concerning for hemolytic anemia with an undetectable haptoglobin, elevated lactate dehydrogenase, and elevated bilirubin. Greater than 50% splenic infarct was detected on CT abdomen. Family history was notable for sickle cell disease (SCD) among distant family members, but the patient had never been tested. Due to suspicion for a thrombotic event, she was started on enoxaparin.

Two days later, she experienced worsening LUQ pain and was found to have worsened leukocytes (31,600/mm^3), anemia (6.2 g/dL), new thrombocytosis (436,000/μL), and new lactic acidosis (4.0 mmol/L). An emergent CT-angiogram detected active hemorrhage of the initial splenic infarct. Immediate vascular intervention with coil embolization was performed. Overall, the patient was transfused 3 units of uncrossmatched packed red blood cells.

Hemoglobin electrophoresis revealed HbS 68.6%, HbE 26.3%, HbA 0.0%, HbA2 3.7%, and HbF 1.4%, suggestive of hemoglobin SE disease. She was immunized for functional asplenism and made a complete recovery.

IMPACT/DISCUSSION: HbS and HbE are the most common hemoglobinopathies worldwide, but double heterozygosity is exceedingly rare. HbE is common among patients with South Asian ancestry and leads to an under-expressed variant beta globin. While HbE trait is clinically silent, heterozygosity with HbS produces a phenotype similar to HbS/β+ thalassemia. Based on limited reports, many patients remain asymptomatic. HbSE VOCs predominantly present in adulthood, likely due to accumulation of vascular damage from subclinical microinfarcts. This case demonstrates that high altitude exposure may provoke VOC in previously benign sickle cell variants. The majority of sickle-related splenic infarcts resolve with conservative therapies directed at vaso-occlusion rather than anticoagulation. Anticoagulation should be approached with caution in patients with a family history of SCD and a clinical picture consistent with a VOC due to the risk of hemorrhagic conversion.

CONCLUSION: HbSE disease is a rare, heterozygous hemoglobinopathy and clinical manifestations, if present at all, occur in adulthood. Stressors such as high altitude may trigger a VOC resulting in infarction. If SCD is suspected, initiation of anticoagulation for an infarct is a serious clinical decision with risk for life- threatening hemorrhagic conversion.

HEMOLYTIC ANEMIA AND RENAL FAILURE AS EXTRAHEPATIC MANIFESTATIONS OF ACUTE HEPATITIS A

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LEARNING OBJECTIVE #1: Recognize that hemolytic anemia can occur in patients with acute Hepatitis A and ultimately lead to renal failure

LEARNING OBJECTIVE #2: Manage potential extrahepatic complications of acute Hepatitis A

CASE: A 54-year-old African American man with hypertension presented with 3-days of nausea, abdominal pain, and jaundice. He frequently ate at diners and road-side restaurants due to his job as a truck driver, but denied any new medications or supplements for the previous year. He had been well previously, and he denied any history of previous liver disease. Laboratory data on admission were notable for an AST and ALT of 1840IU/L and 3860IU/L respectively, total bilirubin of 24.0, and a positive IgM hepatitis A virus (HAV). Further workup for acute liver injury (ALI) was negative, and patient was felt to have ALI secondary to acute hepatitis A. Given that he had no evidence of synthetic impairment (INR 1.2) or encephalopathy, discharge with supportive care was planned. However, 36 hours after admission he developed worsening renal function, with serum creatinine (Cr) 3.6mg/dL and urine output of 100mL over the previous 24-hours. He had no response to intravenous fluid resuscitation and his renal function continued to worsen, with Cr reaching 8.8mg/dL by hospital day 3, requiring initiation of hemodialysis. He also developed marked anemia, with a hemoglobin of 6.2g/dL without any obvious source of bleeding. He had an extensive workup that was notable for haptoglobin <8.0mg/dL, lactate dehydrogenase (LDH) >4000U/L, urinalysis with large blood (but no RBCs), elevated reticulocytes, and a plasma hemoglobin of 570mg/dL all concerning for hemolytic anemia. He was subsequently started on plasmapheresis with improvement in plasma free hemoglobin levels to <50mg/dL. A renal biopsy revealed acute tubular necrosis (ATN) with heme pigment casts and hemosiderin deposits, as well as bile nephrosis. He was subsequently discharged with continued hemodialysis needs and monitoring for resolution of renal function.

IMPACT/DISCUSSION: Extrahepatic manifestations such as hemolytic anemia and renal failure are known complications of hepatitis B and C virus infection. Although HAV infection is common, with nearly 2 million clinical cases encountered worldwide annually, it is typically mild and self-limited, with rare extrahepatic manifestations. Notwithstanding, extrahepatic manifestations of acute HAV may be encountered, particularly in patients with fulminant HAV disease, and include hemolytic anemia, acute renal failure, and acute reactive arthritis – presumably because an aggressive immune reaction not only leads to extensive hepatocyte injury, but also immune activation in the periphery. Our patient emphasizes that these immune mediated processes may also occur in non-fulminant states.

CONCLUSION: We emphasize that given the increase in acute HAV cases particularly in the Southern United States, it is important as internists to be cognizant of the potential complications of acute HAV.

HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS- DELAYED TREATMENT IS POOR PROGNOSIS!

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LEARNING OBJECTIVE #1: To recognize the early signs of HLH and initiate prompt medical intervention

CASE: 20 year old male with no medical history presents to the hospital with one week of fevers, dysphagia, neck swelling and joint pains. He presented to an urgent care and hospital a few days prior where he was given antibiotics and steroids, without improvement. On admission, patient was febrile to104, BP 110s/70s, HR 100s and O2 sat 99%. Physical exam was significant for bilaterally cervical lymphadenopathy, parotid swelling, erythematous pharynx, tenderness to palpation diffusely over the abdomen, bilateral hand joint and feet swelling, and waxing and waning rash over the legs and wrists. Initial laboratory values showed anemia to 9.8, WBC count of 11, platelet 130, Cr of 1.67, AST/ALT of 155/88 and ferritin of 5352. Patient was started on broad spectrum antibiotics. Blood cultures, viral serologies and rheumatologic serologies were all negative. During the first 48 hours of admission, patient remained persistently febrile, with worsening lymphadenopathy and arthralgias. Day 2, labs showed ferritin > 10,000, TAG 391 and platelets 71, meeting 4/8 1994 criteria for HLD. Hematology conducted a bone marrow (BM) biopsy. Given diffuse lymphadenopathy, there was suspicion for lymphoma which would require a core biopsy, however given rapid decline of patient, a consensus decision was made amongst the specialties to initiate the HLH 94 protocol with dexamethasone. Patient with worsening difficulty maintaining secretions and was transferred to the ICU for airway management and started on etoposide as biopsy showed hemophagocytes. He was intubated in the ICU for airway protection and required renal replacement therapy due to tumor lysis syndrome. Patient made a remarkable recovery with chemotherapy and supportive care, and was extubated and taken of hemodialysis. He was discharged with outpatient etoposide therapy.

IMPACT/DISCUSSION: HLH is a rapidly progressive syndrome caused by unregulated immune activation, and if untreated, is fatal. Our patient presented with diffuse cervical lymphadenopathy with hematologic manifestations of anemia and thrombocytopenia with intractable fevers. Infectious, autoimmune and neoplastic, including lymphoma, were all on the differential. However, given his rapidly decline, it was of the utmost importance to initiate treatment for HLH early as it is universally fatal if not treated, and to bypass the lymph node biopsy. We administed dexamethasone per HLH94 protocol, and initially held off on etoposide due to long term side effects, which was was ultimately started the next day with the positive biopsy results. At the time of discharge, the underlying cause of HLH was not elucidated, (ddx includes lymphoma and Still's disease (per Yamaguchi criteria)). Repeat biopsy 2 months after treatment showed resolution.

CONCLUSION: HLH, although an uncommon disease entity, is universally fatal if untreated. Early recognition and intervention is vital to decrease morbidity and mortality.

HEPATIC METASTASES FROM AMPULLARY NEUROENDOCRINE TUMOR MASQUERADING AS LIVER CIRRHOSIS

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LEARNING OBJECTIVE #1: Ampullary neuroendocrine tumors are extremely rare. It is important to recognize their clinical features especially in the presence of hepatic metastasis.

LEARNING OBJECTIVE #2: Hepatic metastatic neuroendocrine tumors can mimic cirrhosis by presenting as nodular liver. It is important to distinguish both these entities based on clinical features, imaging, and biopsies.

CASE: An 86-year-old male with perforated sigmoid diverticulitis was found to have intraoperative ascites and a nodular liver. CT scan showed a cirrhotic liver, moderate amount of ascites and intrahepatic and extrahepatic dilatation. The serum-to-ascites albumin gradient was 1.5 g/dL and the ascitic total protein was 1g/dL. Viral and autoimmune serologies were negative. Liver enzymes throughout the patient's clinical course revealed hyperbilirubinemia with mildly elevated AST and ALT. Alkaline phosphatase levels ranged from 200-500. Ultrasound of the liver showed a mildly nodular hepatic contour. Esophagogastroduodenoscopy (EGD) done for variceal screening revealed a periampullary mass. Biopsies of the mass revealed high-grade adenocarcinoma. The liver nodules were later biopsied. Histology showed a poorly differentiated high-grade neuroendocrine tumor (NET). Histology from the ampulla of Vater was reanalyzed. It was determined to be a high-grade neuroendocrine tumor as well. He was started on chemotherapy with 4 cycles of carboplatin, etoposide, and atezolizumab. The ampullary mass and liver nodules have regressed in size.

IMPACT/DISCUSSION: Neuroendocrine tumors of the ampulla of Vater are exceedingly rare, with the annual incidence of all gastroenteropancreatic neuroendocrine tumors being 0.2 per 100000 according to data from the SEER program. Neuroendocrine tumors of the gastrointestinal tract usually occur in the esophagus, stomach, pancreas or large bowel. Studies have shown that at least 57% of the patients already have metastases at the time of diagnosis. The most common sites of metastasis are the lymph nodes and liver. Given the aggressive nature of metastatic NETs, palliative chemotherapy is the most common management modality.

CONCLUSION: Ampullary neuroendocrine tumor is a rare disease with very limited data on treatment modalities and prognosis. Patients with ampullary NET and nodular liver will benefit from liver biopsy to confirm the presence of liver metastases.

HE SAID, SHE CAN'T SAY: OBTAINING HISTORY WHEN THE PATIENT IS ALTERED

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LEARNING OBJECTIVE #1: Appreciate the benefits and pitfalls of obtaining history from family members of patients who are not able to provide history themselves

CASE: A 48 yo woman with history of multiple sclerosis presents to the ED for altered mental status. Husband is present and reports two days of weakness, as she is unable to communicate. Altered mentation started this morning, before that she was at her baseline and able to communicate. She has been wheelchair bound but with some retained strength for the last five years, with urinary incontinence due to MS. She has not sought medical care in five years.

Her husband has limited history to report. She has had difficulty swallowing bread and dry mouth for the last several days. She has had frequent urination for several weeks, unable to specify further. ROS otherwise negative. Medications are omeprazole and a multivitamin.

She is an occasional smoker. Social alcohol use with rare marijuana. No other drug use.

On exam, she is an obese woman, restless in bed and appearing uncomfortable. She is answering questions inappropriately and disoriented. Mucous membranes are dry. Diffuse, nonspecific abdominal tenderness is present, with bilateral costovertebral angle tenderness. Neurologic exam is nonfocal, and lungs are clear. Cardiac exam reveals tachycardia.

Labwork shows a creatinine of 1.53 from a baseline of ~1, glucose of 848, sodium of 164. White count 17.7. Osmolarity is elevated at 402, with beta-hydroxybutyrate elevated at 4.37. Urine notable for >500 glucose, 20 ketones, 100 protein, large blood with 2 RBC, 35 WBC. A1c is 12.0.

She is treated with half normal saline and an insulin drip to address her volume depletion, hypernatremia, and hyperglycemia, as well as a short course of antibiotics for UTI. Her sugars came down to the normal range, and her sodium and mental status gradually improve as well with the above treatment. Further history is obtained, and it is revealed she has been drinking more than 2L of Mountain Dew per day in addition to at least a half quart of Gatorade daily, with no water intake. She is diagnosed with type 2 diabetes and discharged on 50 units lantus, glimepiride, and metformin.

IMPACT/DISCUSSION: The initial history made it difficult to know what was going on with the patient. Given her corrected Na was in the 180s, it seemed likely that she might have a concurrent hyperosmolar hyperketotic state and diabetes insipidus. However, she improved with volume resuscitation and insulin, suggesting that she was severely volume depleted as well as an undiagnosed diabetic. In the days following her presentation, it became easier to see why she was so dehydrated, as she was able to provide further history about her oral intake.

CONCLUSION: The limited initial history made this case challenging. Once the patient's mental status improved and she provided more history, her initial presentation and labs made sense. Family members are an important source of history, but it must be understood that the history provided will often be incomplete.

HIDDEN DIAGNOSES: THE SEARCH FOR HIV

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LEARNING OBJECTIVE #1: Discuss the prevalence of HIV and HBV coinfection in the United States

LEARNING OBJECTIVE #2: Recognize the impact of not identifying HIV coinfection in an individual with hepatitis B

CASE: A 59-year-old presented to his primary care physician after labs returned positive for hepatitis B. He was referred to hepatology and tenofovir treatment was initiated. Six months later he was admitted to the hospital for dysphagia and a diagnosis of HIV was made at that time.

At a recent follow up visit he was started on entecavir for his HBV as well as emtricitabine, Prezcobix, and dolutegravir for HIV. The genotype returned with an M184V mutation and abacavir was added. He was referred to the HIV Outpatient Program (HOP) for further management of his HIV complicated by worsening cirrhosis. His initial viral load was 5,444 with a CD4 count of 313 cells/μL and a CD4% of 41.5. The patient's HIV regimen was optimized. His Prezcobix discontinued in favor of darunavir and ritonavir given patient's worsening renal function. Juluca was approved and patient's medications were then switched to juluca for HIV and entecavir and emtricitabine for HBV.

He continued to have complications from decompensated cirrhosis such as ascites and worsening renal function, and later required a liver-kidney transplant. HBV DNA was undetectable two months after the surgery. After further antiviral adjustments, HIV viral load returned undetectable and the CD4 count was 317 cells/μL and CD4% of 32.3. The patient remains asymptomatic.

IMPACT/DISCUSSION: In the United States, 1.1 million residents are living with human immunodeficiency virus (HIV) infection and about 6-10% of those residents are co-infected with hepatitis B virus. HIV and HBV can both be acquired through injection drug use and sexual transmission. Social factors that place people at risk of acquisition are similar; therefore, coinfection occurs frequently. HIV infection can increase susceptibility to subsequent infection with Hepatitis B. HIV infection can also further increase HBV viremia, thus accelerating liver damage. Early studies of the natural history of HIV-HBV coinfection demonstrated that liver-related mortality in this population was nineteen times that in HBV infection without HIV, and 8 times higher than in individuals with HIV mono-infection. Mortality rates increased in individuals with lower CD4+ T-cell counts. Coinfected patients are at a greater risk for both liver morbidity and mortality as well as all-cause morbidity and mortality, when compared with those who are monoinfected.

CONCLUSION: Identifying co-infected patients with HIV and Hepatitis B is of critical public health importance. Missing the diagnosis of co-infection with the viruses can be detrimental and worsen outcomes as seen in this patient.

HIDDEN HYPERTENSION: SYNCOPE AND SYMPTOMATIC ORTHOSTATIC HYPERTENSION

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LEARNING OBJECTIVE #1: To demonstrate a presentation of symptomatic Orthostatic Hypertension

LEARNING OBJECTIVE #2: To review current medical regimen for Orthostatic Hypertension

CASE: A 70-year-old man with history of benign prostatic hyperplasia (BPH), hypertension, and aortic stenosis presented with increasing pre-syncopal episodes, one syncopal episode, dyspnea on exertion, and left-sided chest pain. He was transferred to Audie L. Murphy Veterans Affairs (ALMVA) Hospital for evaluation of severe symptomatic aortic stenosis with blood pressure (BP) in the 80s/40s.

On arrival to ALMVA, he was stable, in no acute distress, and had a BP of 149/77. A transthoracic echo demonstrated an ejection fraction of 60-65%, severe aortic stenosis with aortic valve area of 0.8 cm^2 by continuity equation, peak velocity of 4.2 m/s, and a mean gradient of 39 mm Hg. Left heart catheterization was performed and Judkins right catheter easily crossed the valve and obtained an aortic valve area of 1 cm^2 and mean gradient of 32 mm Hg. Final report concluded moderate-to-severe aortic stenosis. As part of the work up, orthostatic vitals had been ordered with supine BP 153/70 and sitting BP 196/71. Upon standing, he was flushed, diaphoretic, light headed, and tremulous with a BP 230/60. At this point, there was concern for Orthostatic Hypertension (OHTN) playing a role in his symptoms. His home BPH medication of terazosin, originally held due to hypotension, was restarted for alpha blockade and metoprolol tartrate added for adrenergic blockade. His symptoms improved dramatically and he was walking down the hallway without symptoms.

IMPACT/DISCUSSION: This case demonstrates an uncommon presentation of symptomatic OHTN masked by coinciding severe aortic

stenosis. Current evidence suggests OHTN patients may have increased adrenergic activity or hypersensitivity. The Japan Morning Surge-1 (JMS-1) Study demonstrated patients treated with alpha blockade had a reduction in OHTN. This case supports the proposed as seen by the response to sympathetic inhibition. This improvement with adrenergic blockade may have implications for further research into management of this disease.

CONCLUSION: OHTN is a rare disease still being studied. We report a unique case of symptomatic OHTN and a marked response to adrenergic blockade. This agrees with current studies that recommend alpha blockers for treatment of OHTN. We encourage further research into this rare disease to improve diagnosis and management.

HIDE AND SEEK: AN ELUSIVE CASE OF SECONDARY HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS (HLH)

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LEARNING OBJECTIVE #1: Diagnose HLH as a source of fever of unknown origin (FUO).

LEARNING OBJECTIVE #2: Recognize malignancies as a cause of secondary HLH.

CASE: An 80-year-old man presented with persistent fevers, chills, and fatigue. Over the last 6 months, he was seen in other hospitals for similar symptoms. Each time, he received antibiotics and clinically improved. Because of this history, a workup for FUO was started. He was found to have splenomegaly, elevated ferritin (4219 μg/L), elevated triglycerides (545 mg/dL), and pancytopenia (ANC: 1.2 K/uL, hemoglobin: 7.9 g/dL, platelets: 22K/uL). The soluble IL-2 receptor level was also markedly elevated (88,300 pg/mL). Activated macrophages with hemophagocytosis were seen in the marrow biopsy. Combined, these findings were consistent with HLH. Because the patient was elderly, primary HLH was deemed unlikely. Work up for an underlying malignancy was performed. This included the previously described bone marrow biopsy, peripheral blood smear, and imaging studies but no causative malignancy was identified. The patient was treated for primary HLH with etoposide infusions and dexamethasone. After 2.5 weeks of inpatient treatment, he was discharged with continued outpatient chemotherapy.

One month later, he was readmitted for worsening fatigue and rising ferritin despite treatment. Alemtuzumab was initiated as salvage therapy for refractory HLH. Despite this, WBC rose from 1.9 K/ul to 47.5 K/ul with 42% blasts over 48 hours. Repeat marrow biopsy was concerning for T-cell large granulocytic leukemia. Therapeutic splenectomy was performed. Spleen histopathology showed hepatosplenic T-cell lymphoma (HSTL), a rare disease with dismal prognosis. Thus, the patient elected for hospice care.

IMPACT/DISCUSSION: Because of its similarity to sepsis with multisystem organ dysfunction, HLH is an underrecognized but often treatable cause of FUO. Its diagnosis hinges on the presence of 5 of the 8 findings based on the HLH-2004 criteria: 1) fever≥ 38.5°C 2) splenomegaly 3) any bicytopenia (hemoglobin <9 g/dL, ANC <1 K/uL, platelets < 100 K/uL) 4) hypertriglyceridemia (>265 mg/dL) or hypofibrinogenemia (< 150 mg/dL) 5) hemophagocytosis in the bone marrow, spleen, or lymph nodes 6) low NK cell activity, 7) ferritin ≥ 500 μg/L and 8) soluble IL-2 receptor greater than 2 standard deviations above normal. In our patient, 7 of these 8 findings were established.

While primary HLH occurs in adults, secondary HLH is more common. An undetected malignancy is often a triggering etiology. Our patient was eventually diagnosed with HSTL, a lymphoma characterized by hepatosplenomegaly, thrombocytopenia, and B symptoms. Diagnosis is through marrow and liver biopsies. No standard therapy exists, and the median overall survival is less than 1 year.

CONCLUSION: The diagnosis of HLH is based on the HLH-2004 criteria. Timely recognition of this disease is important and should prompt the clinician to work up a potential underlying malignant etiology.

HIDING IN PLAIN SIGHT–A CASE OF ATYPICAL LYMPHOMA AND FEVER OF UNKNOWN ORIGIN

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LEARNING OBJECTIVE #1: Recognize the most common causes of causes of fever of unknown origin.

LEARNING OBJECTIVE #2: Diagnose lymphoma when imaging results are normal.

CASE: A 58-year-old African-American female presented for further evaluation of fever of unknown origin.

Over a period of several months, she developed symptoms of recurrent fever, productive cough, dyspnea, weight-loss, and generalized fatigue. Admission was recommended by her PCP after outpatient workup yielded no diagnosis. Her past medical history was significant for rheumatoid arthritis (RA), tobacco abuse, and a recent CT-chest with incidental findings of a sub-centimeter pulmonary nodule and ground-glass opacities. Of note, she had a negative TB test earlier this year, no history of HIV, and recently self- discontinued her RA medications—adalimumab and leflunomide. She denied illicit drug use and reported practicing safe sex habits. She experienced a prolonged hospital course complicated primarily by recurrent, high-grade, nocturnal fevers and lactic acidosis.

After a normal physical exam, investigation focused on ruling out infectious, autoimmune and neoplastic causes. Initially, her lactic acidosis, was treated aggressively with empiric antibiotic therapy and aggressive fluid hydration. Infectious workup remained negative for duration of her stay—including urine cultures, serial blood cultures, HIV testing and TB testing. She underwent a bronchoscopy given her recent CT- findings with cultures negative for atypical infections such as legionella, nocardia, aspergillus, CMV, and PJP. Autoimmune disorders were unlikely after negative screening serologic testing for rheumatologic disorders. Neoplastic workup began with peripheral smear with evidence of atypical lymphocytes and elevated LDH levels. A CT-abdomen/pelvis was ordered for suspicion of lymphoma but showed no evidence of mass or lymph node enlargement. Flow cytometry was ordered and confirmed presence of a few atypical B cells. As a result, a bone marrow biopsy was performed with results of an aggressive lymphoma with differential including mantle cell lymphoma and atypical CLL. She followed with hematology post-discharge with a favored diagnosis of atypical CLL in the setting of TNF inhibitor use.

IMPACT/DISCUSSION: Despite expansion of the definition of fever of unknown origin (FUO) and improved accuracy of diagnostic testing, FUO remains a challenging dilemma for clinicians. It is essential for clinicians to approach the workup of FUO in a systematic fashion and order testing directed at identifying the most common causes—infections, autoimmune diseases, and neoplasms. Lymphoma is a common neoplastic cause of FUO that can easily be missed when relying solely on imaging. Within this case, flow cytometry was valuable in establishing the eventual diagnosis of lymphoma.

CONCLUSION: Evaluation of FUO should ensure start with testing directed at the most common causes of FUO—infection, autoimmune, and neoplastic.

Imaging alone does not rule out lymphoma and flow cytometry is a valuable diagnostic tool.

HIT OR MISS? THE USE OF RIVAROXABAN…

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LEARNING OBJECTIVE #1: 1. Recognize that Heparin induced thrombocytopenia (HIT) is a rare but important cause of thrombocytopenia and life-threatening thrombosis.

LEARNING OBJECTIVE #2: 2. Explore the use of rivaroxaban in treating HIT.

CASE: A 66-year-old African American male with a past medical history of a renal mass was admitted for abdominal pain and blood in his urine. He was told he had a renal mass in 1990 yet never pursued follow up. He reported a 15-pound weight loss and subjective fevers for two weeks prior to admission. On exam, he appeared cachectic with temporal wasting and had no palpable abdominal mass. He denied the use of tobacco, alcohol and drugs. Pertinent lab findings included WBC of 13 k/cmm, Hemoglobin 13 g/dl, platelet count 203 k/cmm, creatinine 2.24mg/d and gross blood on urinalysis. CT scan of abdomen revealed a left renal mass with intrarenal hemorrhage.

The patient underwent left sided nephrectomy. Prophylactic subcutaneous heparin was started on postoperative day one. His platelet count dropped from 204K/cmm on day ten to 64k/cmm on day eleven. The heparin was discontinued and lower extremity ultrasound revealed distal right femoral deep vein thrombosis. Rivaroxaban was started on day eleven and the heparin antibody test resulted positive with an optical density of 2.438. His thrombocytopenia resolved the following 48 hours and he was discharged on Rivaroxaban with close follow-up.

IMPACT/DISCUSSION: HIT is characterized by drop in platelet count after heparin exposure. Type 1 HIT usually occurs within a few days of heparin exposure, the platelet count usually remains above 100k/cmm and it is rarely associated with thrombosis. Type 2 HIT is rare (incidence of 1%) and typically occurs between 5-14 days of heparin exposure, the platelet count invariably drops below 100k/cmm and it is commonly associated with thrombosis. The treatment of HIT requires cessation of all heparin products and initiation of an alternate anticoagulant. Life threatening thrombosis due to HIT requires the use of a non- heparin anticoagulant. Argatroban is the one used most commonly. However, for non-life threatening thrombosis Rivaroxaban (a factor Xa inhibitor) has been shown to be effective. It is available orally and negates the need for Warfarin. These benefits make Rivaroxaban an attractive alternative for treating non-life threatening thrombosis associated with HIT.

CONCLUSION: This case highlights the importance of suspecting HIT in patients with reduced platelet count after exposure to heparin products. Any patient on heparin product with an acute 50% decline in platelets should be suspected of having HIT. The heparin antibody test is 95% sensitive and the positive predictive value is low. An Optical density of >1.0 makes this test more specific. HIT remains a challenging diagnosis and requires the immediate replacement of all heparin products. The American Society of Hematology 2018 guidelines recommends the use of Rivaroxaban in patients with HIT who do not have life- threatening thrombosis.

HOW DO YOU DIAGNOSE AND MANAGE THE PATIENT WHO HE CAN EAT, DRIVE, SPEAK BUT CANNOT BREATHE?

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LEARNING OBJECTIVE #1: Amyotrophic Lateral Sclerosis (ALS) has some clinical phenotypes.

LEARNING OBJECTIVE #2: Leg Amyotrophic Diplegia (LAD) type, a specific subtype of ALS, exhibits respiratory failure prior to bulbar symptoms.

CASE: A 41-year-old man presented with progressive distal leg weakness X-5 years ago. Weakness started in the left leg and progressed to involve both legs. He was diagnosed as ALS X-3 years ago. Muscle weakness in both legs progressed to 0/5 (Medical Research Council) irrespective of treatment. However, muscle power on upper extremities, respiratory and bulbar function remained normal, so he could eat, speak, work and drive with his remodeled car. On day X, he presented to our hospital with dyspnea, which emerged 6-weeks ago. He had tachypnea and his respiratory rate was 22/min with O_2 saturation of 77% on room air, however the rest of his vital signs were normal. On Laboratory finding, the arterial blood gas data revealed pH 7.34, pO_2 56.3mmHg, pCO_2 83.2mmHg, HCO_3 44.3mmol/L, indicating the accumulation of carbon dioxide and respiratory dysfunction. Chest Computed Tomography was normal. Although oxygen limited to 1L/minute was administered using nasal cannula, his consciousness soon dropped and respiratory function worsened. He developed carbon dioxide narcosis and he was urgently intubated. His respiratory ability was so poor and the mechanical ventilation was induced after the consent. His breathing condition dramatically improved, and tracheostomy was undertaken on day 9. During the hospitalization, the muscle strength on upper extremities and bulbar function remained stable. Finally, he went home and lives a daily life with eating, drinking for himself and talking with his family under the respiratory control.

IMPACT/DISCUSSION: ALS is a neurodegenerative disease that selectively affects upper and lower motor neurons and is fatal within 3-5years after the onset if not for the mechanical ventilation. ALS has some clinical subtypes. This includes classical, progressive bulbar palsy, spinal progressive muscular atrophy type and so on. In these phenotypes, muscle weakness in the cranial and upper and lower extremities develops in the early stage and respiratory dysfunction emerges as a final symptom. However, it is known that there are some other specific clinical subtypes. LAD-type ALS is one of the characteristic phenotypes. According to literatures, this type was first reported in 1918, accounting for 2.5% to 6.5% of all ALS, developed with muscle weakness limited to the lumbosacral region, and reported to have a better prognosis than normal ALS. However, little is known about the general clinical course of LAD-type ALS. This case showed respiratory failure occurs without bulbar paralysis or weakness of upper extremities. Considering this uncommon clinical course, it is very important for LAD-type ALS patients to be aware and suspect respiratory failure even in the early stage.

CONCLUSION: We should take into consideration the respiratory failure may immerge in the early stage on LAD-type ALS patient.

HOW DO YOU SPELL DRESS SYNDROME?

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LEARNING OBJECTIVE #1: Recognize the challenges in diagnosing DRESS

LEARNING OBJECTIVE #2: Differentiate DRESS from other possible diagnoses

CASE: An otherwise healthy 30-year-old male presented with flu-like symptoms and a pruritic rash. One week before, he had started trimethoprim-sulfamethoxazole for prostatitis. Five days later he began experiencing severe weakness, malaise, myalgias, arthralgias, anorexia, nausea, fevers, sore throat, and a migraine-like headache followed by the rash. The review of systems was otherwise negative. He denied recent travel, camping, tick bites or sick contacts. He was febrile to 38.7 C, tachycardic and normotensive. His exam was significant for periorbital edema, conjunctival injection, pharyngeal erythema without exudates, anterior and posterior cervical lymphadenopathy, petechiae on his forearms and thighs and a diffuse, warm maculopapular rash with coalescence from his shoulders to his knees. He was given IV fluids, acetaminophen, diphenhydramine and empiric vancomycin & ceftriaxone. Labs were notable for an AKI with a creatinine of 2.1 mg/dL (baseline 1.0 mg/dL), BUN of 26 mg/dL and a CBC with thrombocytopenia at 96 K/uL, 40% bands, atypical lymphocytes, 2.1% eosinophils, and a normal WBC count. A chest x-ray and EKG were normal, and blood cultures, urine cultures, and urinalysis were unremarkable. Measles, EBV, HIV, CMV, HHV6 & HHV7, Lyme, Babesia, Rocky Mountain spotted fever, and *Legionella* & *S. pneumoniae* urine Ag screens were all negative. Given the recent drug initiation and the negative infectious work-up, the patient was diagnosed with DRESS syndrome. He was given methylprednisolone and the antibiotics were discontinued. The patient felt better, was transitioned to topical steroids, and was discharged home two days later.

IMPACT/DISCUSSION: Classically, 2-6 weeks after drug exposure, Drug Reaction with Eosinophilia & Systemic Symptoms (DRESS) syndrome presents with fever, abnormal LFTs, renal impairment, & myocarditis, as well as a morbilliform rash and eosinophilia. This presentation is similar to various viral, bacterial & tick-borne illnesses, or autoimmune & hypersensitivity reactions such as Stevens-Johnson Syndrome or vasculitis. Confusingly, it is actually possible to have DRESS without a clear D (drug), without rash, without E (eosinophilia) or even without SS (systemic symptoms). Our patient did not have many of the classic systemic symptoms or eosinophilia, and presented well under the usual 2-6 weeks. In order to cut through the ambiguity, RegiSCAR, a scoring system developed for classifying potential cases of DRESS as excluded (<2), possible (2-3), probable (4-5) or definite (6+), was used. Our patient scored a 6 using this system, which is considered “definite” for DRESS.

CONCLUSION: Not all cases of DRESS present classically. The medication, exposure and past medical history, as well as immunological status must be explored for other diagnoses. The RegiSCAR score can be used to identify definite cases or where more exploration is needed.

HOW HIGH IS TOO HIGH

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LEARNING OBJECTIVE #1: Recognize hypertriglyceridemia as a cause of pancreatitis

LEARNING OBJECTIVE #2: Discuss a unique treatment plan for acute pancreatitis

CASE: A 39-year-old alcoholic man presented with nausea, vomiting, abdominal pain, and decreased oral intake for one day. He reported having several drinks in the past 24 hours. His vitals included a temperature of 98.3 F, HR 111, and BP of 180/114. He appeared uncomfortable on exam. Abbdominal tenderness was present in the left upper quadrant without rebound or guarding. Blood alcohol level returned undetectable. Lactic acid was 2.8mmol/L, liver function studies were within normal limits, blood glucose was 341mg/dL, and lipase was elevated at 94 IU/L. Triglyceride (TG) level returned at 4830 mg/dL with a cholesterol of 1059 mg/dL and an LDL of 200 mg/dL. A CT of the abdomen revealed stranding around the pancreas consistent with pancreatitis and a mildly dilated pancreatic duct. He was fluid resuscitated and provided symptomatic relief for presumed acute on chronic pancreatitis. Repeat TG levels remained elevated (4328 mg/dL). The patient was transferred to the ICU for insulin infusion and hourly glucose checks.

IMPACT/DISCUSSION: Once an internists establishes a diagnosis of pancreatitis, focus turns toward determing an underlying etiology and disease management. While not as common as gallstones or alcohol-induced pancreatitis, hypertriglyceridemia is the third most common cause of pancreatitis. To cause acute pancreatitis, typically, TG levels will need to exceed 1000. If levels exceed 2000, 10-20% of patients can develop acute pancreatitis. Hypertriglyceridemia-induced pancreatitis can result is associated with increased severity and complications when compared with other causes of pancreatitis, necessitating prompt recognition of the etiology.

Treatment for pancreatitis regardless of etiology includes fluid resuscitation, medication to address pain and nausea symptoms, and nutritional support. If elevated triglyceride levels are the underlying etiology, it is additionally important to reduce the TG levels which requires insulin infusion and frequent glucose monitoring. Alternatively, intravenous heparin or plasmapheresis can be utilized. An evidence-based algorithimic approach does not exist to determine which therapy is most approrpriate for patients with such elevated triglyceride levels. In this case, the patient's level exceeded 4000 which prompted a transfer to the ICU to rapidly reduce triglyceride levels. Although early return to feeding has been shown to reduce duration of inpatient stays in cases of "simple" pancreatitis, in this case, the patient was kept NPO while on the insulin drip in order to prevent increases in the triglyceride levels.

CONCLUSION: Prompt clinical recognition of hypertriglyceridemia as an underlying etiology for acute pancreatitis is critical. Appropriate treatment can be initiated resulting in a decrease in the severity of illness and the prevention of complications or recurrences of pancreatitis.

HUMAN HERPESVIRUS 6 ENCEPHALITIS IN IMMUNOCOMPETENT PATIENT TREATED SUCCESSFULLY WITH GANCICLOVIR

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LEARNING OBJECTIVE #1: HHV-6 can cause encephalitis in adult immunocompetent patients.

LEARNING OBJECTIVE #2: ganciclovir could be an effective treatment for immuncompetent patients with Human Herpesvirus 6 (HHV-6) encephalitis

CASE: A 62-years-old Caucasian female with a history of diabetes, hypertension, stroke, renal disease, and Hypothyroidism presented with altered mental status. She was found unresponsive with seizure-like activity. She was afebrile without neck stiffness. She had residual right-sided weakness with upgoing plantar reflexes. Initial lab work was unremarkable. MRI of the head showed no acute changes. Electroencephalography showed epileptic foci in the left parietal and temporal lobes. Her family witnessed the patient having visual hallucinations while in the ICU. PCR testing of CSF was positive only for HHV-6. HIV was negative. She was started on intravenous Ganciclovir. Repeated EEG on day 5 showed no ictal discharges. By day 8 she was alert and responding appropriately. She finished 10 days of Ganciclovir, and was discharged home without neurological sequelae.

IMPACT/DISCUSSION: HHV-6 primary infection occurs early in life. CNS involvement is felt to be rare and is thought to occur by reactivation in the CNS in immunocompromised patients as well as HIV 1 infected individuals. A recent case series identified 17 immunocompetent patients. In this series 4 died while 30% of those who survived had permanent neurological sequelae. Our patient is unique in that there was no CSF pleocystosis. Further, the EEG and visual hallucinations were reminiscent of HSV encephalitis. The presence of the free viral DNA in CSF argue against incorporation in chromosomal DNA. The availability of PCR analysis allows identification of the virus in patients presenting with encephalitis of unknown etiology.

CONCLUSION: We conclude that; HHV-6 may be associated with encephalitis in adult immunocompetent patients and Gancyclovir appears to be more effective than acyclovir.

HYDRALAZINE-INDUCED LUPUS OR VASCULITIS

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LEARNING OBJECTIVE #1: Compare and contrast clinical and laboratory findings of two hydralazine- induced autoimmune diseases: drug induced lupus and ANCA-positive vasculitis.

CASE: A 70- year old male presented to the hospital with a three month history of hemoptysis and an associated 16-lb weight loss over 3 months, with associated acute kidney injury and pancytopenia. Past medical history includes atrial fibrillation on coumadin, diastolic heart failure, hypertension, and remote prostate cancer. Home dedications included warfarin, hydralazine, atorvastatin, and metoprolol.

His lungs were clear to auscultation. His chest x-ray demonstrated patchy right basilar ground glass opacities and CBC demonstrated pancytopenia: 2.6/8.9/128. He had acute kidney injury (AKI) with a Cr of 1.67 from baseline of 0.9. A V/Q scan demonstrated a low probability for a pulmonary embolus. A CT chest without contrast demonstrated patchy ground class opacities in all lobes of lungs. A bronchoscopy was performed demonstrating diffuse alveolar hemorrhage; cultures were negative. During his hospital course his AKI worsened, as did his pancytopenia. A work-up for AKI was negative: with a normal renal ultrasound, normal serum electrophoresis, free kappa lambda. His work-up for pancytopenia noted a slightly low B12 level and normal TSH. During his course he develop a malar rash.

Clinical concern for a pulmonary-renal rheumatologic syndrome developed. An autoimmune screen was positive while his anti-neutrophil cytoplasmic antibodies (ANCA) were positive at 1:650. His anti-histone antibody was positive, double-stranded DNA was negative, while both his C3 and C4 levels were low.

The patient's hydralazine was discontinued. He received methylprednisolone IV for empiric treatment of an autoimmune process pending final labs. As a result there was a subsequent increase in his hemoglobin and platelets and downtrend in creatinine.

IMPACT/DISCUSSION: Hydralazine is a medication commonly used for chronic conditions such as heart failure and hypertension and exposure can lead to multiple autoimmune conditions. Differentiating between hydralazine induced lupus (DIL) or vasculitis (DIV) can be challenging as they demonstrate many overlapping symptoms and laboratory values. There are no set diagnostic or clinical criteria for DIL, however it is classically less severe with cutaneous and arthritic findings, although renal and hematologic manifestations are possible as in this patient. ANA and anti-histone positivity are suggestive of DIL whereas presence of ANCA-positive antibodies with MPO confirmation suggests DIV. The patient deferred a biopsy so definitive diagnosis of lupus or vasculitis could not be made. DIL was determined as his final diagnosis due to symptom resolution with prednisone.

CONCLUSION: This patient was diagnosed with hydralazine-induced lupus although his laboratory values supported both DIL and DIV due to resolution of his ground glass opacities and hemoptysis with prednisone and hydralazine cessation.

HYPERCALCEMIA AND CANCER; NOT THE USUAL SUSPECTS

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LEARNING OBJECTIVE #1: Recognize the prognostic importance of hypercalcemia in cancer patients

LEARNING OBJECTIVE #2: Distinguish hypercalcemia of malignancy from hyperparathyroidism in a cancer patient

CASE: A 67 year old undomiciled male with a history of alcohol abuse and schizophrenia was brought to the ED with altered mental status of unknown duration. He endorsed drinking 3 pints of alcohol weekly, but none recently. He was disoriented, but did not have any focal deficits or signs of alcohol withdrawal. His labs revealed a calcium level of 14.1 mg/dL with an albumin of 3.8 g/dL and an ionized calcium of 1.62 mmol/L. A CT brain without contrast was negative for acute changes. Given concern for malignancy, a CT chest was performed showing a hepatic mass. CT liver protocol demonstrated a large heterogenous arterially enhancing and centrally necrotic mass favored to be hepatocellular carcinoma (HCC). AFP was elevated and chronic HBV and HCV were also diagnosed. Further studies included a PTHrp of 30 pmol/L, PTH of 9 pg/ml, 25-(OH)D of 28, 1,25 (OH)D of 84, and negative imaging for osseous lesions. The patient initially responded to IV fluids and bisphosphonates, but then required denosumab, cinacalcet, and prednisone for control of calcium levels. His mental status improved with normalization of calcium, and he was able to engage in goals of care discussions regarding HCC treatment.

IMPACT/DISCUSSION: Although HCC causing hypercalcemia is rare, it is known that any tumor can cause hypercalcemia. Humoral hypercalcemia of malignancy, mediated by PTHrp, accounts for 80% of cases. However, many cancer patients have non-malignant causes for hypercalcemia with primary hyperparathyroidism being the leading cause. Hypercalcemia in a cancer patient with concomitant hyperparathyroidism and an elevated PTH has been associated with longer survival when compared to the poor outcomes of hypercalcemia of malignancy.

The workup of hypercalcemia in cancer patients should include PTH, PTHrp, Vitamin D levels and targeted radiology studies looking for osteolytic lesions. Suppressed PTH in the setting of hypercalcemia and cancer confirm the diagnosis of hypercalcemia of malignancy, however, elevated PTH with hypercalcemia is inappropriate and could suggest hyperparathyroidism with ectopically produced PTH being a much rarer alternative.

Our patient had hypercalcemia in the setting of elevated PTHrp and low PTH thus excluding primary hyperparathyroidism. He had clinically significant HCC, but no evidence of bone lesions and thus a humoral hypercalcemia of malignancy was diagnosed. Interestingly, his vitamin D level was elevated and thought to be a contributor to his hypercalcemia, which is a less common mechanism of hypercalcemia of malignancy.

CONCLUSION: Hypercalcemia in cancer patients merits a full evaluation as it has several pathophysiologic etiologies including significant non-malignant causes, most important primary hyperparathyroidism, which should be differentiated from malignant causes as it has implications for treatment and prognosis.

HYPERCALCEMIC CRISIS: A CASE REPORT

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LEARNING OBJECTIVE #1: Recognize the clinical features of hypercalcemic crisis

Identify/assess common etiologies of hypercalcemia

CASE: An 80-year-old elderly female, with past medical history of oxygen dependent COPD, CAD, hypertension, CKD stage III, hypothyroidism, chronic lower back pain, and provoked pulmonary embolism, presented to the hospital with a 1 week history of confusion, worsening generalized weakness, lower extremity pain, and polyuria. In the emergency department, the patient's vital signs were within normal limits. Physical exam was significant for dry mucous membranes, decreased skin turgor, mild tenderness to lower extremities bilaterally, and she was oriented to person and place only. Laboratory studies revealed a calcium of 18 mg/dl, ionized calcium of 2.28 mmol/l. Further testing was resulted: TSH of 0.96 mcl/ml, PTH of 9 pg/ml (12-88), PTH related peptide 0.3 pmol/l, Vitamin D 1, 25–dihydroxy 18 pg/ml, and vitamin D 25- hydroxy 48.8 ng/ml. Lastly, patient's kappa/lambda chain ratio was mildly elevated at 1.67 however M spike, SPEP, UPEP were negative. The patient denied taki ng any calcium supplements or antacids, but was on a low dose thiazide (HCTZ–losartan 25 mg /100 mg) which was discontinued on admission. Additionally she denied any excessive vitamin K intake, which increases the absorption of calcium. Chest x-ray and lumbosacral spine noted no lytic lesions. Treatment included aggressive IV hydration with normal saline, calcitonin, and IV zoledronic acid. In addition IV Lasix 40 mg was recommended by nephrologist after euvolemia was achieved to help further decrease calcium levels. Her calcium then returned to normal limits within 4 days. The etiology of patient's hypercalcemia remained unclear. The patient was referred to hematology and nephrology in the outpatient setting.

IMPACT/DISCUSSION: Hypercalcemic crisis or severe hypercalcemia is a life-threatening emergency. The main symptoms of hypercalcemic crisis include oliguria or anuria as well as somnolence or coma. Treatment of choice for acutely lowering calcium is extensive hydration, calcitonin, and bisphosphonates (which takes 2-3 days before taking into effect). Hypercalcemia of this caliber is commonly attributed to malignancy. Thus genetic mutations should be further evaluated to discover possible etiology of hypercalcemia in a patient with no known external or internal factors, such as malignancies, intoxication, or granulomatous disorders. The unusual etiology of hypercalcemic crisis in this case was likely multifactorial; hydrochlorothiazide use, CKD stage III, Vitamin D and calcium supplementation, and dehydration. Upon strict recommendations regarding supplemental intake and discontinuation of hydrochlorothiazide, patient's re-admission one year later (May 2019) demonstrated normal calcium levels.

CONCLUSION: Few etiologies of hypercalcemia cause levels >14

Hypercalcemia of this magnitude was determined to be multifactorial

Evaluation of genetic mutations predisposing individuals to high calcium levels is warranted

HYPERCAPNEIC RESPIRATORY FAILURE DUE TO SKELETAL ABNORMALITIES IN RENAL OSTEODYSTROPHY

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LEARNING OBJECTIVE #1: Chronic kidney disease- mineral and bone disorder (CKD-MBD) is an important complication in patients with chronic kidney disease (CKD) which leads to significant morbidity and mortality.

LEARNING OBJECTIVE #2: Early recognition and appropriate treatment can help prevent devastating complications of renal dystrophy.

CASE: A 40-year-old woman with end-stage renal disease (ESRD) due to lupus nephritis presented with arteriovenous graft infection. She was receiving hemodialysis 3-times a week for 13 years, but reported non-adherence to medications and dietary restrictions. Physical examination showed prominent jaw bones consistent with uremic leontiasis ossea. Skull radiograph also showed thickening of calvaria and classic "salt- and-pepper sign". Hand radiographs showed diffuse demineralization and extensive acro-osteolysis of the distal phalanges and cortical tunneling. She also had severe kypho-scoliosis which had progressed over years leading to restrictive lung disease and chronic hypercapneic respiratory failure. Her serum parathormone (PTH) level was higher than 1900 pg/mL (201 pmol/L) and serum phosphorous level was consistently above 5.5 mg/dL (1.78 mmol/L). These findings were consistent with advanced CKD-MBD. She was treated with antibiotics, arterio-venous graft resection, and was discharged on sevalamer.

Over the following two years, the patient required multiple hospitalizations for hypercapneic respiratory failure needing mechanical ventilation and eventually passed away in hospice.

IMPACT/DISCUSSION: CKD-MBD is a systemic disease characterized by abnormalities in mineral hemostasis leading to biochemical abnormalities (serum calcium and phosphorous), endocrine dysfunction (PTH and vitamin D metabolism), anomalous bone turnover and extra-skeletal calcification. It is associated with increased cardiovascular calcification, morbidity and mortality. Renal osteodystrophy is the skeletal component of CKD-MBD and refers to the alterations in bone morphology which often leads to elevated fracture risk in these patients. Since bone biopsy is invasive and expensive, circulating PTH levels are commonly used as surrogate indicator for bone turnover. Bone mineral density is sensitive in predicting vertebral fractures in hemodialysis patients. Proactive management, including optimal control of serum calcium, phosphate, PTH levels and, sometimes timely parathyroidectomy can prevent such severe manifestations.

CONCLUSION: CKD- MB is an inevitable complication of CKD, which is often difficult to treat. Timely identification and treatment can help improve quality of life of patients with CKD-MBD.

HYPERCOAGULABILITY AND INFLAMMATION: A CASE OF IBD AND EXTENSIVE VENOUS THROMBOEMBOLI

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LEARNING OBJECTIVE #1: Recognize venous thromboembolism (VTE) as a major sequelae of inflammatory bowel disease (IBD)

LEARNING OBJECTIVE #2: Appreciate the safety of VTE prophylaxis in hospitalized IBD patients

CASE: A 55-year-old woman with recurrent *Clostridium difficile* colitis presented to the emergency department for five days of bloody vaginal discharge and rectal pain. Over the preceding two months, she had 25 bloody bowel movements daily and 25 pounds weight loss, but denied fevers, chills, abdominal pain, nausea, vomiting, or anorexia. Social history was notable for an 8 pack-year smoking history.

On physical exam, she had a jugular venous pressure of 12 mmHg; soft, nontender abdomen; erythematous tender nodules on bilateral shins; and symmetric pitting edema. Gynecologic exam showed a rectovaginal fistula. Her labs revealed anemia, hypoalbuminemia, elevated inflammatory markers, and fecal calprotectin >1250 μg/g. GI PCR and *C. diff* stool antigen excluded acute infection. CT abdomen and pelvis showed severe colitis and non-occlusive left renal vein thrombosis. Flexible sigmoidoscopy found cookie cutter rectal ulcers with chronic active colitis, consistent with IBD. She was started on a heparin drip and IV methylprednisolone for a severe IBD flare.

An echocardiogram revealed a mass in right ventricular (RV) inflow tract, with cardiac MRI identifying a 1.3 x 0.9 cm thrombus. CT chest showed segmental and subsegmental pulmonary emboli and lower extremity duplex showed a left femoral vein thrombosis.

Medical management was continued for RV thrombus given hemodynamic stability. She responded quickly to IV steroids and was transitioned to Lovenox injections and prednisone prior to discharge, with plans to initiate biologics outpatient.

IMPACT/DISCUSSION: Patients with IBD are at two to three times greater overall risk of DVT and PE compared to the general population, a risk which increases to eight times that of controls during an acute IBD flare. This excess VTE risk is attributed to incompletely understood abnormalities in the coagulation cascade triggered by inflammation. VTE can be a marker of activity and extent of disease and is associated with fistula, stenosis, abscess, use of steroids and hospitalization. Hospitalized IBD patients with VTE are at twice the risk of mortality compared to those without VTE. We present a case of a new diagnosis of inflammatory bowel disease presenting with rectovaginal fistula and extensive venous thromboemboli, including left renal vein thrombosis, left femoral DVT, right ventricular thrombus, and multiple pulmonary emboli.

Despite often presenting with rectal bleeding, hospitalized IBD patients should receive prophylactic anticoagulation to reduce elevated VTE risk. Studies demonstrate no increase in bleeding rates among IBD patients who receive prophylaxis.

CONCLUSION: In patients with acute inflammatory bowel disease flare, clinicians must have a high index of suspicion for venous thromboembolism and prescribe prophylactic anticoagulation during hospitalization.

HYPEREOSINOPHILIC SYNDROME LEADING TO EOSINOPHILIC MYOCARDITIS

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LEARNING OBJECTIVE #1: Recognize the difficulty in differentiating the etiology of hypereosinophilia between idiopathic HES and EGPA.

CASE: A 63-year-old man with asthma, chronic rhinosinusitis, and fifty-pound weight loss in the past seven months, was admitted to the hospital for left parietal and right occipital stroke. Asthma was diagnosed in childhood and was well-controlled without recent exacerbation. Patient had focal right hand weakness of 4/5 strength, petechiae on the left lateral thigh, and violaceous plaque on the right lateral thigh that was non-blanching. Work-up for stroke revealed hypereosinophilia and a new non-dilated cardiomyopathy with ejection fraction of 25% and left atrial appendage thrombus. His white blood cell count was 21,600/UL on admission, with an eosinophil count of 12,410/UL (57.5%). Duration of hypereosinophilia was unknown as patient had not seen a doctor for many years. Cardiac MRI was highly suggestive of eosinophilic myocarditis, later confirmed with endomyocardial biopsy. Skin biopsy revealed leukocytoclastic vasculitis with numerous eosinophils but no granulomas. Flow cytometry, genetic mutation analysis, and bone marrow biopsy were all negative for myeloid and lymphoid neoplasms. Immunologic studies were non-diagnostic. Nasal polyp pathology revealed chronic inflammation with numerous eosinophils. Fungal, viral, and parasitic infectious workup were negative. Patient was started on high dose pulse intravenous corticosteroids with subsequent decline of hypereosinophilia and near normalization of ejection fraction. However, patient had recurrence of hypereosinophilia with steroid taper. Prednisone was increased to a higher dose and given that patient developed perforated gastric ulcer requiring surgical management as a complication of steroid use, a decision was made to start cyclophosphamide. After the first infusion of cyclophosphamide, patient was discharged home with outpatient hematology, rheumatology, and cardiology follow-up.

IMPACT/DISCUSSION: Unlike in HES, the precise role of eosinophils in disease complications and clinical manifestations in EGPA remains unknown. Both disorders usually respond to glucocorticoids initially but subsequent treatment strategies can differ. Documented eosinophilic vasculitis on tissue biopsy is helpful in diagnosing EGPA, although early in disease, pathology usually reveals eosinophil tissue infiltration without the distinguishing granulomas and frank vasculitis of late-stage EGPA. For patients with HES and features of EGPA and severe organ involvement who are unresponsive to glucocorticoids, cyclophosphamide would be the preferred next agent.

CONCLUSION: Hypereosinophilic syndromes (HES) are a rare group of disorders caused by sustained overproduction of eosinophils, leading to eosinophil infiltration and mediator release causing multi-organ damage. Non-neoplastic HES can be difficult to differentiate from disease entities associated with hypereosinophilia (HE) such as eosinophilic granulomatosis and polyangiitis (EGPA).

HYPER-RESPONSIVENESS TO DOFETILIDE LEADING TO TORSADES DE POINTES

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LEARNING OBJECTIVE #1: Recognize side effect of Dofetilide and adequate monitoring

LEARNING OBJECTIVE #2: Manage Dofetilide induced ventricular arrhythmia

CASE: 67 year-old-male with a history of hypertension and atrial fibrillation (Afib), not on medications for 2 years, presented with dyspnea. Found to have Afib with rapid ventricular response (RVR). Echocardiogram (ECHO) showed ejection fraction (LVEF) of 17%. Left atrial appendage was free of thrombus by trans- esophageal ECHO with subsequent unsuccessful cardioversion. Electrophysiology recommended starting oral Dofetilide 500mg BID with telemetry monitoring and obtaining EKG 2 hours after each dose to monitor QTc. Baseline QTc was normal (423 ms). An hour after administration of first dose of Dofetilide, he developed pulseless ventricular tachycardia with rhythm strip showing torsades de pointes (Tdp). He received unsynchronized shock twice with performing advanced cardiac life support measures including amiodarone 150mg and 4g of magnesium. Return of spontaneous circulation (ROSC) was achieved. Post ROSC EKG showed sinus rhythm with prolonged QTc (619 ms). No electrolytes derangement on lab review. He underwent coronary angiography that demonstrated non-obstructive CAD. Subsequently, he had successful implantation of a bi-ventricular defibrillator in anticipation of future AV nodal ablation. Unfortunately, he had recurrent episodes of Afib/flutter with RVR. After risk versus benefit discussion with him, he elected to proceed with atrial flutter ablation with wide-area circumferential pulmonary vein ablation of all pulmonary veins. He converted to normal sinus rhythm. He then tolerated Metoprolol and amiodarone. He was discharged with 3 months follow up ECHO showing significant improvement in his LVEF to 52%.

IMPACT/DISCUSSION: Dofetilide is a class III antiarrhythmic drug. Dofetilide blocks rapid component of cardiac delayed rectifier K^+ current resulting in prolongation of action potential duration and effective refractory period. Therefore, it can prolong QT interval and increase risk of Tdp. In a Danish study, 1518 patients with left ventricular dysfunction were randomly assigned to receive dofetilide versus placebo. Dofetilide was effective in converting to and sustaining sinus rhythm. Risk factors of Tdp in their sample included severe HF, female gender, and baseline Qtc prolongation. However, some patients like the present case could exhibit hyper-responsiveness to Dofetilide regardless of baseline QTc. Majority of events occurred within the first three days after giving Dofetilide. Dofetilide requires inpatient oral loading with EKG and electrolytes monitoring. Dofetilide induced Tdp should be managed similarly to ventricular tachycardia from any other cause.

CONCLUSION: Dofetilide is an effective medication for treatment of Afib; however, it has known potential side effects. Optimizing patient before administration by correcting electrolyte derangement and monitoring with telemetry with frequent QTc checks are critical with drug load to avoid fatal arrhythmias.

HYPERSENSITIVITY PNEUMONITIS: A WORK PLACE HAZARD

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LEARNING OBJECTIVE #1: Differentiate between the clinical and diagnostic features of pneumonia from hypersensitivity pneumonitis

LEARNING OBJECTIVE #2: Diagnose and manage hypersensitivity pneumonitis

CASE: A 48-year-old healthy male presented with acute dyspnea and dry cough. In the ED, he could not speak in full sentences and was severely hypoxic (oxygen saturation 70% room air), requiring BIPAP stabilization. Chest CTA revealed bilateral infiltrates concerning for multifocal pneumonia. He was started on Vancomycin and Cefepime and admitted for acute hypoxic respiratory failure. On admission, his vitals were otherwise normal. CBC and CMP were normal; blood and sputum cultures were negative. Further history revealed patient is a chemist and has been working with trifluoroacetic acid (TFA) in his lab. Given no signs of infection and recent TFA exposure, he was diagnosed with hypersensitivity pneumonitis. Empiric antibiotics were stopped. Bronchoscopy found no abnormal findings; cytology was negative for infection or malignancy. Patient was placed on high-flow nasal cannula oxygen, scheduled inhalers and aggressive pulmonary hygiene for supportive treatment. Pulmonary consult advised against systemic steroids. Patient's respiratory status eventually improved and he was slowly weaned off oxygen after a 13-week hospitalization. CT Chest 3 months later showed resolution of airspace opacities.

IMPACT/DISCUSSION: This case teaches the dangers of pattern recognition as a diagnostic heuristic and demonstrates that not all multifocal pulmonary infiltrates indicate infectious etiology. A detailed history including occupational exposures is imperative to elicit such risks for hypersensitivity pneumonitis (HSP). While no case reports exist of HSP secondary to TFA inhalation, CDC reports common post-exposure symptoms include cough, dyspnea and delayed pulmonary edema. In this case, CTA Chest found no pulmonary edema, al though patient did experience protracted symptoms. Distinguishing between pneumonia and HSP is important to dictate proper treatment. Bacterial pneumonia warrants a course of antibiotics, and in severe cases, even steroids whereas neither is indicated in acute HSP. The key treatment for HSP is the identification and avoidance of causative exposure with common triggers being workplace exposures and pets. While systemic glucocorticoids are unnecessary in acute HSP, chronic cases warrant a course of systemic steroids. Prognosis for recovery is overall good, particularly in acute cases with complete removal of triggering exposure. Our patient now wears a N95 mask and works under a fume hood when handling TFA at work.

CONCLUSION: Although the clinical presentation (e.g. acute respiratory failure) and radiographic findings (e.g. multifocal infiltrates) can be similar in pneumonia, the recent TFA exposure and lack of infectious signs solidifies the diagnosis of hypersensitivity pneumonitis.

Bacterial pneumonia warrants a course of antibiotics and steroids, whereas avoidance of causative agent is key in hypersensitivity pneumonitis.

HYPOGLYCEMIA IN THE NON-DIABETIC PATIENT

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LEARNING OBJECTIVE #1: Recognize the risk factors and diagnostic clues for presyncope due to hypoglycemia in nondiabetic patients.

Diagnose and manage hypoglycemia due to bariatric surgery.

CASE: A 68-year-old male bus driver with history of Wolff Parkinson White syndrome (WPW), aortic Insufficiency and Roux-en-Y gastric bypass for peptic ulcer disease presents to clinic with frequent lapses of memory, confusion and lightheadedness. He has had sporadic episodes of forgetting his bus route with associated nausea, lightheadedness, flushing and weakness. He denies syncope, diarrhea, weight loss, insulin or sulfonylurea use. He reports no inciting factors. A third of these events occurred postprandially. At a clinic visit, he acutely developed flushing, diaphoresis, dizziness, palpitations, and nausea. POCT glucose was 50. Blood glucose level improved to >100 with snacks and his symptoms resolved completely. Cardiac and neurologic evaluation were negative including EKG, Holter monitor, EEG, CT and MRI brain. HbA1c, C-peptide and serum insulin levels were normal.

IMPACT/DISCUSSION: This case demonstrates the diagnostic dilemma associated with the evaluation of presyncope and the risk of a shotgun approach to its work-up. Vasomotor and cardiovascular causes lead the

differential diagnosis for presyncope. Yet hypoglycemia remains an important cause of presyncope in both diabetic and nondiabetic patients. Neuroglycopenic presyncope can occur with either fasting or reactive hypoglycemia which occurs a few hours postprandially. Obtaining a detailed clinical history and knowing risk factors for neuroglycopenic presyncope are vital. Risk factors in nondiabetic patients include anorexia, severe liver or kidney disease, drugs e.g. alcohol, salicylates and history of Roux-en-Y gastric bypass, as true in our case. Roux-en-Y surgery causes reactive hypoglycemia due to early and late dumping syndromes causing metabolic and nutritional derangements. While early dumping syndrome is self-limiting, late dumping syndrome can present months to years later causing recurrent endogenous hyperinsulinemic hypoglycemia.

In our patient with WPW, our initial diagnosis was arrhythmia. However, the negative Holter monitoring, history of bariatric surgery, documented hypoglycemia during an episode and resolution of symptoms upon euglycemia solidified the diagnosis of neuroglycopenic presyncope. As treatment of post-bypass hypoglycemia, patient was advised to eat small meals or snacks about every 3 hours, eat a variety of foods including protein and high fiber, and limit high sugar foods. A high-protein, low-carbohydrate diet has not proven effective for hypoglycemia prevention. In severe cases, acarbose and pancreatectomy nay be warranted.

CONCLUSION: Have a high index of suspicion for neuroglycopenic presyncope in those with history of bariatric surgery and other risk factors.

Diagnostic clues for neuroglycopenic presyncope include predominantly postprandial symptoms and resolution with return of euglycemia.

HYPONATREMIA AND HYPERTENSION AS PRESENTING SIGNS OF SHEEHAN SYNDROME

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LEARNING OBJECTIVE #1: Recognize that sodium disorders can be caused by late-onset disturbances of the HPA axis.

CASE: A 67-year-old woman with a history of hypertension, hyperlipidemia, and type 2 diabetes presented to the ED with a headache of 2 months' duration. On admission, her blood pressure was 233/106, and she was euvolemic with no signs of end-organ damage. Her initial serum sodium level was 126, but all other electrolytes were normal. Her hyponatremia was associated with a low serum osmolality (264 mOsm/kg), and her urine studies demonstrated a urine sodium level of 114 mmol/L with an elevated urine osmolality of 501 mOsm/kg. Diagnostic evaluation of her hyponatremia yielded a normal TSH (3.53 uIu/mL) with a low free T4 (<0.4 ng/dL), as well as a low morning cortisol level of 3.6 mcg/dL with an inadequate response (peak serum cortisol concentration of 14.8 mcg/dL) after an ACTH stimulation test. On further questioning, she disclosed a history of a severe postpartum hemorrhage 30 years prior to presentation requiring multiple blood transfusions with resultant secondary amenorrhea; however, her ability to breastfeed remained intact for 2 years following the hemorrhage. The diagnosis of Sheehan syndrome was made after an MRI of the brain revealed an empty sella turcica. She was initially treated with sodium chloride tablets and subsequently with hydrocortisone and levothyroxine, and her serum sodium level improved to 134 mmol/L by discharge. For her hypertensive urgency, she was initially treated with hydralazine and then started on amlodipine as well as an increased dose of her home benazepril with eventual normalization of her blood pressure.

IMPACT/DISCUSSION: Hyponatremia is the most common electrolyte abnormality in patients with Sheehan syndrome, and in one study, 59% of patients with Sheehan syndrome were noted to have hyponatremia (1). Two notable features of this patient's case were the delayed onset of presentation from the initial insult to her pituitary as well as her severe hypertension rather than the more expected hypotension. However, late-onset Sheehan syndrome presenting with hyponatremia 30 years after a postpartum hemorrhage has previously been documented in the literature, suggesting that pituitary gland necrosis can develop over a long period of time (2). Additionally, 10% of patients with Sheehan syndrome in one large cohort were noted to have hypertension, suggesting that hypertension cannot exclude a diagnosis of adrenal insufficiency (1).

CONCLUSION: Electrolyte disturbances are common in patients with Sheehan syndrome. It is important to maintain a high index of suspicion for this disease in patients presenting with hyponatremia and a remote history of postpartum hemorrhage.

1. Lim CH, Han JH, Jin J, et al. Electrolyte imbalance in patients with Sheehan's syndrome. Endocrinol Metab (Seoul). 2015;30(4):502508.
2. Soresi M, Brunori G, Citarrella R, et al. Late-onset Sheehan's syndrome presenting with rhabdomyolysis and hyponatremia: a case report. J Med Case Rep. 2013;7:227.

HYPOTENSION ASSOCIATED WITH HYPOCALCEMIA IN A PATIENT WITH A REMOTE HISTORY OF COMPLETE THYROIDECTOMY

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LEARNING OBJECTIVE #1: Identify hypocalcemia as a complication of complete thyroidectomy.

LEARNING OBJECTIVE #2: Recognize hypocalcemia as a contributor to refractory hypotension.

CASE: A 54 y/o woman with history of Grave's Disease, medullary thyroid carcinoma s/p complete thyroidectomy, Crohn's Disease, diabetes mellitus type II, and hypertension presented to the hospital with diarrhea after initiation of Vedolizumab for Crohn's Disease flare. She was admitted to the ICU for initiation of phenylephrine due to hypotension unresponsive to fluid resuscitation. Labs were notable for WBC 24K, creatinine of 2.6 mg/dL, and calcium 8.3 mg/dL. Admission CT abdomen/pelvis was consistent with an active flare of Crohn's Disease. Evaluation for infectious process was negative. She was started on methylprednisolone 30mg IV BID on hospital day 2 for Crohn's disease and persistent hypotension. This was transitioned to prednisone 40mg PO daily on hospital day 8. On hospital day 5, phenylephrine drip was transitioned to PO midodrine then stopped on hospital day 14. She was discharged on hospital day 15 on prednisone 40mg PO daily. On follow up with her primary care provider she was orthostatic off all antihypertensive medications (previously on amlodipine 5mg, lisinopril 40mg, and HCTZ 25mg). Outpatient labs were notable for critically low corrected calcium of 7.2 mg/dL. She was admitted to the hospital with Chvostek sign. Chart review noted ionized calcium 1.6 mg/dL, vitamin D 1,25 level <12.5 pg/mL, PTH intact 37.3 pg/mL. She was previously on calcium supplementation with calcitriol but it had been discontinued a year earlier without sequela. Her calcium was acutely corrected and calcitriol was restarted with plan to continue indefinitely. As her serum calcium levels improved, she had rapid improvement in her blood pressure thus necessitating she restart lisinopril 20mg-HCTZ 12.5mg. Oral prednisone was tapered without any episodes of hypotension.

IMPACT/DISCUSSION: Hypocalcemia is a rare complication of complete thyroidectomy. It occurs due to damage to the parathyroid resulting in hypoparathyroidism. Between 0.2% and 1.9% of people undergoing total thyroidectomy have permanent hypocalcemia. This is almost always

detected one to three days post- operatively. Patients with hypocalcemia secondary to hypoparathyroidism require supplementation with calcitriol. This patient had a history of post-operative hypocalcemia but had done well for nearly a year off of calcium supplementation. Her development of severe hypocalcemia was attributed to low PTH reserves secondary to complete thyroidectomy which was exacerbated by decreased gut absorption of vitamin D, magnesium, and calcium due to her persistent flare of Crohn's Disease.

CONCLUSION: Hypocalcemia, though rare, should be considered in cases of refractory hypotension as it is easily corrected. Discontinue calcium supplementation with caution in patients with a history of hypocalcemia after thyroidectomy as there is a risk of hypocalcemia during critical illness due to low PTH reserve.

I.F. THE CYANOCOBALAMIN LEVEL IS NORMAL...CAN IT STILL B A B12 DEFICIENCY?

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LEARNING OBJECTIVE #1: Identify the clinical and diagnostic features of vitamin B12 deficiency.

LEARNING OBJECTIVE #2: Diagnose vitamin B12 deficiency when laboratory B12 measurements are normal.

CASE: A 56-year-old woman with a history of hypothyroidism presented with fatigue. Physical exam demonstrated glossitis but was otherwise normal. Initial labs demonstrated macrocytosis with normal hemoglobin, folate and B12 (1446) levels. TSH was mildly elevated and the patient was restarted on levothyroxine. Over the next several months she had persistent fatigue and developed shortness of breath, a metallic taste in her mouth, and paresthesias in her distal extremities. Repeat labs showed a macrocytic anemia with hemoglobin 11.0 (MCV 111) and normal B12 level of 815, now with normal TSH. Over the next month her hemoglobin decreased further to 8.6, and there was evidence of hemolysis with undetectable haptoglobin and elevated LDH >2000 (ULN 170). Methylmalonic acid (MMA) and homocysteine levels were significantly elevated with MMA >4000 and homocysteine level of 282 (ULN 10). Together these findings confirmed B12 deficiency despite normal serum B12 levels. Anti-intrinsic factor antibody returned positive providing a diagnosis of pernicious anemia. Cyanocobalamin injections were initiated, and her hemoglobin increased to 10.2 with improvement in her symptoms.

IMPACT/DISCUSSION: The classic presentation of B12 deficiency is a megaloblastic anemia with hemolysis and associated symptoms, as well as various neurologic manifestations, most commonly paresthesias or ataxia. Glossitis is also a common feature. The main causes of B12 deficiency are dietary (now uncommon aside from strict vegan diets) or poor absorption from various underlying disorders, in this case pernicious anemia due to anti-intrinsic factor antibodies. The symptoms of B12 deficiency are caused by the role of B12 as a cofactor in DNA synthesis for dividing cells. As this pathway is unable to proceed it causes a buildup of reactants, namely MMA and homocysteine. The literature reports several cases of B12 deficiency in the setting of normal B12 blood levels, most often in the setting of pernicious anemia as in this patient, given that the antibodies may interfere with the laboratory test. The MMA and homocysteine will remain elevated as in this case, allowing the diagnosis to be made when clinical suspicion is high. Treatment of B12 deficiency includes correction of the underlying disorder if possible and repletion of B12. This case demonstrates the classic presentation of B12 deficiency and illustrates the importance of proper lab interpretation.

CONCLUSION: B12 deficiency classically presents as a megaloblastic anemia with hemolysis, neurologic symptoms such as peripheral neuropathy, and glossitis.

Laboratory B12 levels can be falsely elevated, especially in the setting of pernicious anemia, and if clinical suspicion is high the diagnosis can be supported by elevated levels of the reactants MMA and homocysteine.

I CAN'T HEAR YOU, YOU SAID I HAVE WHAT?

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LEARNING OBJECTIVE #1: Recognize the common findings of Wernicke Encephalopathy

LEARNING OBJECTIVE #2: Identify auditory symptoms as a rare manifestation of Wernicke Encephalopathy

CASE: A 46 year old African American woman presented with 1 week of worsening hearing loss along with 3 days of vision changes, confusion, visual hallucinations, and difficulty ambulating. She had history of invasive ductal cell carcinoma status-post mastectomy and chemotherapy.

Vital signs were within normal limits other than tachycardia with heart rate to 110 beats per minute. The initial physical examination was notable for a reasonably well-nourished appearing woman although her BMI had dropped from 27 to 22 within the previous 18 months. She spoke very loudly and complained of difficulty hearing questions or reading written questions. Responses were inappropriate at times, which could have been attributable to misunderstanding questions asked. She was alert, intermittently oriented, and also complained of visual hallucinations. Neurologic examination was notable for end-gaze horizontal nystagmus, dysmetria as measured with finger-to-nose exam, decreased visual acuity and decreased hearing bilaterally. Laboratory evaluation was significant for WBC count 14.4 x 10^3uL, AST 106 U/L, and ALT 15 U/L. The patient was initiated on broad spectrum antibiotics for suspicion of meningitis. CT of brain and MRI of brain were normal. Lumbar puncture was performed and showed grossly normal CSF studies with negative cultures and PCR studies. Wernicke encephalopathy was suspected, and intravenous thiamine supplementation was initiated with subsequent improvement of auditory and visual disturbances, confusion and ataxia. Serum thiamine level returned undetectable and she later admitted to significantly more alcohol intake than the "occasional use" reported at admission.

IMPACT/DISCUSSION: Wernicke encephalopathy is a condition of thiamine deficiency commonly affecting those with alcohol use disorder or gastric bypass history. Though traditionally associated with encephalopathy, ophthalmoplegia, and ataxia, it can rarely be associated with auditory deficits as well. Wernicke encephalopathy should be suspected in any patient presenting with altered mentation and alcohol intake history, but also in those with auditory deficits. Recovery of deficits is possible with prompt diagnosis and treatment, and mortality from untreated disease is high.

CONCLUSION: Wernicke encephalopathy classically presents with the triad of encephalopathy, oculomotor dysfunction, and ataxia, but only one-third of patients have the full triad. Other less common findings include vestibular dysfunction, peripheral neuropathy, hypothermia, protein calorie malnutrition, and rarely hearing loss. It is imperative that internists consider this entity in the differential diagnosis even when classic findings are not present in order to provide prompt treatment, prevent morbidity, although residual deficits are common.

IDIOPATHIC GRANULOMATOUS MASTITIS: AN UNCOMMON DIAGNOSIS IN YOUNG WOMEN WITH SEVERE BREAST PAIN

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LEARNING OBJECTIVE #1: Recognize the presentation of idiopathic granulomatous mastitis (IGM), a less typical etiology for breast pain and swelling especially in women of childbearing age

LEARNING OBJECTIVE #2: Review the treatment guidelines of IGM, and its complex and lengthy nature, despite being a benign disease

CASE: 36 year old female with PMH of intermittent asthma and prediabetes, presented to an urgent care center with right breast pain for 12 days. She stated that her right breast was tender and swollen but denied skin changes, redness, nipple discharge, fevers and chills. She had no other significant PMH, PSH of family history. Her children were 3, 5, & 7 yrs old. Her exam was only significant for swelling and tenderness in the upper outer quadrant of the right breast, with no erythema, warmth, nipple discharge, fluctuance, skin changes, or LAD. Right breast ultrasound showed edema but no focal abnormality (brds 2). For the next 2 months, she was monitored with serial breast exams by her PCP, and her exam fluctuated – from improvement in symptoms/findings to tender, indurated areas to eventually diffuse edema of the breast. Repeat imaging suggested an infectious process but no drainable collection. Breast surgery was consulted, Keflex given for 10 days, but with no improvement. Finally, a biopsy revealed acute and chronic mastitis with non-necrotizing granulomas, suggesting IGM.

IMPACT/DISCUSSION: IGM is a rare, benign, but complicated breast disease. Etiology is unclear, but in two small retrospective studies, IGM tends to affect young women between 23-38 years of age, and 63-86% have been pregnant within the past 5 years. It presents as a unilateral, painful, discrete mass without systemic symptoms. It's differential includes malignancy, fungal/bacterial infections, and granulomatous (tuberculous/sarcoid) mastitis. Symptoms are relapsing and remitting, persisting for 3-16 months prior to diagnosis. Imaging is often non-conclusive and biopsy is required to make the diagnosis. With no clear consenus on mangement, antibiotics are often prescribed (57%) despite negative cultures. Long courses of steroids (8-12 weeks) are often tried, but a large majority of the patients (64%) require some surgical intervention (wide local excision or partial mastectomy). IGM can take 2-24 months to attain symptom resolution, and with a recurrence rate of 15-20%.

CONCLUSION: IGM is a rare, benign, breast disease with challenges in diagnosis and management. It should remain in the differential diagnosis of women of reproductive years, especially with recent pregnancy, who present with a painful breast mass. Work up and mangement can often require multiple rounds of imaging, biopsies, antibiotics, steroids, surgery, over several weeks and months, and despite that can recur. Providers need to approach this diagnosis with compassion, patience and reassurance, since the work up and treatment can be extremely frustrating and anxiety-provoking, especially in young women who are also often supporting a work-life balance at the same time.

IFOSFAMIDE-INDUCED DIABETES INSIPIDUS

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LEARNING OBJECTIVE #1: Recognize risk factors for ifosfamide nephrotoxicity

LEARNING OBJECTIVE #2: Manage diabetes insipidus with desmopressin

CASE: A 64-year-old African American woman with chronic kidney disease and stage IV leiomyosarcoma previously treated with several chemotherapy regimens before recieving four cycles of ifosfamide presented with increasing urinary frequency and urge incontinence. Vital signs showed tachycardia but stable blood pressures and no fever. Exam showed dry mucous membranes, mucositis, and decreased skin turgor with polyuria.

Labs on admission showed Na 153, K 2.2, HCO3 12, Phos 1.4, Ur osm 184, creatinine 2.4, and proteinuria. She was treated with hypotonic fluid resuscitation, aggressive electrolyte replacement, and started on desmopressin 2mcg IV bid. Labs showed gradual improvement of electrolyte deficiencies and acidosis, but patient remained hypernatremic and polyuric. Desmopressin was transitioned to twice daily intranasal spray and required eighteen days of therapy until labs continued to improve, trending to Na 137, K 4.2, HCO3 24, Phos 2.8, Ur osm 413, creatinine 1.8 and resolution of polyruria at time of discharge. Patient was continued with outpatient desmopressin nasal spray and followed in clinic where therapy was eventually able to be discontinued.

IMPACT/DISCUSSION: Ifsofamide is a potent alkylating agent with known nephrotoxicity resulting in tubular injury, Fanconi syndrome, and rarely nephrogenic diabetes insipidus. Risk factors for ifosfamidenephrotoxicity include age under five years, concomitant use of cisplatin, cumulative dose >90g/m2, and underlying chronic kidney disease. Most cases occur in children receiving ifosfamide with cisplatin, however our adult patient had no other active concurrent chemotherapies. She did, however, previously undergo six cycles of gemticabine/docetaxel followed by letrozole before transitioning to an oloratumab/doxorubicin regimen one month before beginning ifosfamide.

Our patient contributes another report of ifosfamide-induced Fanconi syndrome with rare nephrogenic diabetes insipidus. Consistent with several cases in the paucity of literature, our patient slowly recovered proximal tubular function and was able to resolve the insult with desmopressin support. Although nephrogenic diabetes insipidus would theoretically be unresponsive to desmopressin, repeated administration of DDAVP may act on enough of the spared or recovering tubules to show clinical and laboratory improvement of diabetes insipidus. This may be due to a partial down-modulation of the basolateral arginine vasopressin receptor 2 (AVPR2), as seen in cases of partial nephrogenic diabetes insipidus due to congenital mutations in the AVPR2 gene.

CONCLUSION: Diabetes inspidus is a rare complication of ifosfamide therapy. Risk factors may include concurrent kidney disease as well as prior chemotherapy. This may be due to vasopressin receptor downregulation, which may still be responsive to desmopressin therapy.

IF YOU GET PREGNANT, I CAN HELP WITH THAT TOO: PREVENTING, ANTICIPATING AND ADDRESSING UNINTENDED PREGNANCY IN PRIMARY CARE

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LEARNING OBJECTIVE #1: Describe how general internists can routinely assess contraceptive and preconception health needs

LEARNING OBJECTIVE #2: Describe how general internists can reduce barriers to abortion care by anticipating the potential for unintended pregnancy and providing office-based abortion care

CASE: A 24-year-old woman presents to establish primary care. She denies plans for pregnancy in the next year; when asked about her interest in contraception, she denies sexual activity or interest in contraception. One year later, she presents to the Emergency Room with nausea,

vomiting, and delayed menses, and is diagnosed with early pregnancy. She expresses interest in terminating the pregnancy and receives information about outpatient abortion care. She is seen in primary care clinic two days later, where her internist explores her attitudes toward the pregnancy and reviews options for abortion care; she is clear in her desire to terminate and expresses a preference for medication abortion. She is referred to Planned Parenthood and receives a medication abortion.

IMPACT/DISCUSSION: Unintended pregnancy is common, and associated with adverse medical and socioeconomic outcomes. To prevent these adverse outcomes, general internists should elicit patients' reproductive plans at routine visits and offer appropriate contraceptive or preconception care. Multiple frameworks exist to efficiently and sensitively engage in these conversations, including the evidence-based One Key Question ®: "Would you like to become pregnant in the next year?"

However, not all patients engage in reproductive planning. For those who do, plans may change or unfold differently than expected—as in this case. Thus, both patients who do and do not engage in planning may experience unintended pregnancy. Forty percent of these pregnancies will result in abortion. Although abortion is common and safe, many barriers face those who seek abortion care, including stigma and provider scarcity. Our patient required three visits to receive abortion care, including one Emergency Room visit.

We propose two clinical practices to address the barriers of stigma and provider scarcity. Internists should normalize pregnancy options by communicating to patients their willingness to support prenatal or abortion care in the event of an unintended pregnancy. Additionally, internists should consider pursuing training to provide office-based abortion care, as the literature indicates that medication abortion can be safely provided in the primary care setting.

For our patient, these interventions might have resulted in more efficient care in a familiar setting.

CONCLUSION: - Prevent unintended pregnancy by routinely assessing patient desire for pregnancy and providing appropriate preconception or contraceptive care

- Anticipate the potential for unintended pregnancy and communicate willingness to assist with abortion or prenatal care
- Consider addressing unintended pregnancy by incorporating office-based abortion care

IF YOU HAVE BEEN A HEAVY ALCOHOL DRINKER, YOU CAN GET INFECTED TO PASTEURELLA MULTOCIDA EVEN WITHOUT ANY BITE

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LEARNING OBJECTIVE #1: *Pasteurella multocida* resident in pets such as dog and cat may cause brain abscess as well as respiratory infections

LEARNING OBJECTIVE #2: Brain abscess by *Pasteurella multocida* may occur in immunocompromised patient such as cirrhosis.

CASE: A 67 years old woman who has been a heavy alcohol drinker visited our hospital due to fever and anorexia. Her medical strory was unknown. She was drinking one liter of beer every day. She has kept one cat, but had no bites or scratches. The inspection reavealed a traumatic right putamen hemorrhage confirmed by head CT in addition to fever associated with sepsis. Abdominal CT also comfirmed surface irregularities on the liver suggesting alcoholic cirrhosis. We began to be administration of Meropenem (1g / q8h) for 1week as a treatment of sepsis / DIC and admitted her to the ICU. After that, both blood and sputum cultures demonstrated *Pasteurella multocida (P. multocida*), and we switched to Ampicillin (2g / q6h) for 1 week. Then she recoverd well and was discharged, but after five days she was taken to the emergency again due to fever and headache. Head-contrast CT revealed multiple chamber ring-enhanced masses around the right cerebral hemisphere. Accordingly, a brain abscess caused by *P. multocida* was suspected. No signs of cerebral hernia or paralysis were observed, so we decided to treat with Ampicillin (3g / q6h) without surgical treatment. *P. multocida* was detected again from the blood culture and the sensitivity of Ampicillin was good. With 6 weeks of antibacterial treatment, her symptoms disappeared in a few days and was discharged without leaving sequelae. Follow-up at outpatient for half a year, but no relapse is confirmed.

IMPACT/DISCUSSION: *P. multocida* is a gram-negative coccus that is resident in the oral cavity and digestive tract of many mammals and is often transmitted by abrasion or bite. In cases of atraumatic infection, the major causes are due to respiratory infections. Central nervous system infection is rare. Although bites by domestic cats could not be confirmed, there are some case reports of infection by a contact such as licking. In this case, severe infection is likely to be established by immunodeficiency due to the cirrhosis. Then it is presumed that the patient had a brain abscess after cerebral hemorrhage. The antimicrobial susceptibility at first hospitalization was good, but both the administration period and quantity of antibiotics were judged to be inadequate, and a treatment period of 6 weeks or more was selected as the treatment period for brain abscess.

CONCLUSION: We experienced the rare patient who got infected with brain abscess due to *P. multocida*.

IMMOBILITY: A RARE CAUSE OF SYMPTOMATIC HYPERCALCEMIA

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LEARNING OBJECTIVE #1: - Hypercalcemia due to immobilization is a diagnosis of exclusion.

LEARNING OBJECTIVE #2: - Re-mobilization or physical therapy is the best long-term treatment for hypercalcemia due to immobility.

CASE: A 76-year-old woman with prior stroke with right-sided hemiparesis, chronic kidney disease (CKD), total parathyroidectomy was brought in by the family for altered mental status for one month, worse over the last two days. Following her stroke eight months prior, the patient had mostly been in bed or in wheelchair.

On arrival, she was hemodynamically stable with GCS 7. Labs revealed a corrected calcium level of 17 mg/dl and creatinine at baseline. CT scan head did not reveal any new changes. Hypercalcemia workup showed normal parathyroid hormone (PTH), normal thyroid-stimulating hormone, low PTH-related peptide, low 25 Vitamin D and 1,25 Vitamin D levels, and borderline low alkaline phosphatase. Serum/urine protein electrophoresis, cortisol, angiotensin-converting enzyme, and vitamin A level were normal. The bone scan did not reveal any lesions. She was treated with intravenous fluids, one dose of pamidronate 90 mg IV and calcitonin 8 U/kg q12 hours (for 48 hours). Calcium level slowly trended down over one week, to 9 mg/dl. Physical therapy was started, and mental status recovered slowly in the next few days.

IMPACT/DISCUSSION: Severe hypercalcemia can manifest as muscle flaccidity, lethargy, acute kidney injury, and altered mental status. Primary hyperparathyroidism and underlying malignancy account for 90% of cases. Our patient already had total parathyroidectomy and a normal PTH level. Her malignancy workup was also negative. Hypercalcemia due to immobilization is a diagnosis of exclusion. It is mostly seen in patients with prior vascular events like stroke, spinal cord injuries, or

multiple fractures. Prolonged immobilization causes increased bone resorption rather than formation because of the lack of mechanical stress. This causes the movement of calcium out of the bones and induces hypercalciuria and suppression of the parathyroid-1,25-vitamin D axis. Our patient had CKD, which decreased the renal excretion of calcium, further intensified by dehydration. Most of the reported cases of hypercalcemia due to immobility occurred in men, age less than 21 with either complete neurologic injuries or high cervical levels of spinal cord injury. It is uncommon to see such a high level of calcium 17 mg/dl. In the past calcium levels as high as 15 mg/dl have been reported in adults/pediatric populations due to immobilization. Although our patient did not have complete paralysis, her decreased activity along with risk factors of CKD and dehydration lead to such high calcium levels.

CONCLUSION: - Symptomatic hypercalcemia due to immobilization requires extensive workup to rule out other malignant and nonmalignant causes.

- Dehydration and chronic renal failure can trigger hypercalcemia even in partially immobilized elderly patients.

IMPACT OF DRIVING RELATED FINES AND FEES ON A 29-YEAR-OLD SINGLE MOTHER WITH LADA

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LEARNING OBJECTIVE #1: Recognize how transportation-related fines and fees can impact access to health care.

LEARNING OBJECTIVE #2: Develop a model for joint patient-clinician advocacy to influence national policy for transportation-related patient care.

CASE: DB, a 29-year-old female with LADA (Hba1c 12%), was jailed for traffic related fines and fees.

Family notified her primary care doctor after arrest. DB had previously been unable to pay driving related fines and fees and, unbeknownst to her, as a result her driver's license was suspended. She has known poorly controlled diabetes and per her report had at least one hypoglycemic event in jail where she did not receive access to glucose supplies. She was ultimately gifted multiple cups of juice by other incarcerated women, allowing her to avoid hypoglycemic coma.

With DB's permission, her doctor notified her public defender of her risk of death, ultimately assisting in expediting her release from jail. Prior to this intervention, the legal system and public defender had questioned her diagnosis and refused to verify. Following initial release from jail, DB was jailed two additional times and, in each instance, had medical supplies taken away. She lost a position of employment and endocrinologist in part due to difficulty with transportation access. DB was referred for personal assistance with her driving related fines and fees. The patient and clinician jointly participated with an external advocacy organization, the Fines and Fees Justice Center's Free to Drive Campaign, to educate a national coalition of advocacy groups working to end incarceration for driving related fines and fees about DB's experience.

IMPACT/DISCUSSION: Currently in 44 states unpaid driving related fines and fees can result in loss of a driver's license (finesandfeesjusticcenter.org). Currently in zip code 14611, 1/3 of adults have driver's license suspensions due to unpaid fines and fees. Loss of a driver's license can limit access work, school and health care. Individuals who are unable to afford initial fines and ultimately incarcerated for driving-related fines and fees are disproportionately individuals of color living below the federal poverty line in NYS (drivenbyjustice.org). Physicians have power to advocate for release of their patients jailed in unsafe medical conditions. We have an opportunity to identify key social and legal barriers to patient safety, bear witness to those barriers, and partner with patients to advocate for a more just legal system.

CONCLUSION: Physician-patient partnerships that highlight how social determinants of health impact our communities are a key opportunity to advocate for those with unmet legal needs related to traffic related fines and fees. This model, joining a physician, patient and advocacy organization may be implemented on other social determinants related topics. Further research is needed on the impact of driver's license loss on access to health care across a larger population.

*Note the co-authors are the patient and physician involved in this case.

INCARCERATION AND HEALTH: A LACK OF TRANSITION OF CARE IN MANAGEMENT OF CHRONIC CONDITIONS IN PRISON

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LEARNING OBJECTIVE #1: Recognize the impact of improper continuity of care in a jail setting.

CASE: A 33-year-old male inmate presented with a history of well-controlled ulcerative colitis (UC). Upon entry to jail, he did not receive a health screen, and his adalimumab was not prescribed. Over the next four months, he experienced a severe flare up of UC and was admitted. The patient presented with eight to nine bloody bowel movements a day, severe left lower quadrant (LLQ) pain, and a 70-pound weight loss. During hospitalization, he had a nutrition and gastroenterology consultation, a colonoscopy, and was treated with steroids and adalimumab. Prior to discharge, the medical team spoke with the jail and determined that if the patient received one dose of adalimumab, it would be continued in jail. This medical regimen was documented on his transition of care document and discharge summary, both of which were sent to the jail. However, in jail the medical staff only provided the patient with Tylenol for pain. The patient's condition further deteriorated, and he was readmitted to the hospital four days later with worsening symptoms of bloody bowel movements, LLQ pain radiating to the perianal region, low hemoglobin count, and anemia. He was treated with blood transfusion and IV methylprednisolone and discharged with the same medical regimen as recommended on the first admission. On return to jail, he received the recommended treatment.

IMPACT/DISCUSSION: This case demonstrates the improper treatment of chronic medical conditions in jail and the negative health and financial outcomes that result. In the United States, non-violent, pre-arraigned individuals are held in jail prior to being sent to prison, a more long-term institution. Improper screening and continuity of care during short jail stays is associated with a significant increase in preventable costs for avoidable medical interventions and hospitalizations. Today, 50% of inmates report having at least one chronic medical condition while nearly 70% of new jail inmates report absence of an admission health screen, a necessity for institutions to understand the medical conditions of their population. Had the jail screened for pre-existing chronic health conditions on our patient's arrival or had provided the recommended treatment after his first admission, his UC likely would not have flared and negative health outcomes could have been avoided. In all, we estimate the cost of his emergency visits, hospital stays, and procedures at $25,000 - an avoidable expense. Scenarios like our patient's can be prevented with proper screening upon entry to jail and continuity of care across the health system and the jail system.

CONCLUSION: Many inmates with chronic conditions do not receive proper treatment in jail which cause chronic condition exacerbations. In order to save on healthcare spending and avoid negative medical outcomes, proper communication with jail medical staff is needed to ensure compliance with medical regimens.

INDETERMINATE HCG: DETERMINED TO DIAGNOSE

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LEARNING OBJECTIVE #1: Review the differential diagnosis for an abnormal serum bHCG

LEARNING OBJECTIVE #2: Determine appropriate treatment of common sexually transmitted infections (STIs) in pregnant patients

CASE: A 43 year old Haitian female presented to primary care clinic with a 3-month history of irregular periods. She reported bi-monthly heavy bleeding and foul smelling vaginal discharge. She immigrated from Haiti 7 months prior and was sexually active with one new male partner. She denied use of birth control or any previous cervical cancer screening. Exam was notable for a friable, erythematous cervix with mucopurulent discharge, and significant cervical motion tenderness. Based on these findings, the patient was treated for pelvic inflammatory disease (PID) with intramuscular (IM) ceftriaxone and a 14-day course of doxycycline. Labroatory studies included urine HCG which resulted "borderline" and a subsequent quantitative serum HCG of 16 (normal <5, or >202 in pregnant patients 1-20 weeks post last menstrual period). Vaginitis swabs returned positive for chlamydia, bacterial vaginosis (BV) and candida yeast. Given the possbility of active pregnancy, the doxycycline prescription was changed to azithromycin. Metrogel and fluconazole were also prescribed. Subsequent TVUS showed no intrauterine sac, and she was referred to the ER for evaluation by Ob/Gyn out of concern for ectopic pregnancy. Serial HCG testing down-trended to within reference range, and a diagnosis of spontaneous abortion was made.

IMPACT/DISCUSSION: As general internal medicine providers, we have a responsibility to address common gynecologic conditions and recognize when referral to specialized providers is warranted. On initial evaluation of a woman with an elevated HCG, a broad range of diagnoses needs to be considered. Although the result was due to a spontaneous abortion in this case, other causes include early intrauterine or ectopic pregnancy, malignancy (including trophoblastic, ovarian, cervical, and bladder), pituitary secretion, exogenous injection, familial hCG, or false elevations due to certain immunoglobulins. Clinicians must also know safe and effective methods for treating STIs in patients who are or may be pregnant. Although it's quite rare to have PID during pregnancy, it can occur in the first 12 weeks. Doxycycline is a known teratogen so an alternative regimen includes azithromycin in combination with IM cephalosporin. This patient also had BV, which is usually treated with metronidazole. Traditional teaching is that metronidazole may cause fetal harm as it crosses the placenta, however current CDC guidelines no longer discourage its use in pregnancy. BV can increase the risk of preterm birth so it should be promptly treated.

CONCLUSION: A broad differential needs to be considered for a woman presenting with abnormal bleeding and an indeterminate bHCG, including possible malignancy.

As primary care physicians, we should be able to address common gynecologic complaints including appropriate treatment of STIs in pregnant patients.

INFLAMED AND CONSTRAINED: A CASE OF RHEUMATOID INDUCED PERICARDITIS

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LEARNING OBJECTIVE #1: Recognize the clinical features related to chronic pericardial inflammation in patients with rheumatoid disease.

LEARNING OBJECTIVE #2: Manage the presentation of constrictive pericarditis in rheumatoid arthritis

CASE: A 50-year-old man with a history of rheumatoid arthritis was admitted with shortness of breath and peripheral edema. He was found to have new-onset atrial fibrillation with RVR as well as clinical features of right-sided heart failure. His past medical history included a right pneumonectomy after failed decortication of a trapped lung following a massive pleural effusion. On presentation, the patient was complaining of a one-month history of progressive dyspnea on exertion, orthopnea, and worsening of peripheral edema. On physical exam patient had 4+ bilateral LE edema as well as scrotal edema, no JVP noted.

Labs: WBC 12.7 / nl; AST 43, ALT 76, ALP 219 UNIT/L; BILT 2.0 mg/dL; pro-BNP 852 pg/mL; UA with no proteinuria.

CXR: right pneumonectomy and new interstitial edema with a small effusion of the left lung. EKG: atrial fibrillation, 127 bpm, right axis deviation, no ischemic changes.

TEE: bi-atrial enlargement with a left ventricular ejection fraction of 65%.

Cardiac MRI: pericardial thickening and calcification over the right and left ventricle, with extension to the AV junction.

MRI findings were consistent with constrictive pericarditis of the ventricles. Thoracic surgery was consulted for possible pericardiectomy; however, the patient opted for medical management of symptoms and immunomodulatory therapy.

IMPACT/DISCUSSION: Constrictive pericarditis is a rare but serious complication of rheumatoid arthritis that can be fatal, thus diagnosis requires a high index of clinical suspicion. Rheumatoid constrictive pericarditis typically presents with symptoms of right-sided heart failure. Prognosis is dependent on underlying etiology, comorbidities and extent of LV dysfunction and can vary greatly between patient populations.

A CT scan of the chest, and/or cardiovascular MR are the gold standard for diagnosis but chest x-ray and echocardiography can support a diagnosis with high clinical suspicion. Patients with confirmed constrictive pericarditis should be evaluated by a thoracic surgeon for possible pericardiectomy. Medical therapy may have an important role particularly in the early effusive period of acute pericarditis.

Early treatment with NSAIDs, low dose corticosteroids, and colchicine can halt the progression to constrictive disease. In the absence of evidence that the constriction is chronic (cachexia, atrial fibrillation, hepatic dysfunction or pericardial calcification) an empiric 2-3 month course of anti-inflammatory medical therapy may be of benefit.

CONCLUSION: - Rheumatoid constrictive pericarditis should be considered in any patient with RA and unexplained systemic venous congestion.

- CT scan of the chest or cardiovascular MR are the gold standards for diagnosis.
- Pericardiectomy is the first-line therapy but in high-risk patients, medical treatment should focus on symptom management.

INSULIN INDUCED EDEMA: A RARE EFFECT OF A COMMON MEDICATION

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LEARNING OBJECTIVE #1: Insulin can cause generalized edema.

CASE: A 75 year old female with type 2 diabetes, hypertension, and chronic kidney disease presented to the clinic for generalized edema. She endorsed associated nausea, but denied chest pain, shortness of breath, and orthopnea. It began after the initiation of insulin glargine for uncontrolled hyperglycemia. Initially, she developed profound swelling in her legs to the thighs, which progressed in two months to involve her upper extremities and torso. She gained 29 pounds in this time. Notably, her previously uncontrolled hypertension improved, allowing discontinuation of many of her anti-hypertensives. Venous duplex ultrasound of her upper and lower extremities showed no superficial or deep vein thrombosis. Computed tomography of pancreas was unremarkable. Renal and liver function testing was normal aside from stable chronic kidney disease and hypoalbuminemia with an albumin of 2. Urine studies showed normal albumin to creatinine ratio and slight proteinuria with urinary protein excretion of 187mg over 24 hours. She had elevated thyroid stimulating hormone of 10.58 but normal free levels, and normal cortisol levels. BNP was normal at 41. She underwent a trans-thoracic echocardiogram which showed an ejection fraction of 67%, with normal diastolic function, high-normal pulmonary artery pressure of 36, and small pericardial and pleural effusions. She was given escalating doses of furosemide therapy, without improvement of her edema.

Her blood sugar improved with dietary restriction, and her insulin requirements gradually decreased and was discontinued. One month later, her edema had resolved. She lost 26 pounds and became increasingly hypertensive, necessitating up-titration of therapy. She was diagnosed with insulin-induced edema.

IMPACT/DISCUSSION: Insulin edema is often overlooked in the setting of edema in patients new to insulin, with only a few cases reported in literature. The pathologic mechanism is unclear. Insulin has been posited to reduce renal sodium excretion and increase albumin excretion. However, our patient showed no hyponatremia and had no evidence of excessive urinary albumin or protein excretion. Commonly treated with diuresis, insulin edema usually resolves with time. Our patient did not respond to diuretic therapy. Interestingly, her uncontrolled hypertension resolved with insulin and immediately returned on stopping therapy.

CONCLUSION: Insulin-induced edema is under-recognized, and may occur more frequently than is reported. Diagnosis of insulin edema should be one of exclusion, with other causes of generalized edema including renal, liver, and cardiac disease ruled out. The timing of insulin initiation and resolution of edema on insulin cessation supports the diagnosis. Most patients respond to diuretic therapy, but some do not, as illustrated in this case. Blood pressure improvement with insulin initiation is another interesting phenomenon observed in our patient, and may suggest the pathophysiology underlying insulin edema.

INTERCEPTING INTUSSUSCEPTION AS A COMPLICATION OF HEREDITARY ANGIOEDEMA IN AN ADULT

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LEARNING OBJECTIVE #1: Evaluate GI manifestations of hereditary angioedema (HAE)

LEARNING OBJECTIVE #2: Review management strategies for HAE

CASE: A 27-year-old male with known HAE type 2 presented due to acute worsening of his abdominal pain that initially began 6 months ago. The patient had been non-compliant with his plasma derived (pd) C1-INH therapy over that time, as it was too expensive. His pain was colicky left lower quadrant pain associated with loose stools. One month prior, he presented to the emergency department for nausea and vomiting and was found to have edema from his gastric antrum to proximal duodenum on CT imaging and was treated with one dose of pd C1-INH prior to leaving against medical advice. In the two weeks prior to presentation, he reported melanic stools; and 3 days prior, reported acute worsening of his abdominal pain.

On presentation, his vital signs were all found to be within normal limits. Physical exam demonstrated a non- distended abdomen with tenderness to both light and deep palpation in the bilateral lower quadrants without rebound or guarding, and hypoactive bowel sounds. Laboratory analysis was significant for a leukocytosis of 13.49k/μL, but otherwise largely unremarkable. CT imagining showed significant intestinal angioedema involving the bladder wall and transverse colon, as well as telescoping of the large bowel at the splenic flexure consistent with intussusception, but non-obstructive. The patient was admitted and administered a total of 3 doses of pd C1-INH at 20mg/kg in the first 24 hours. On hospital day 5, he underwent colonoscopy to rule out malignant lesions, which was notable only for a tortuous colon; no mucosal edema or polyps/masses were appreciated. The patient was discharged with close follow-up with allergy/immunology.

IMPACT/DISCUSSION: HAE is a rare autosomal dominant disease that occurs in three major types affecting the C1 inhibitor protein; quantitative (type 1, 80-85% of cases), qualitative (type 2, 15-20% of cases), and a third type which has been found to affect coagulation factor XII (type 3, < 5% of cases). This leads to activation of the kallikrein-kinin system and release of vasoactive proteins resulting in the characteristic angioedema. The most common GI manifestations include nausea and vomiting, colicky abdominal pain, and diarrhea, but intussusception in an adult is exceedingly rare. CT imaging is the diagnostic test of choice, accurately diagnosing intussusception in 78-100% of patients, whereas ultrasound has been shown to be only 50% accurate. Previously treated with FFP, new medications including C1-INH proteins have been FDA approved for acute HAE episodes. And while intussusception is normally the result of a malignancy in over 75% of adults, in the setting of HAE, treatment of the HAE flare with medical management is often sufficient to avoid invasive interventions.

CONCLUSION: Diagnosis of intussusception is best made with contrast enhanced CT and prompt treatment with pd C1-INH or alternative first line agents for HAE attacks is vital.

INTRAPULMONARY SHUNTS FACILITATING AN ORAL SOURCE OF SEPTIC ARTHRITIS

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LEARNING OBJECTIVE #1: Recognize clinical features and complications of hereditary hemorrhagic telangiectasia

LEARNING OBJECTIVE #2: Recognize that intrapulmonary shunts are associated with paradoxical embolic spread of infection to remote sites

CASE: A 28 year old female with no medical history presents with unilateral leg pain, tachycardia, and recurrent epistaxis for one week. CT angiography reveals no embolus, but 3 large pulmonary arteriovenous malformations (AVMs) concerning for new diagnosis of hereditary

hemorrhagic telangiectasia. She then develops knee pain and swelling, with joint aspiration yielding frank pus. She is given antibiotics and taken for surgical management of septic arthritis. Blood and joint cultures initially grow the oral and urogenital bacterium Streptococcus constellatus. She remains stable on parenteral antibiotics over the next week, but surgical culture grows more oral flora – Eubacterium brachy, Parvimonas micra, Prevotella intermedia, and Campylobacter rectus. Brain MRI shows no AVMs but scattered punctate infarcts. Transesophageal echocardiogram shows no vegetations. Formal dental evaluation is unremarkable. She continues to have leg pain, swelling, and elevated inflammatory markers, prompting numerous returns to the operating room for decompression of popliteal and thigh abscesses. These cultures grow more oral flora – Fusobacterium species, Prevotella oris, and Streptococcus anginosus. Further CT imaging of the chest, abdomen, and pelvis reveal no other AVMs or infectious foci. She receives 6 weeks of ceftriaxone and metronidazole per literature reports of bacterial sensitivities, to be followed by repeat MRI of her leg and definitive coil embolization of her pulmonary AVMs.

IMPACT/DISCUSSION: This case represents a highly unusual presentation of a rare genetic disease. The patient develops polymicrobial septic arthritis of a native knee and embolic intracranial infarcts as complications of hereditary hemorrhagic telangiectasia. The proposed mechanism is paradoxical embolization across pulmonary AVMs allowing transient bacteremia of normal oral hygiene to bypass the pulmonary capillary bed's innate filtering ability, as well as its significant pool of marginalized leukocytes. Literature review reveals a handful of cases documenting brain abscesses with oral flora secondary to pulmonary AVMs, but no cases of septic arthritis. In addition to the novelty of the scenario, we also highlight the difficulty in determining timing of embolization. The decision to leave permanent endovascular coils in the setting of ongoing infection is distressing. In patients with pulmonary AVMs, however, closure of the shunts may be required for definitive source control.

CONCLUSION: Suspicion of systemic infectious seeding warrants consideration of paradoxical embolization. In such cases, transient bacteremia alone without a primary source can cause remote infection. Further diagnostic workup may include transthoracic echocardiogram with bubble contrast and pulmonary angiography.

IS HIGH DOSE HYDRALAZINE SAFE TO USE?

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LEARNING OBJECTIVE #1: Recognize a rare adverse drug reaction of hydralazine.

LEARNING OBJECTIVE #2: Consider an alternate class of antihypertensive before prescribing high dose of hydralazine.

CASE: 63-year-old woman with hypertension treated with 250mg of hydralazine for many years presented with diffuse pruritic rash, nausea and vomiting. She had pink excoriated, painless, itchy rash on the extensor surfaces of upper and lower extremities with hypopigmented atrophic macules coalescing into patches on the trunk. Labs revealed potassium 5.9mEq/L, creatinine of 11.2mg/dl (from 0.8mg/dl 4 months ago) and blood urea nitrogen of 97 mg/dl (from 15mg/dl 4 months ago). Erythrocyte sedimentation rate was >140mm/hr and C-reactive protein was 6.7mg/dl. Further investigations yielded a positive result (>8mU/ml) for anti- myeloperoxidase (MPO) antibody and anti-histone antibody (1U). Tests for proteinase 3 (PR3) antibody, anti- nuclear antibody and complement 3 and 4 (C3, C4) were normal. Renal biopsy showed anti neutrophilic cytoplasmic antibody (ANCA) positive, pauci-immune crescentic glomerulonephritis with associated interstitial inflammation with severe tubular injury. She was diagnosed with hydralazine-associated ANCA positive vasculitis with renal syndrome. Treatment was initiated with cyclophosphamide and hemodialysis.

IMPACT/DISCUSSION: The pathogenesis for hydralazine-induced vasculitis may include its binding to MPO resulting in neutrophil apoptosis, increased neutrophil expression through hydralazine-induced reversal of epigenic silencing of MPO and PR3, and a break in tolerance in slow versus fast acetylators of hydralazine. Based on the study, patient who is on hydralazine for over three years, the incidence ranges from 5.4% in patients on 100mg/day and 10.4% with 200mg/day. Considerable other risk factors include female gender, mean exposure of more than four years, cumulative dose more than 100 mg and thyroid disease. The diagnosis depends mainly on symptoms, exposure to drugs, serological markers such as anti-histone antibody, anti-MPO antibody and/or anti PR3, ANCA and symptoms resolution after discontinuation of the offending agent. For glomerulonephritis due to hydralazine-induced vasculitis, renal biopsy is recommended to determine severity and prognostication. There is no specific guideline for the management of hydralazine induced vasculitis. Treatment depends on age, severity, co-morbidities and renal function. Discontinuation of the offending agent may be enough in mild cases whereas the aggressive treatment with immunosuppressants are warranted in severe cases with renal or pulmonary involvement. Corticosteroids with cyclophosphamide, rituximab and plasma exchange can be considered.

CONCLUSION: Hydralazine induced vasculitis with renal syndrome is associated with cumulative high dose and can be life-threatening. If a patient has refractory hypertension, alternative antihypertensives are suggested to prevent adverse effects.

ISOLATED NON-INFECTIOUS INFLAMMATORY DACTYLITIS

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LEARNING OBJECTIVE #1: Differential diagnosis of Isolated dactylitis

LEARNING OBJECTIVE #2: Management of non-infectious isolated inflammatory dactylitis

CASE: A 67-year-old female presented with acute onset of the right second toe swelling without any history of trauma. Interestingly, before her symptoms began, she was treated for uncomplicated urinary tract infection. Also, she received a dose of fremanezumab for her migraine shortly before her symptoms began. She did not have a history of psoriasis, rash, fever, chills, colitis, uveitis, or diarrhea. Her past medical history included ductal carcinoma in situ treated with bilateral mastectomy and radiation; presently, in remission, stable meningioma causing chronic migraine-like headaches and generalized premature osteoarthritis. On exam, her toe was red, swollen, warm to touch, and tender. Initially, due to concern for cellulitis, she completed a course of amoxicillin without improvement. Among the laboratory tests, the erythrocyte sedimentation rate remained elevated at 28mm/h. However, there was no leucocytosis, and C-reactive peptide, rheumatoid factor, anti-cyclic citrullinated peptide antibody were all negative. Magnetic Resonance Imaging of the right foot to further evaluate for osteomyelitis showed bone marrow edema crossing the distal interphalangeal and proximal interphalangeal joints of the second toe along with mild generalized circumferential signal in overlying soft tissue. Subsequently, three-phase bone and indium scans were positive and suggestive of osteomyelitis. However, a bone biopsy and culture were negative for infection. Hence, she got diagnosed with inflammatory dactylitis. As first-line, she was trialed on prednisone 40mg daily with an inadequate response while indomethacin and colchicine provided a

marginal response. Fortunately, following this, she did well on an empiric trial of adalimumab. For insurance reasons, she trialed methotrexate, which made no difference, and finally, she switched to golimumab with further improvement in her symptoms.

IMPACT/DISCUSSION: The common cause of infectious isolated dactylitis is streptococcus, while inflammatory etiology is commonly psoriasis. Interestingly, in this patient's case, she did not have an infection, nor did she have an identifiable inflammatory disorder. Her dactylitis was likely related to a seronegative peripheral spondyloarthropathy. The role of methotrexate in the treatment of psoriasis, which bears a close resemblance to dactylitis, has been questionable. However, biologics, like tumor necrosis factor- alpha inhibitors(TNF-alpha inhibitors), are shown to be effective.

CONCLUSION: In cases of isolated non-infectious inflammatory dactylitis, a trial of TNF-alpha inhibitors warranted as well as vigilance for the emergence of an associated seronegative spondyloarthropathy over time.

IS POST-OP CHEST PAIN ALWAYS AN MI?

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LEARNING OBJECTIVE #1: Recognizing takotsubo cardiomyopathy as a cause of postsurgical chest discomfort.

CASE: A 72-year-old woman with hypertension and hyperlipidemia developed an episode of substernal chest discomfort on post-operative day 1 following left total knee arthroplasty. It was described as a bloating sensation, lasted for few minutes, and resolved on its own. Patient was tachycardic to 107 bpm. Electrocardiography revealed sinus tachycardia without ST or T wave changes. Cardiac biomarkers resulted troponin levels of 0.27 ng/mL and 0.34 ng/mL and creatinine kinase levels of 378 U/L and 472 U/L consecutively. She was initially managed for non-ST elevation myocardial infarction with a heparin drip. Echocardiogram was limited due to tachycardia, but there was akinesia of the antero-septum, apex and distal anterior wall, with an ejection fraction of 44%. In view of recent surgery, the etiology was thought to be due to demand ischemia, but decision was made for cardiac catheterization as her total blood loss during the procedure was minimal. Cardiac catheterization revealed apical hypokinesis and angiographically normal coronaries, suggesting takotsubo cardiomyopathy (TC). She was prescribed a beta blocker and angiotensin converting enzyme inhibitor, and antiplatelet therapy was discontinued. Repeat echocardiogram one month later revealed normal ejection fraction without wall motion abnormality.

IMPACT/DISCUSSION: TC also known as stress cardiomyopathy or apical ballooning syndrome is transient and is typically precipitated by acute emotional stress. It is characterized by transient regional systolic dysfunction of the left ventricle (LV) and is accompanied by reversible LV apical ballooning, mimicking myocardial infarction, but in the absence of angiographic evidence of obstructive coronary artery disease or acute plaque rupture. Pathophysiology of TC includes diffuse catecholamine-induced microvascular spasm or dysfunction or direct toxicity, dynamic mid-cavity or LV outflow tract obstruction. As a physical stress, surgery causes sympathetic stimulation, which can cause catecholamine release.

It is not known why TC disproportionately affects postmenopausal women or why the LV mid-cavity and apex are predominantly affected.

TC commonly presents in a similar manner as myocardial infarction (estimated that 1-2% of suspected acute coronary syndrome). It is always prudent to rule out an ischemic etiology. Patients are treated with thrombolytic agents, which put them at unnecessary risk of bleeding. Undiagnosed TC can present as sudden cardiac death, cardiogenic shock, systemic thromboembolism and congestive heart failure.

CONCLUSION: Having TC as one of the differentials for postsurgical chest discomfort can prevent mismanagement. Although TC is uncommon among post-menopausal female, but of the people who are diagnosed with TC, most are postmenopausal women.

IS THAT THE RIGHT SPLIT? USING THE PHYSICAL EXAMINATION TO DIAGNOSE RIGHT BUNDLE BRANCH BLOCK (RBBB)

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LEARNING OBJECTIVE #1: Use the physical examination to diagnose RBBB

LEARNING OBJECTIVE #2: Describe the differential diagnosis of a widely split S1

CASE: A 47-year-old woman presented with 3 unexplained episodes of chest pain. The first episode occurred 6 months prior while she was making dinner. The second occurred 4 months prior while she walked in her home after work. The third occurred 10 days prior to the office visit and woke the patient from sleep. She described the pain as a gripping sensation under her left breast. The pain was pleuritic and resolved after an hour. There was no chest pain with exertion, dyspnea, palpitations, syncope, heartburn or feelings of anxiety or panic.

Past medical history was remarkable for anemia and hypothyroidism. Medications included levothyroxine. Family history was significant for sudden cardiac arrest in her mother and maternal grandfather in their late 60s due to myocardial infarction.

She worked as an attorney, had never smoked, drank 2 drinks per week and did not use drugs.

On physical examination, cardiac exam revealed regular rate and rhythm S1, S2 without murmur rub or gallop, BP 152/78, pulse 64. There was an additional sound following S1, felt to be a widely split first heart sound. The remainder of the examination was normal.

EKG showed sinus bradycardia with heart rate=56 and an incomplete RBBB. Echocardiogram revealed mild tricuspid regurgitation. Stress echocardiogram and lipid profile were normal.

IMPACT/DISCUSSION: Although RBBB is often first identified on EKG, it may also be diagnosed on physical examination. RBBB results in an electrical delay in RV contraction, causing delayed closure of the pulmonary and tricuspid valves. Delayed closure of the pulmonary valve causes splitting of S2 that increases with inspiration and remains auscultable on expiration. Delayed closure of the tricuspid valve results in increased splitting of S1 best heard in the tricuspid region, as was seen in our patient.

RBBB is the most common cause of increased splitting of S1. LV ectopic or paced beats may also present with prominent splitting of S1. Atrial septal defects cause a widely split S1 due to increased blood flow across the tricuspid valve delaying its closure. Ebstein anomaly (associated with RBBB) can also present with wide splitting of S1 due to delayed tricuspid valve closure due to ballooning of the leaflets during systole. Mimickers of a widely split S1 include an S4, ejection sound and systolic click.

Although most patients with incomplete RBBB are asymptomatic, it is important to consider the possibility of underlying cardiac disease, as RBBB may result from structural heart disease, be rate-related or iatrogenic.

CONCLUSION: -RBBB results in wide splitting of S1 and/or S2 on physical examination. These findings may be the only indication of a RBBB in asymptomatic individuals, and may necessitate and EKG.

- PVCs, paced beats, atrial septal defects and Ebstein anomaly are other causes of a widely split S1.
- Mimickers of a widely split S1 include an S4, ejection sound and systolic click.

IS THIS A SPONGY HEART?

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LEARNING OBJECTIVE #1: Early identification of Left Ventricular noncompaction (LVNC) is crucial as it is frequently associated with worse cardiovascular outcomes like fatal arrhythmias, including sudden death. We present a case of a young male who had some of the high-risk features of LVNC.

CASE: A 34-year-old male with a history of Legg-calve Perthes disease, sleep apnea, and gout presented to the hospital with new symptoms of decompensated heart failure. Laboratory testing revealed elevated BNP, normal troponins, and thyroid function. His family history was significant for heart failure in a brother who expired before the heart transplant. His initial electrocardiogram showed sinus tachycardia. His echo indicated that he had severely reduced left ventricular systolic function with an ejection fraction of 18%, grade 3 diastolic dysfunction along with prominent trabeculations. Given his low ejection fraction, the patient underwent a workup for ischemia. It demonstrated normal coronaries along with high pulmonary artery wedge pressure and right atrial pressure. Based on this, a workup for causes of non-ischemic heart failure was pursued, which included normal sedimentation rate, mildly elevated C-reactive protein, normal iron panel. Other workup was negative for Anti-nuclear antibody, HIV, hepatitis C, infiltrative cardiovascular disorders. Cardiac magnetic resonance imaging was suggestive of hyper-trabeculated left ventricular myocardium from the mid chamber to the apex with non-compacted: a compacted ratio of 2.5; meeting threshold criteria for myocardial noncompaction. During his hospital stay, the patient also developed multiple episodes of non- sustained ventricular tachycardia. This patient had multiple risk factors for high-risk phenotype - primary cardiomyopathy with low ejection fraction, family history of heart failure, and the development of arrhythmias. Therefore, he underwent implantable cardiac defibrillator for primary prevention of sudden cardiac death.

IMPACT/DISCUSSION: LVNC is thought to be due to the arrest of myocardial morphogenesis that results in abnormal remodeling of ventricular trabeculae that result in ventricular noncompaction. Some recent studies have shown that around 20-40% of these cases are familial. Genetically, it is heterogeneous and has two modes of inheritance – autosomal dominant and X linked recessive. Clinically, LVNC manifests as heart failure and fatal arrhythmias. The other feature which contributes to the triad of LVNC is systemic embolic events. LVNC is diagnosed with characteristic echo features and cardiac MRI findings. The degree of heart failure and ventricular arrhythmias both serve as strong independent mortality predictors.

CONCLUSION: This case presents to us an exciting opportunity to delve into family history for a patient who presents with new-onset heart failure at a relatively young age.

It also emphasizes the importance of genetic testing of family members.

IS THIS MULTIPLE MYELOMA

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LEARNING OBJECTIVE #1: Highlight that several hematologic malignancies can have similar presentation

LEARNING OBJECTIVE #2: Emphasize the significance of integrating findings and avoid treating individual abnormal results

CASE: A 55-year-old man with PMH of asthma, previous smoker was sent to the ED by his PCP for severe anemia. He reported fatigue, exertional dyspnea for a few months, denied fever, recent travel, unintentional weight loss, family history of hematologic malignancies. Medications included prn albuterol inhaler. Initial vitals were normal and examination showed conjunctival pallor. Labs revealed pancytopenia with Hb 4.7, MCV 112, WBC 2200, Platelets 73000, normal B12 and Folate, hyponatremia with a serum(Sr) Na 130 likely associated to paraproteinemia, Sr Cr 1.76, Sr calcium 7.7, AG <6, total Protein 14.5, albumin 2.1, positive IgG cold autoantibody, IgA 18, IgG 10,700, IgM 775, kappa 111, lambda 0.93 with a ratio of 119. Sr Protein electrophoresis showed M spike of 0.74 IgM and 8.71 IgG, urine Protein electrophoresis revealed M component 78 IgG kappa. Peripheral smear revealed normochromic, macrocytic, anisopoikilocytosis with NRBC, few tear drop cells, prominent rouleaux. Skeletal survey was negative. CT chest, abdomen showed splenomegaly with no lymphadenopathy. He received 2 units PRBC which improved Hb to 6.6. He continued to be pancytopenic with elevated Sr Cr and was discharged with an outpatient follow up for initiation of chemotherapy pending BM biopsy results with a presumptive diagnosis of Multiple myeloma(MM).

Later BM biopsy showed low grade B lymphoproliferative disorder with plasmacytic differentiation and a hypercellular marrow. Flow cytometry showed monoclonal B cell and plasma cell colonies. PCR was positive for MYD 88 L265p mutation, cytogenetics showed 6q deletion and isochromosome of 6p and a diagnosis of Lymphoplasmacytic Lymphoma(LPL) with IgG, IgM monoclonal proteins was made.

IMPACT/DISCUSSION: LPL is a low grade B cell tumor and commonly affects the bone marrow and spleen(Swerdlow SH, et al., 2008). 95% of LPL cases are IgM monoclonal gammopathy called Waldenstrom macroglobulinemia(Treon, 2009). However, non IgM LPL has a low incidence and often can be diagnosed preliminarily as a different hematologic malignancy when they have overlapping lymphoplasmacytoid features(Kang, Hong, & Suh, 2018). 4 of 8 non IgM LPL patients included in a study were primitively diagnosed as MM vs 14 of 14 IgM LPL patients who were rightly diagnosed(Kang et al., 2018). Differentiating LPL from MM may not always be possible with clinical presentation and routine work up alone and more sophisticated testing may be needed to arrive at a diagnosis as in our patient.

CONCLUSION: The overall survival and prognosis are poorer in the non IgM LPL compared to the IgM LPL(Kang et al., 2018) and hence it is prudent to include it in the differential when a patient presents with nonspecific symptoms like pancytopenia despite the lower incidence as early recognition helps with early treatment and possible better patient outcomes.

ITCHING FOR THE DIAGNOSIS: A UNIQUE CASE OF AMYLOID LIGHT-CHAIN AMYLOIDOSIS

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LEARNING OBJECTIVE #1: Recognize pruritus as a symptom of underlying systemic disease

LEARNING OBJECTIVE #2: Diagnose amyloid light-chain amyloidosis via laboratory tests and biopsy

CASE: A 60 year-old male with no significant past medical history presented with generalized itching and weight loss over the past month. He had no family history of cancer and no history of alcohol, tobacco or drug use. His physical exam was remarkable for multiple diffuse excoriations on the forearms, back, abdomen and legs with no evidence of infection, urticaria, or jaundice. Laboratory tests revealed hyperkalemia of 5.7 mmol/L, BUN of 52 mg/dL, creatinine of 2.14 mg/dL, albumin of 2.2 g/dL, alkaline phosphatase of 2142 U/L, AST of 122 U/L, ALT of 106 U/L and GGT of 3045 U/L. Urinalysis showed proteinuria and hematuria. Serum Protein Electrophoresis (SPEP) was performed and found to be positive for a monoclonal band. Serum Immunofixation test Electrophoresis (sIFE) showed IgG monoclonal lambda in gamma region. MRI showed a noncirrhotic liver with mild hepatomegaly and diffuse hypodensities in liver, spleen and bone marrow. The patient ultimately was evaluated by both gastroenterology and nephrology and underwent kidney and liver biopsies. The biopsies demonstrated amyloid nephropathy with light-chain AL lambda type deposition in both glomeruli and interstitium consistent with amyloid light-chain amyloidosis.

IMPACT/DISCUSSION: Pruritus is a very common complaint in the outpatient setting but can potentially represent an underlying systemic disease. It is important to have a broad differential diagnosis when evaluating patients with symptoms such as pruritus. Basic laboratory tests may help point towards the direction of a possible etiology. Monoclonal light-chains are responsible for a wide array of both renal and hepatic diseases, specifically amyloid light-chain amyloidosis where both kidney and liver involvement is a frequent finding. While amyloid light-chain amyloidosis has a wide spectrum of findings, some key renal manifestations include proteinuria, nephrotic syndrome and progresive renal failure. Ultimately, diagnosis of amyloid light-chain amyloidosis can be made via biopsy of an affected organ and will demonstrate amyloid light-chain deposits.

The prognosis of amyloid light-chain amyloidosis varies and depends on the extent of organ involvement. Therefore, continued follow up with laboratory monitoring and specialist consultation is crucial in managing this challenging disease.

CONCLUSION: 1. Pruritus is a common complaint that can potentially represent an underlying systemic disease. 2. Suspect amyloidosis as a possible diagnosis when both kidney and hepatic disease is present.

ITCHING TO KNOW: AN ELUSIVE CASE OF GENERALIZED ITCHING- SEZARY SYNDROME

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LEARNING OBJECTIVE #1: Discuss different causes of common symptom like itching and present a rare case of persistent itching-Sezary syndrome

CASE: 61 year male presented to outpatient clinic with generalized itching of skin and redness all over the body since 3 years. He was frustrated since "I have seen so many doctors. No one can tell me the cause of my itching. I want to know." The itching was so bad that it was interfering with his life and his ability to do his ADLS. He was even contemplating suicide to get rid of the itch. He made many life style modifications to get rid of suspected allergens and had been using moisturizing lotion multiple times, but it was not helping. He complained of diffuse pain associated with skin disease worst in his hands.

Exam revealed a distressed patient with normal vitals who was scratching his body constantly and was unable to sit still. Skin exam showed dry skin with diffuse erythematous macular rash covering > 90 % of body surface area. Systemic exam was otherwise normal.

I evaluated him in the clinic and ordered labs and XR of hands. Labs ruled out polycythemia. Thyroid, ferritin, Liver, kidney function, uric acid was normal. ANA panel was negative. Tryptase which shows mast cell activation was normal. Serum Ig E was normal. HIV, Hepatitis B and C were negative.

XR hands showed mild osteoarthritis. Peripheral smear showed high monocytes to 1.5. (Ref. range0.2 - 0.9 10*9/L) Pt was referred to Hematologist for high monocytes and to dermatologist for biopsy. CT scan chest, abdomen, pelvis showed groin and axillary lymphadenopathy and enlarged liver at 18 cm.

Biopsy showed atypical lymphocytes with epidermotropism. The same clonal population of T-cell identified in the blood were also identified in this skin sampling, supporting the diagnosis of Sezary syndrome.

He was seen by multidisciplinary clinic and started on Targretin and ECP for the newly diagnosed Cutaneous T cell lymphoma.

His rash and pruritis have significantly improved since starting therapy. He is happy that he knows the cause of the itching.

IMPACT/DISCUSSION: The differential diagnosis for generalized chronic itching with erythroderma and exfoliation can be hypothyroidism, diabetes, polycythemia, cirrhosis, renal failure, neurogenic causes, Systemic Sclerosis, hemochromatosis, psoriasis. But in this patient all of those were ruled out with tests. The one that should not be forgotten is a cutaneous T cell lymphoma especially the subtype Sezary syndrome.

CONCLUSION: Mycosis fungoides and the Sezary syndrome (SS) are rare lymphomas of CD4+ helper T cells. There is stage wise progression from patch or plaques to thicker tumor lesions diffuse erythroderma. Blood involvement is a characteristic of Sezary Syndrome. Outcomes are related to the extent of skin, blood, lymph node, and visceral organ involvement. Patients with limited patch and plaque disease are treated with skin-directed therapies. More advanced or refractory disease is treated with skin-directed therapies and oral or systemic immunomodulatory agents.

IT'S GETTING HOT IN HERE: DETERMINING THE CAUSE FOR PERSISTENT FEVER IN AN IMMUNOCOMPROMISED PATIENT

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LEARNING OBJECTIVE #1: Recognize risk factors and morbidity associated with tuberculosis in HIV patients

CASE: A 28-year old Vietnamese man who has sex with men, with recent diagnosis of AIDS, on antiretroviral therapy (ART), presented to the hospital with 1 month of fevers associated with headaches, night sweats, anorexia, and diarrhea. He was born in Vietnam but moved to the United States 2 years prior to presentation for work.

On admission, his vitals were within normal limits, except for a heart rate of 120. Physical exam was notable for clear lung fields, tenderness in the right lower quadrant, and a positive Rovsing sign. HIV viral load was 97 and CD4 count was 63. CT scan revealed diffuse pulmonary nodules in a millet-seed like distribution and a necrotic mass adjacent to the cecum. Sputum smear for acid-fast bacilli and nucleic acid amplification testing confirmed a Mycobacterium tuberculosis infection.

The patient was started on piperacillin-tazobactam for the necrotic abdominal mass and isoniazid, rifampin, pyrazinamide, ethambutol, and levofloxacin for resistant mycobacterium strains. However, he continued to spike daily fevers. Cerebrospinal fluid revealed elevated protein, low glucose, and mononuclear pleocytosis, and MR brain showed leptomeningeal enhancement in the left sylvian fissure and right temporal and occipital lobes, suggestive of TB meningitis. Given his recent initiation on antiretroviral therapy, immune reconstitution inflammatory syndrome (IRIS) was also suspected. Dexamethasone was started and his symptoms abated within 24 hours.

IMPACT/DISCUSSION: This was an AIDS patient with disseminated TB, manifesting with miliary TB, TB meningitis, and a necrotic colonic tuberculoma, with persistent fevers despite broad antimicrobial coverage. Despite exposure to a TB-endemic region, he was not screened for TB at the time of his HIV diagnosis. Screening for latent TB is recommended at the time of initial HIV diagnosis with either tuberculin skin test or interferon gamma release assay. With a CD4 count below 100, he was at increased risk for disseminated TB and TB meningitis, which is associated with severe neurological sequelae and high mortality (up to 41%). He was also at high risk for TB-IRIS given his disseminated TB infection, high HIV viral load at diagnosis, and low CD4 count. There are two forms of TB-IRIS: paradoxical (TB treatment before ART) and unmasking (no TB treatment before ART). Corticosteroids are recommended to treat severe cases of unmasking TB-IRIS, as in our patient. Use of corticosteroids also reduces short-term mortality by nearly a quarter in patients with TB meningitis, although data in HIV patients are limited.

CONCLUSION: The severity and rapid progression of this patient's infection illustrates the importance of TB screening in HIV patients at the time of their HIV diagnosis. AIDS patients are at greater risk for TB meningitis and TB-IRIS, which confer high morbidity and mortality. Corticosteroid administration can decrease mortality in both of these conditions.

IT'S NOT ALWAYS A STRAIN: HIP PAIN DUE TO PSOAS ABSCESS IN A PATIENT WITH CROHN'S DISEASE

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LEARNING OBJECTIVE #1: Recognize small bowel Crohn's disease is insidious, and can present as isolated complications of penetrating disease.

CASE: A 45-year-old active duty male soldier with chronic low back pain and history of Crohn's disease, requiring small bowel resection at the time of diagnosis, presented to his primary care physician for right hip pain. The patient was on mesalamine for several years, however, was switched to adalimumab after a flare up last year requiring hospitalization. He had not followed up with his gastroenterologist since starting adalimumab. An initial hip x-ray was negative and he was subsequently treated for a strained hip flexor with physical therapy and dry needling. Three months after his initial visit, he returned to the clinic with persistent hip and low back pain as well as an inguinal hernia. An ultrasound was done to evaluate the inguinal hernia, incidentally showing an inflamed tubular structure in the right hemi-abdomen. A subsequent computed tomography scan showed extensive ileocecal inflammation with fistulization and a 17 cm long right psoas abscess. He was then admitted to the hospital and started on empiric antibiotics and total parenteral feeding.

A magnetic resonance enterogram 4 weeks later showed a resolving psoas abscess and residual stricture of the terminal ileum. The patient underwent an ileocecectomy without complications and has been doing well at post-operative follow up.

IMPACT/DISCUSSION: This case illustrates the complications and insidious nature of small bowel Crohn's disease. While classic symptoms of Crohn's disease remain diarrhea, abdominal pain, weight loss, and fever; penetrating disease is known to fistulize and seed abscesses. Indeed, psoas abscesses are a well- documented complication of Crohn's disease. However, they are often plagued by delayed diagnosis, causing increased morbidity. It is important for primary care providers to recognize isolated hip pain as a presentation of penetrating Crohn's disease complicated by a psoas abscess.

CONCLUSION: Hip pain can be easily overlooked in a primary care clinic inundated with routine musculoskeletal concerns. Therefore, a high index of suspicion must be maintained for complications of penetrating Crohn's disease, such as a psoas abscess presenting as isolated hip pain.

IT'S NOT JUST A YOUNG MAN'S GAME

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LEARNING OBJECTIVE #1: Recognize the risk factors of E-cigarette or Vaping Associated Lung Injury (EVALI)

LEARNING OBJECTIVE #2: Distinguish patient populations with severe forms of EVALI

CASE: A 71-year-old man presented with 10 days of worsening dyspnea. He experienced fevers, intermittent pleuritic chest pain, nausea, and weight loss of 10 pounds. He had used marijuana for 45 years and 3 years ago began using a THC vaporizer 3-4 times per day. Temperature was 38°C, heart rate was 118 beats per minute, respiratory rate was 35 breaths per minute, and an oxygen saturation was 84% on room air. He was in respiratory distress, using accessory muscles to breathe. Lungs sounds were coarse diffusely with inspiratory crackles. Exam was otherwise normal. He initially required high flow oxygen. A chest CT demonstrated diffuse bilateral ground glass opacities. White blood cell count was 18,000 cells per cubic millimeter but infectious evaluation including respiratory and blood cultures, urine Legionella and Pneumococcal antigen, respiratory viral panel, and HIV screening were negative. Rheumatologic work-up including anti-nuclear antibodies, rheumatoid factor, anti-neutrophilic antibodies were negative. With other plausible etiologies ruled out in the setting of heavy vaporized THC use, he was diagnosed with EVALI. He was treated with high dose steroids and symptoms improved. After 3 weeks, he was discharged on 3 liters of supplemental oxygen and a steroid taper.

IMPACT/DISCUSSION: Vaping products were initially introduced in the U.S. in 2007 and are becoming increasingly popular, particularly among youths. EVALI is an interstitial lung disease related to vape product use. As of October 22, 2019 there have 1,604 cases and 34 deaths in the United States. The majority of patients afflicted by this condition are young white males, with a median age of 25-years-old. The majority of mortality in EVALI cases occurred in older individuals with a median age of 45-years-old. Being over 50-years-old was the worst prognostic indicator

identified with 54% of these individuals requiring intubation and a mean inpatient stay of 15 days. Other groups had an intubation rate of 25% with mean inpatient stay of 8 days. Clinical presentation includes respiratory, gastrointestinal, and constitutional symptoms.

EVALI is mainly associated with THC-containing vape products. Nearly all patients with the condition report use of these products, while only about 10% report use of nicotine-containing products alone. Over 90% of patients obtained THC containing products from unregulated source. There is still no definitive cause of EVALI. A study of patient bronchoalveolar lavage samples showed vitamin E acetate, a thickening agent in THC products, was the only substance detected in all samples.

CONCLUSION: Younger individuals, who are more likely to use this product, are at the highest risk, but older patients tend to demonstrate more severe disease. Preventative counseling is of particular importance given that no definitive treatment has been established for EVALI.

I'VE FORGOTTEN HOW TO WRITE A TITLE

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LEARNING OBJECTIVE #1: Build a differential for rapidly progressive dementia.

LEARNING OBJECTIVE #2: Recognize the diagnostic criteria of sporadic Creutzfeld-Jakob disease.

CASE: A 65-year-old woman presented with status epilepticus and hypertensive emergency. Seizure was aborted and blood pressures lowered. Mental status did not return to baseline. She had been admitted for similar presentations in the last six months with recovery of mental status and blood pressure. Her family also reported progressive forgetfulness and personality changes. She developed akinetic mutism and rigidity in her upper extremities and was found to have an ataxic gait. She had no meningeal signs. Urine drug screen was negative. She had an ESR 119, CRP 8.5, and serum WBC 8.8. Aldosterone/renin ratio was normal. Cerebrospinal fluid (CSF) returned with white blood cells 0, red blood cells 0, glucose 127, and protein 49. CSF paraneoplastic and vasculitis antibody panels, West Nile virus, and VRDL, and culture were negative. EEG exhibited no further epileptiform activity. MRI of the brain revealed evidence of decreased perfusion in the right posterior cerebral artery territory. Her mental status continued to decline. She became less responsive, lethargic, and eventually expired. CSF studies later revealed a tau protein >4000, positive 14-3-3 protein, and negative real time quaking- induced conversion (RTQuIC).

IMPACT/DISCUSSION: Dementia is commonly diagnosed and managed by the general internist. It is normally a slow, progressive process that occurs over many years and treatments aim to delay this decline. Conversely, rapidly progressing dementia (RPD) commonly occurs over the span of several weeks to months. Ongoing atherosclerotic or thromboembolic disease can cause rapid worsening of vascular dementia. Untreated depression can cause of a "pseudo-dementia" symptoms. Recurrent seizure or non-convulsive status epilepticus can contribute to progressive dementia. Deficiencies of B12 or thiamine, autoimmune vasculitis or cerebritis, cancer metastatic to the brain, neurosyphilis, and exposure to toxic substances must also be considered.

The most feared causes of RPD given lack of treatment options are the prion diseases. Prions are neurodegenerative proteins that may be sporadic, inherited, or transmissible. Sporadic Creutzfeld-Jakob disease (CJD) is an example of a prion disease that can cause rapidly progressive dementia. The gold standard in diagnosis of sporadic CJD is neuropathology from brain biopsy, however one of two scenarios outlined below is sufficient to qualify for a clinical diagnosis of sporadic CJD:

1. Neuropsychiatric disorder with positive RTQuIC

2. Progressive dementia PLUS two of four - myoclonus, visual/cerebellar disturbance, pyramidal/extrapyramidal dysfunction, and akinetic mutism PLUS supportive evidence on either EEG, MRI, or CSF 14-3-3.

CONCLUSION: RPD have a limitted differential diagnosis. Systematic investigation may yield the rare diagnosis of CJD.

I'VE GOT YOU UNDER MY SKIN: A CASE OF CHLAMYDIA PNEUMONIAE INDUCED RASH AND MUCOSITIS (CIRM)

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LEARNING OBJECTIVE #1: Recognize newly-described mucocutaneous complications of Chlamydia pneumoniae infection.

CASE: A 19M with no significant PMH presented with a two-week history of progressively worsening intraoral, ocular, and genital ulcerations. The patient had initially developed sinus congestion, rhinorrhea, and bilateral edematous conjunctiva, for which he was prescribed amoxicillin and pseudoephedrine at urgent care. Four days later, he presented to a dentist with swollen lips, intraoral mucosal ulcerations, and odynophagia. Treatment with lidocaine mouthwash, steroids, and trimethoprim-sulfamethoxazole eventualized mild improvement. A week prior to admission, the patient developed daily fevers between 101-103F and had worsening oral ulcerations. The day prior to admission, the patient developed new genital rashes with dysuria. He presented to urgent care, where he was given valacyclovir and fluconazole, but came to our ER when he continued to deteriorate overnight.

Family history was negative for autoimmune disease, and the patient denied tobacco, alcohol, or drug use. He worked as a lifeguard, in a fresh-water and a chlorinated pool. He had one monogamous sexual partner with whom he used condoms consistently. The patient reported his latest sexually activity was two weeks prior to admission. He denied a history of STIs. During admission, the patient's workup was negative for HIV, C. trachomatis, gonorrhea, and HLA-B27. His chest x-ray was unremarkable. Dermatology biopsied an oral lesion, and the patient was started on azithromycin empirically. The patient's HSV-1 IgM was positive, but the vesicular biopsy was negative for HSV by PCR. His respiratory mucosal swab was positive for Chlamydia pneumoniae by PCR. These results led to the diagnosis of Chlamydia pneumoniae induced rash and mucositis (CIRM). The patient was treated with moxifloxacin and discharged home.

IMPACT/DISCUSSION: CIRM is a new syndrome in the international literature that describes the muco- cutaneous sequelae of Chlamydia pneumoniae infection. This is the second reported case of CIRM and the first in an adult. A related entity, Mycoplasma pneumoniae induced rash and mucositis (MIRM), has been recently described as similar to erythema multiforme and Stevens-Johnson syndrome. The pathophysiology of CIRM is thought to involve polyclonal B-cell activation and antibody production. Cases of CIRM have been reported with HSV co-infection, requiring treatment of both pathogens. However, the immune reactivation in CIRM may lead to false positive diagnoses of viral co-infection from immunoassay alone.

This patient had a positive HSV serology, but confirmatory testing with PCR was negative for HSV infection. This case contributes to our understanding of these newly described muco-cutaneous sequelae of C. pneumoniae.

CONCLUSION: CIRM is a newly described syndrome of muco-cutaneous sequelae of Chlamydia pneumoniae infection associated with immune reactivation.

JANE DOE: A VICTIM OF HUMAN TRAFFICKING

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LEARNING OBJECTIVE #1: Recognize red flags of a victim of human trafficking once access to medical care is sought

LEARNING OBJECTIVE #2: Identify risk factors for victims of human trafficking

CASE: A presumed 18-year-old African American female was brought in by police after finding her on the corner of a street partially dressed. Initially, the patient only spoke nonsensically to an imaginary being. Upon arrival to the emergency department, basic labs only revealed a very low TSH (<.01) and a positive BHcG. Twin pregnancies were confirmed and she was admitted for further care where she only participated with her name and knew that she was pregnant. The next morning, she had no recollection why she was brought into the hospital and provided inconsistent stories to staff. She also did not know where she was staying as it was paid for by her boss and did not have any ID/phone with her. She did provide details as to where she was employed and two bosses' names that were contacted. As time progressed, more information included a history of sexual trafficking, drug and alcohol use, as well as posttraumatic stress disorder for which she detained details. Resources were contacted for further assistance as well as local and federal authorities to correctly identify the patient and possible involvement in sex/labor trafficking. It was discovered the patient was transported from another state as she was homeless after running away from her family. This company she worked for provided her the opportunity to sell merchandise to make money. The patient was fearful of being discharged without obtaining her belongings, of which she possessed a check that was earned by prostitution because her sales were poor that day. Through a multidisciplinary approach involving the local/federal authorities, social worker, hospital security, and hospital administration, the patient was safely escorted out of the hospital to obtain her belongings and transported to a women's shelter who eventually flew her home to her parents.

IMPACT/DISCUSSION: Human trafficking is forced labor or commercial sex using manipulation into thinking they would have a better life, however, once they oblige to the responsibilities, their identity is removed. Through fear, control and disempowerment, victims find it very difficult to leave the organization. Victims may have posttraumatic stress disorder, paranoia, depression, not know where they are or have any sense of time, show signs of medical neglect, and be reluctant to speak for themselves. Vulnerable victims include those coming from developing countries, resource-poor areas, homelessness, dysfunctional families, have an involvement with substance abuse, and/or have a mental illness.

CONCLUSION: Victims of human traffickers are very difficult to identify unless clinicians deep dive into their social history, physical exam, and work with a multidisciplinary team. Multiple resources exist in reporting any suspicion for human trafficking including the National Human Trafficking Hotline and local community resources.

KEEP AN EYE OUT (AND DOWN) FOR GLUCOSE

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LEARNING OBJECTIVE #1: Evaluate an oculomotor nerve palsy, recognizing multiple etiologies, higher risk features, and prognosis.

LEARNING OBJECTIVE #2: Recognize limited English proficiency Hispanic patients have linguistic and cultural barriers which may lead to poorer diabetic control, especially if with a non-Spanish speaking provider.

CASE: A 50 year-old Spanish-speaking male with hypertension and diabetes type 2 presented to clinic with worsening blurred vision, right sided ptosis and bilateral periorbital headache for the past week. In the emergency department, CBC and BMP were normal except for glucose 429. Computerized tomography angiography (CTA) revealed a 3mm right internal carotid aneurysm.

He denied family history of aneurysm or intracranial hemorrhage. He was unable to recall his prescribed insulin types or antihypertensives. Blood pressure was 163/78 and was neurologically intact except for right pupil-sparing oculomotor nerve palsy (OMNP). C-reactive protein 6.9 and hemoglobin A1c 12.4%. Headache resolved with Acetaminophen. Neurosurgery did not recommend surgical intervention given the small size. His OMNP significantly improved in the next two months and was ascribed to poorly controlled diabetes.

IMPACT/DISCUSSION: Neuropathy is expected as one neurological diabetic manifestation yet cranial nerve palsy is not readily considered. Aneurysm is an urgent condition that can present as cranial nerve palsy, therefore higher risk features are valuable triage tools.

OMNP should first be categorized by pupil involvement. Non-pupil sparing (unopposed dilatation and loss of accommodation) may be an ominous sign, usually attributable to compressive etiologies such as aneurysm or tumor, given the affected pupillomotor fibers are found on the superficial portion of the third cranial nerve. Most pupil-sparing etiologies are from microvascular ischaemic disease—namely diabetes or hypertension. Headache or periorbital pain is not discerning of compression. There is lower threshold for imaging (CTA or magnetic resonance angiography) younger patients (20 to 50 years old) lacking microvascular comorbidities as pre-test probability of aneurysm is increased.

One percent of diabetic patients will have a cranial nerve palsy—approximately 40% as OMNP. Prognosis is favorable, with progressive resolution occurring over 2 to 3 months.

Diabetic control is key and his limited English proficiency (LEP) is of special significance. Cross-sectional studies have found no difference between Hispanic and White populations in glycemic control, but considered language concordance as a possible factor reducing the difference. A retrospective study found glycemic control significantly improved in switching to a Spanish speaking provider.

CONCLUSION: Diabetic neuropathies can involve cranial nerves, resolving in two to three months. Aneurysmal OMNP is more likely to impair the pupil. Providers' ability to speak their patient's language is of value and can have concrete health benefits, such as better controlled diabetes

LESSONS LEARNED FROM CAMP IN NORTH CAROLINA

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LEARNING OBJECTIVE #1: Recognize the importance of taking a military history

CASE: A 52yo male presented with intermittent fever for 1 year. Fevers occurred with rigors and night sweats 7-9 days each month. He also had headache, rhinorrhea, hearing loss, nausea, and diarrhea. The patient was first seen at a local clinic and worked up for chronic sinusitis. He was referred to an ENT specialist, infectious disease expert, and an oncologist. All could not identify the cause of his fevers.

He had a history of hypercholesterolemia and binge alcohol use, and was on doxycycline. He was a police officer, lived with his wife, and was a veteran. The physician took a military history. The patient had served in the Marines and was stationed at Camp Lejeune from 1985-89.

On exam, he appeared chronically ill. BP 124/80, HR 118, and T 99.3°F. HEENT, cardiac, abdominal, and extremity exams were normal. Neuro exam was significant for bilateral hearing loss. There were no palpable lymph nodes or rashes.

Blood work showed Hgb 12.9, wbc 3.8, platelets 92, Na 125, BUN 23, Cr 1.09. Albumin 3.2, ALT 68, AST 62, LDH 507, ESR 58, CRP 206.3, ferritin 18,499.

He was admitted. CT of the chest revealed enlarged mediastinal and hilar lymph nodes. PET CT revealed diffuse, mild heterogeneous uptake in the skeleton without hypermetabolic nodes. Bone marrow biopsy confirmed Hodgkin Lymphoma.

IMPACT/DISCUSSION: This patient was stationed at MC Base Camp Lejeune in the late 80s. From the 1950s-80s, the water supply at Camp Lejeune was contaminated with several industrial solvents. Exposure to this water has resulted in a variety of cancers and illnesses. The patient had received notice from the Marines about these health risks, but it took over a year until the patient was finally asked about his military history. Using both clinical data and military history, we began to suspect malignancy, ultimately leading to diagnosis.

Veterans are at risk for many health conditions, including hazardous chemical exposures. Recently, sarin gas exposure has been linked to chronic heart disease in Gulf War veterans. Many long-term effects of pollutant exposures are still unknown. Initial symptoms can manifest years after exposure, indicating that a thorough military history is critical for accurate diagnosis.

Due to their complex healthcare needs, identifying patients who are veterans is critical to their care. A common misconception is that veterans only receive care at the VA. However, more than 50% of veterans receive care outside the VA. This number is likely to increase due to the 2014 Veterans Choice Act, which allows veterans more choice in providers. All patients should be asked about military history to ensure all veteran patients are identified.

CONCLUSION: Veterans are at risk for a variety of conditions, including hazardous chemical exposures

A military history can assist with clinical decision making

All patients should be asked about prior military service since many veterans receive care outside the VA

LEUKOCYTOSIS INTERPRETED THREE WAYS: CLL VS B-PLL VS RICHTER'S TRANSFORMATION

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LEARNING OBJECTIVE #1: Recognize the difference between chronic lymphocytic leukemia and B-cell pro-lymphocytic leukemia

LEARNING OBJECTIVE #2: Anticipate Richter's transformation in a patient with new presentation of leukocytosis

CASE: A 73 year old man with 80 pack year smoking history presented with one month of lower extremity edema and one week of generalized weakness and dyspnea. He had intermittent fevers and mechanical falls.

A few hours after ED visit, he developed septic shock and required vasopressors. Laboratory findings showed WBC 582 K/uL with lymphocytic predominance, hemoglobin 7.5 g/dL, platelets 44 K/uL, and LDH 3,000 U/L. CT chest, abdomen, and pelvis was notable for splenomegaly and para-aortic lymphadenopathy.

Peripheral smear demonstrated 70% immature blastic cells with prominent nucleoli and loose chromatin. Flow cytometry of peripheral blood showed CD20+, CD19+, CD22+, kappa+, FMC7+, CD5+, as well as lambda-, CD10-, CD23-, CD38-, and CD34-, favoring a diagnosis of B-cell prolymphocytic leukemia (B- PLL). Due to the high risk of CNS and pulmonary complications from leukostasis, dexamethasone was initiated followed by hydroxyurea and leukapheresis, resulting in a 90% reduction in WBC to 33 K/uL. He was subsequently able to be weaned off vasopressors.

Bone marrow biopsy revealed two distinct cell types: small lymphocytes with mature clumped chromatin typical for CLL and larger atypical lymphocytes with open chromatin and prominent nucleolus typical of prolymphocytes. Cytogenetics reported interphase FISH consistent with 90% cells showing one copy or loss of TP53 (17p13.1). Overall, the data seemed most consistent with CLL and Richter's transformation (RTF) to B-PLL rather than CLL or B-PLL alone. Rituximab was started but later changed to Ventoclax due to hypotension.

IMPACT/DISCUSSION: CLL is the most common form of adult leukemia in Western countries and is often the initial morphologic impression in cases of leukocytosis. Although CLL has CD5+ and CD23+ co-expression, this case instead showed CD5+, CD23-, and FMC7+ with abnormalities of TP53 gene, which instead favors B-PLL, carrying a poorer prognosis than CLL alone. Bone marrow biopsy that demonstrates two cell types, small CLL lymphocytes and a majority of larger atypical B cell prolymphocytes, suggest a RTF. This involves the development of a post-chronic, secondary aggressive leukemia that is usually less responsive to therapies compared to B-PLL. It is important to note that in cases of acute leukostasis, hydrea followed by leukapheresis can aid in stabilizing hemodynamics.

CONCLUSION: Acute leukocytosis with >55% immature B-cell prolymphocytes, presence of CD23- or CD5- or FMC7+ on flow cytometry, and TP53 gene abnormalities should prompt investigation of B-PLL. Bone marrow biopsy demonstrating two cell lines consisting of small lymphocytes with mature chromatin and large atypical lymphocytes with open chromatin correlates with RTF of CLL to B-PLL, conferring poorer prognosis than either diagnosis separately.

LIFTING THE ANCHOR: HOW RISING LIVER ENZYMES PROMPTED RE-EVALUATION OF AN HIV-ASSOCIATED FUO AND SHATTERED ANCHORING BIAS

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LEARNING OBJECTIVE #1: Define the elements of HIV-associated fever of unknown origin (FUO). **LEARNING OBJECTIVE #2:** Cite the importance of actively seeking additional diagnostic clues to avoid anchoring bias.

CASE: A 34-year-old man with a past medical of HIV/AIDS (CD4+ unknown) on intermittent HAART presented with a 1-week history left sided facial numbness, blurred vision in his left eye, intermittent headaches, and neck stiffness as well as a 1-month history of unintentional weight loss and nights sweats. A CT head with contrast demonstrated no

acute abnormality. A lumbar puncture (LP) was performed and the patient was initiated on empiric antimicrobial therapy due to concern for meningitis. LP results returned the morning after admission with only minimal alterations in glucose and protein, prompting discontinuation of antimicrobial therapy. Within hours, the patient began to develop persistent fevers, at which time antimicrobial therapy was re-initiated and an extensive yet unrevealing infectious workup commenced without resolution of the patient's fevers. After several days of unsuccessful treatment of the presumed infection and continued fevers, rising liver enzymes prompted the team to re-evaluate the full clinical situation and look beyond his HIV status. CT abdomen/pelvis with contrast demonstrated confluent adenopathy concerning for lymphoproliferative disease, and CT chest with contrast noted scattered pulmonary nodules. Percutaneous liver and lymph node biopsies demonstrated non-caseating granulomas, at which time lymphoma and sarcoidosis were moved higher on the differential diagnosis.

IMPACT/DISCUSSION: Infection accounts for ~ 80% of HIV-associated FUOs. As such, practitioners often first consider infectious etiologies as the cause of a patient's HIV-associated FUO, yet malignancy (namely lymphoma) and autoimmune conditions represent important causes of HIV-associated FUOs. These cannot afford to go unrecognized, as the treatment modalities are vastly different. The temporal relationship to the discontinuation of antimicrobial therapy and onset of fevers cemented the anchor that the etiology of the patient's HIV-associated FUO was infectious in nature despite the lack of improvement with antimicrobial therapy. Only on further investigation was the concern for underlying lymphoma or autoimmune conditions such as sarcoidosis carefully considered. This case underscores the importance of actively acknowledging discordant data (in this case, rising liver enzymes) and challenging anchoring bias in an attempt to make a prompt diagnosis and deliver expedient and appropriate therapy.

CONCLUSION: -Infectious etiologies account for the majority of HIV-associated FUOs; however, malignancy and autoimmune conditions are important causes of HIV-associated FUOs that must be carefully considered in the differential diagnosis, as the treatment modalities are vastly different.

-Practitioners must actively seek out additional diagnostic clues to challenge anchoring bias, make a prompt diagnosis, and deliver appropriate therapy.

LITHIUM INDUCED LEUKOCYOTOSIS: A RED HERRING

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LEARNING OBJECTIVE #1: Lithium has been used for treatment of psychiatric disorders for more than 70 years and has been a cornerstone for long-term treatment of bipolar disorder. Lithium has been associated with diverse hematologic changes, most consistent being leukocytosis. Lack of awareness of these findings may result in unwarranted patient workup and prolonged hospitalization.

CASE: 60 year old male with a past medical history significant for bipolar disorder presented with facial swelling involving almost the entire left side of the face with extension to the external auditory canal. WBC count on admission was 28.6 thou/ul and was attributed to the cellulitis. Patient was started on broad spectrum antibiotics and underwent debridement of external auditory canal. Patient improved clinically. However, WBC count remained elevated greater than 20 thou/uL even though no other source of infection was found. Detailed retrospective review of charts revealed consistently elevated WBC counts on previous admissions in the absence of infection as well. Patient was noted to be on lithium for at least 5 years, and this persistent elevation in WBC count was attributed to the use of lithium.

IMPACT/DISCUSSION: Treatment with lithium has been shown to result in leukocytosis predominantly neutrophilia, increased platelet count and increased circulating CD34+ hematopoietic stem cells. Lithium causes neutrophilia by enhancing the phosphorylation of glycogen synthetase kinase 3 (GSK 3) and increasing hypoxia induced factor-1 (HIF-1). Patients treated with lithium usually have mature granulocytes without a significant shift to the left. WBC elevation occurs by the end of 4 weeks in almost all hematologically normal patients ingesting lithium. Increment in WBC count is not generally proportional to blood lithium levels, however usually noted when serum lithium levels are between 0.4 and 0.7 mmol/l. This leukocytosis is usually self-limiting and should not be treated aggressively. Stopping lithium is not the appropriate step in patients who have been on it chronically and it is recommended that lithium be continued. Lithium has also been successfully used as an augmentation strategy in patients with a partial response to clozapine and to prevent clozapine-associated neutropenia.

CONCLUSION: The take-home message from this case is that, in patients who are chronically on lithium, the presence of a high WBC count alone should be co-related clinically to rule out infection. Lithium therapy should not be abruptly stopped as it can result in worsening of pyschiatric symptoms.

LIVING IN THE CREEKS

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LEARNING OBJECTIVE #1: Diagnose and treat pathogenic waterborne infections

LEARNING OBJECTIVE #2: Recogize social determinants of health in at-risk patients

CASE: A 53 year-old male presents with left lower leg pain for 1 day. He reported being incarcerated for the past 2.5 years, was released 1 week prior, and was now homeless and living near a creek. He reported bathing in the creek when he felt a sharp pain in his left leg. Past medical history was notable for hypertension, polysubstance use, and decompensated cirrhosis secondary to chronic hepatitis B and alcohol use disorder.

On admission, temperature was 36.7 C, blood pressure was 96/50, heart rate was 107, and oxygen saturation was 97% on room air. His left thigh was edematous, erythematous and tender to touch, and he had pustular bullae to his left foot. Laboratory evaluation revealed a white blood cell count of 9.2 and lactic acid of 4.6. CT of the affected leg revealed extensive soft tissue edema involving the thigh and lower leg suggestive of cellulitis or myositis, devitalized tissue of the left foot, and no drainable abscess. He was treated with vancomycin, piperacillin-tazobactam, and doxycycline for presumed sepsis and he underwent incisional debridement of the foot. Tissue culture revealed *Aeromonas hydrophila* and blood cultures grew *Plesiomonas shigelloides*.

IMPACT/DISCUSSION: Cellulitis is a bacterial skin infection and a condition commonly encountered by internists. β-Hemolytic streptococcus and staphylococcus species are the most common causative organisms. However, in patients with limited access to clean water, rare organisms underlie bacteremia and cellulitis

Plesiomonas shigelloides is a gram-negative bacillus that inhabits aquatic environments like freshwaters and estuaries. It has primarily been linked with gastrointestinal symptoms, especially in those who have consumed raw seafood or are exposed to contaminated water. The most common extra-intestinal manifestation of *Plesiomonas shigelloides* is bacteremia, though it is a rare culprit for septicemia with only about 40 recorded cases,

mostly in patients with underlying HIV, cancer, cirrhosis, or sickle cell anemia. Similarly, *Aeromonas hydrophila*, a gram-negative rod bacterium, is also widely distributed in aquatic environments and most commonly causes diarrheal symptoms after contact with contaminated water, but can have extra-intestinal manifestations as well. Wound infections from *Aeromonas* often lead to cellulitis, and invasive infections are more likely to occur in those with liver cirrhosis, malignancy, or immunocompromised states. Interestingly, there are no recorded cases of soft tissue infections from *Plesiomonas* despite it also being an aquatic pathogen.

CONCLUSION: This case highlights the inextricable link between housing and health outcomes. Lack of housing or clean drinking water made our patient susceptible to these infection with atypical organisms. Addressing health care needs of our patients must address socioeconomic disparities, including access to housing.

LOCKED UP AND LOCKED OUT OF DECISION MAKING

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LEARNING OBJECTIVE #1: Understand differences in medical decision-making (MDM) rights for incarcerated patients

LEARNING OBJECTIVE #2: Appreciate complexities of power disparity when incarcerated patients lack medical decision making capacity

CASE: A 72 year old man presents to the hospital after an assault while in custody. Due to the need for a higher level of care patient was transferred to the surgical intensive care unit at our facility with multiple fractures traumatic injuries. Due to his severe injuries including an intracranial hemorrhage and traumatic brain injury he is unable to participate in his care. His correctional records include of next of kin (NOK), however, due to restrictions from the jurisdiction, providers were not given approval for immediate contact. His course was complicated by respiratory failure requiring intubation, tracheostomy, blood transfusions, and multiple surgeries and procedures - all of which require consent. Numerous calls were made to the jurisdiction to try and obtain permission to contact NOK as a possible medical proxy. A provider was told by the jurisdiction that patient needed to be dying in order to contact a proxy decision maker. Several weeks after admission, permission was granted for family meeting and family member to act as a proxy decision maker.

IMPACT/DISCUSSION: In the typical framework for surrogate decision-makers, decision-making authority passes from the patient to surrogates, as needed, when the patient lacks capacity to make medical decisions on their own. When the patient is incarcerated, much of the power to determine things like geographical location is not in the hands of the patient. For example, they cannot choose where they seek medical care, and even if they refuse medical care, they cannot demand to be returned to their correctional facility. In this way, community and correctional health providers, as well as correctional administrators, may take on the role of decision-makers for certain aspects of care. In the case of incarcerated patients that lack medical decision-making capacity, some practical considerations, such as location and security, may come up against the providers' goal of understanding and implementing patient values as they pertain to health care decisions. We review current guidelines for the care of incarcerated incapacitated patients, as well as review some of the more difficult cases encountered at our institution and discuss the tension in the atypical distribution of power in these situations between correctional facility, patient, health care facility, and care team.

CONCLUSION: Competing priorities between providers, jurisdictions security, and patient autonomy complicate surrogacy when incarcerated patients lack MDM capacity. An understanding of the law, correctional standards of care, and medical ethics can guide physicians in the ethical treatment of their incarcerated patients.

LOOK DEEPER! A CASE OF SARCOIDOSIS, THE GREAT IMITATOR

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LEARNING OBJECTIVE #1: Recognize the importance of systemic evaluation in a patient with cutaneous sarcoidosis.

LEARNING OBJECTIVE #2: Assess a patient with cutaneous sarcoidosis for extent of systemic involvement

CASE: A 71 year old woman with history of diabetes mellitus, hypertension, left optic neuropathy, GERD, and cutaneous sarcoidosis presented with 3 day history of epigastric pain, nausea, emesis. Pain was tight, epigastric, radiated to bilateral upper quadrants and was sometimes worse with food. No hematemesis, melena, pale colored stool. Granulomatous skin lesions were first diagnosed 2 years prior to presentation. Medications: metformin, chlorthalidone, valsartan, amlodipine, aspirin. No tobacco use.

Exam: BP 148/81, HR 86, T 98.3, R 18. Lungs: no wheezes; Heart: regular rate and rhythm, no murmur; Abdomen: epigastrium mildly tender without guarding or rebound. No masses or hepatosplenomegaly. Skin: hyperpigmented macules on face and neck. Multiple indurated papules on the right forearm, left hand and nose. Labs: Alb 3.5, Ca 10.8, ionized Ca 1.3 (NL), Alk Phos 439, ALT 204, AST 142, Total bili 4.4, Direct bili 3.54, Lipase 71, CA 19-9 73 (elevated), CEA 2.7 (NL). Abdominal ultrasound: Moderate intrahepatic biliary ductal dilation without common bile duct dilation. CT and MRI: 4.2 x 2.8 x 4.7 cm hilar mass predominantly involving the left lobe with extension into central liver with dilated intrahepatic bile ducts, concerning for hilar cholangiocarcinoma; Pathology showed noncaseating granulomas consistent with sarcoid granulomas, negative for malignancy.

IMPACT/DISCUSSION: Sarcoidosis is a multisystem, noncaseating granulomatous disorder of unknown etiology that commonly affects young and middle aged adults. It most frequently involves the lungs, but up to 30% of patients present with extrapulmonary involvement, sometimes mimicking infection or malignancy. Diagnosis typically requires clinicoradiographic findings supported by histopathogic evidence of noncaseating granulomas. Skin is the second most commonly affected organ with involvement in 25-30% of cases. Once diagnosed, evaluation must exclude other causes of granulomatous histopathology, and work-up should attempt to assess extent and severity of organ involvement. Systemic work-up should include detailed history and physical exam (including occupational/environmental history), labs (complete blood count, comprehensive serum chemistries including calcium, liver function tests and creatinine), radiographic evaluation (PAL chest x-ray), PFTs with spirometry and diffusion capacity, ophthalmologic exam, ECG, UA, vitamin D and testing for TB. Additional testing with CT/MRI, echocardiogram and holter monitoring should be considered based upon symptoms or findings. There is growing evidence for the inclusion of PET/CT in the workup of sarcoid, particularly in atypical presentations.

CONCLUSION: Cutaneous sarcoidosis may be the presenting sign of systemic sarcoidosis, and a thorough systemic evaluation is critical to assess for possible life-threatening organ involvement.

LOOKING BEYOND A RARE PRESENTATION OF BETEL NUT USE- AN OPPORTUNITY FOR LESSONS IN GLOBAL HEALTH AND GENDER EQUITY

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LEARNING OBJECTIVE #1: Recognize and interrupt the hidden import and perpetuation of gender-based health disparities.

CASE: A 39-year-old female from South Asia presented with one year of progressive dysphagia, weight loss and trismus. She had no history of facial trauma, radiation, dental abscess, cancer or autoimmune disorders. Since emigrating to the United States at the age of nine she was healthy, took no medications, and denied tobacco use but did endorse daily BN use since early childhood which she continued after immigration through an exotic goods importer in her area; she was never asked or counseled about BN use despite annual primary care visits. Her exam was normal except for sialorrhea, hypophonia, and an inability to retract her jaw greater than 0.9 cm. She had normal electrolytes and a negative autoimmune workup. Computed tomography of the face and neck showed normal temporomandibular joints without masses. Nasopharyngeal endoscopy revealed diffuse thickening of the oral mucosa- biopsies showed squamous mucosa with hyperkeratosis with subepithelial fibrosis and hyperpigmented macrophages without malignancy confirming a diagnosis of BN-associated OSF. She was then taken for brisement surgery and feeding gastrostomy while undergoing long term oral physical therapy.

IMPACT/DISCUSSION: Betel nut (BN) is the fourth most used psychoactive substance used behind caffeine, alcohol, and nicotine with 600 million global users. BN is strongly associated with oral cancer and many other systemic effects including oral submucosal fibrosis (OSF). Its effects may surface long after use posing a diagnostic challenge in caring for an increasingly global diaspora. We present a case of OSF which highlights another aspect of BN use: the enduring effects of gender-based health inequalities. BN is a mild, addictive stimulant consumed in many parts of the world, particularly in south and southeast Asia, which is unregulated by the Food and Drug Administration. Although BN has a strong association with several consequences such as oral cancer, there remains a widespread lack of risk awareness and entrenched social norms permitting BN use in early childhood in endemic areas. Women bear a higher proportion of BN-related disease not only due to limited means of healthcare access but also due to cultural norms that often discourage women from tobacco while encouraging BN use. Here, standard tobacco and cancer screening missed a silent but significant driver of poor health which highlights the importance of a sagacious approach to migrant patients who may have a history of exposure to imported substances and cultural habits of clinical importance, particularly where women may be inadvertently neglected.

CONCLUSION: This case illustrates the enduring effects of gender-based health inequalities and serves to help practitioners recognize their potential in interrupting the occult import and perpetuation of gender disparities which are relevant to the individualized provision of culturally informed, gender equitable care.

LUDWIG'S ANGINA CAN BE LIFE-THREATENING CELLULITIS

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LEARNING OBJECTIVE #1: Recognizing Ludwig's angina as early diagnosis and immediate treatment planning could be a life-saving procedure

CASE: A 45-year-old female with a past medical history of hypertension, Von Willebrand type 2b who presented to the hospital with swelling of her neck and tongue, some difficulty breathing, dysphagia, odynophagia and change in her voice. The patient started getting left sided tooth pain about a week prior to presentation. She went to her primary and was prescribed Zithromax Z-pak. She presented to dental office a day ago with acute swelling and tooth #18, 19 were extracted and patient was placed on clindamycin. On physical exam, there was firm sublingual and bilaterally submental edema with left submental ecchymosis. The tongue was enlarged and the uvula was not visualized Ear, Nose and Throat (ENT) specialist performed flexible endoscopic nasopharyngolaryngoscopy which confirmed minimally patent airway. Computed tomography of neck was obtained which showed bilateral submental swelling without fluid collection with reactive lymph node enlargement in the neck bilateral. Patient underwent emergent tracheostomy for impending airway obstruction. Oral and maxillofacial surgery (OMFS) consulted who performed incision and drainage (I &D) of bilateral fascial neck and midline neck spaces and dobbhoff feeding tube was placed. The cultures from theI&D and blood were negative. Infectious disease suggested treatment with clindamycin and ciprofloxacin for at least four weeks duration. Patient was going to follow up with both ENT and OMFS to ensure proper response to therapy on physical exam and repeat images. Hematology was also consulted for mild thrombocytopenia in the setting of history of Von Willebrand and recommended aminocaproic acid 1mg twice a day for 3 days after tracheostomy.

IMPACT/DISCUSSION: Ludwig's angina is bilateral infection of the submandibular space that consists of two compartments in the floor of the mouth, the sublingual space and the submylohyoid space. It is an aggressive, rapidly spreading cellulitis without lymphadenopathy with potential for airway obstruction and requires careful monitoring and rapid intervention for prevention of asphyxia and aspiration pneumonia.

CONCLUSION: This case illustrates that we should suspect Ludwig's angina in patients with infection in the floor of their mouth because it is an aggressive cellulitis and can cause airway obstruction. It is a typically a polymicrobial infection involving the flora of the oral cavity but the most common organisms are viridians streptococci. Most abscesses originating from the teeth also harbor oral anaerobes and gram-negative aerobes may also be present in immunocompromised patients.

LUPUS HEPATITIS: AN UNCOMMON PRESENTATION OF THE GREAT IMITATOR

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LEARNING OBJECTIVE #1: Identify hepatic dysfunction caused by Systemic Lupus Erythematosus

CASE: A 43-year-old male with history of membranous nephropathy of unknown etiology presented with a 3-day history of gradual onset malaise,

diffuse abdominal pain, myalgias, fever, and headache. Upon presentation he was febrile to 39.1 °C and exam was significant for nuchal rigidity and lower extremity weakness. Labs were significant for a white blood cell count of 2.64 K/μL, platelets of 83 K/μL, acute kidney injury with BUN and creatinine elevated at 40 and 1.77 respectively, transaminitis with ALT of 323 units/L and AST of 375 units/L, and ferritin of 1941 ng/ml. Septic work-up was initiated with blood cultures and a lumbar puncture with CSF studies. CT of the head and abdomen were negative. Patient was admitted and started on broad-spectrum antibiotics for presumed meningitis. However, infectious work-up returned negative and patient continue to have fevers during clinical course with rising LFTs (ALT 1203 units/L, AST 1623 units/L) and ferritin (12,888 ng/ml). Patient underwent more testing with negative toxicology, tuberculosis, HIV, EBV/CMV, hepatitis A/B/C, autoimmune hepatitis, and tick-borne illness serologies. After 1 week of admission with progressive symptoms, patient then exhibited a new rash in malar distribution with positive ANA in a 1:640 cytoplasmic pattern, anti-RNP antibodies, anti-SSA antibodies, as well as low C3 at 56 mg/dL and C4 at 14 mg/dL. Ds-DNA and anti-smith antibodies were negative. He was diagnosed with systemic lupus erythematosus (SLE) and started on glucocorticoids and tacrolimus with remission of fever and abdominal pain, recovery of cytopenias, and improvement of aminotransferase levels to the low 100s. He was thereafter discharged with close follow-up.

IMPACT/DISCUSSION: SLE is a clinically heterogeneous disease, and patients can present in various different ways (1). SLE encompasses a broad spectrum of liver disease including immunologic overlap syndromes, non-immunologic associations, and infrequently damaged induced by itself (2). Bessone et al describe Lupus Hepatitis as an asymptomatic elevation of aminotransferases associated with exacerbations of SLE, which returns to normal values after corticosteroid therapy (3). Furthermore, anti-Ribosomal P antibodies have been correlated to this clinical entity (4). Our case highlights this underreported and uncommon presentation of SLE.

CONCLUSION: Lupus hepatitis is a distinct manifestation of SLE with variable course and prognosis (4). It is important for clinicians to know this association in order to promptly achieve diagnosis and initiate appropriate therapies thereafter.

MAG-NAMINOUS URINE

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LEARNING OBJECTIVE #1: Describe the pathophysiology of hypomagnesemia in patients with alcohol abuse

LEARNING OBJECTIVE #2: Review the consequences of severe hypomagnesemia

CASE: A 61-year-old alcoholic man was admitted to the ICU for management of sepsis, alcohol withdrawal, and hepatic encephalopathy after being found down at home. He required several weeks of renal replacement therapy and subsequently intermittent dialysis until his kidney function recovered from ATN. When renal function improved, he developed hypomagnesemia (0.9 mg/dL) despite daily magnesium repletion and ultimately had to be supplemented with 6 mg IV magnesium and 1200 mg oral magnesium oxide per day. Spot urinary magnesium levels were 25.6mg/dL and 24 hr urinary magnesium level was 803mg/dL confirming a diagnosis of urinary magnesium wasting. Intravenous magnesium was more effective at repleting his magnesium than oral therapy early in his hospital course. Later, he was able to maintain serum magnesium concentrations within normal range without additional IV repletion. Urinary spot magnesium had decreased from 25.6 mg/dL to 6.8 mg/dL.

IMPACT/DISCUSSION: Urinary magnesium wasting is one of many reasons that contribute to hypomagnesemia in alcoholic patients. In a study examining electrolyte abnormalities in alcoholics approximately 30% had hypomagnesemia and of those, 47% were found to be due to urinary magnesium wasting as a consequence of alcohol induced tubular dysfunction. Urinary tubular wasting of magnesium is usually a self-limited process and appropriate urinary absorption recovers in ~4 weeks.

Other mechanisms that contribute to magnesium loss in this patient population are diarrhea, and nutritional deficiencies. Diarrhea is a potent contributor as upper GI secretions have approximately 1mEq Mg/L and lower GI secretions have 15 mEq Mg/L. Medications can also contribute to diminished magnesium loss such as diuretics. Concomitant pancreatitis can also worsen hypomagnesemia as magnesium and calcium are saponified into necrotic fat.

Another unique electrolyte abnormality in patients with alcohol abuse is hypocalcemia. This occurs as a result of hypomagnesemia causing decreased PTH sensitivity as well as renal and skeletal desensitization to the effect of PTH. Hypomagnesemia and hypocalcemia contribute to osteoporosis in these patient populations. These electrolyte derangements can also cause Qt prolongations and increase the risk of ventricular ectopy and torsade de pointes.

CONCLUSION: A general internist frequently encounters alcohol abuse and the the health consequences of excessive drinking. A better understanding of the pathophysiology leading to electrolyte derangement in these patients will result in faster, more appropriate management and limit additional complications.

MAINTAINING THE SICK ROLE AT ALL COSTS: TREATING MEDICAL COMORBIDITIES IN PATIENTS WITH FACTITIOUS DISORDER

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LEARNING OBJECTIVE #1: Consider optimal strategies for managing patients with factitious disorder presenting with medical comorbidities

LEARNING OBJECTIVE #2: Highlight one of the ethical dilemmas that can arise when treating disease in patients with factitious disorder

CASE: A 38 year-old woman with secondary acute myelogenous leukemia presented after a reported slip and fall. She demanded specific doses of opioids and a cholecystectomy for a "festering gallbladder." Her abdomen had dramatically inconsistent tenderness to light palpation diffusely. Gallstones were absent on CT, however, her spleen was enlarged.

She endorsed many other comorbidities and frequently visited multiple other hospitals to address them. Collateral information from her family and medical record revealed that none of these comorbidities were true and that she had been deceiving people about these diagnoses for decades. At times the patient was willing to acknowledge truths about her medical history, but more often confrontation was met by verbal abuse or feigned sleep.

The patient's desire to remain in a sick role, her refusal to address her undiagnosed psychiatric issues, and her refractoriness to chemotherapy made her a poor candidate for further treatment of her leukemia. She was referred to hospice care where she died after a blast crisis.

IMPACT/DISCUSSION: Patients with factitious disorder (FD) intentionally produce, feign, or exaggerate symptoms of a disease with the motivation of assuming the "sick role." Patients tend to be female, in their mid-30s, employed in the healthcare field, and display signs of a

personality disorder. Due to difficulties with diagnosis, estimates of FD's prevalence among all physician-patient encounters vary widely – from 0.5% to as high as 5%. Reexamining the general internists' management techniques for patients with FD and other comorbidities may result in better patient outcomes and the avoidance of iatrogenic harms.

Many providers choose to confront patients with FD. However, some experts argue against this approach due to the possibility that the patient will become more guarded. They instead suggest using techniques that allow the patient to give up the factitious symptoms without "losing face." The only systematic review looking at these opposing strategies found no significant difference on Global Improvement Scale scores. However, longer lengths of stay, incorporating psychiatric treatment into medical management, and normalizing the patient's reluctance to share painful or embarrassing information is beneficial.

The treatment of this patient's leukemia was hindered by her desire to remain "sick." The vignette highlights the difficulties in balancing the ethical principles of autonomy and beneficence in this particular population.

CONCLUSION: While more research is needed to determine the best techniques for managing patients with comorbid medical conditions and FD, internists should incorporate psychiatric care and empathy into their care plans.

MAJOR DEPRESSIVE DISORDER (MDD) IN ESRD: AN IMPACTFUL COMORBIDITY

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LEARNING OBJECTIVE #1: Appreciate the prevalence of MDD in ESRD patients.

LEARNING OBJECTIVE #2: Recognize the impact that MDD has on outcomes in ESRD patients.

CASE: 37yoAAM with MDD and ESRD secondary to PCKD presented to the ED for syncope and nausea that had been worsening over the last week since his last session of scheduled outpatient hemodialysis (HD). He had recently been permanently discharged from his HD center due to an altercation with a weapon. Vital signs were normal, but examination revealed a lethargic man. Labs were remarkable for K 5.8, BUN 110, SCr 17. The remainder of an extensive inpatient workup, including EKG, CXR, telemetry, and transthoracic echocardiogram, was unremarkable.

Medications:

- none

Psychiatric History:

- remote psychiatric hospitalization for depression during which started on citalopram which was discarded after discharge

- no prior suicide attempts or mania

- prior hydromorphone use, last a year ago and currently no tobacco, illicits, or alcohol

Family History:

- grandfather completed suicide by gun

- brother with bipolar disorder

Social History:

- lives alone with significant housing instability

- identifies as gay, currently no partner

Hospital Course:

He was dialyzed and quickly improved. He disclosed that he had been discharged from numerous HD centers due to irritable altercations. He felt ashamed of his fistula, ugly, and depressed about his illness, no longer able to socialize or sleep. Psychiatry evaluated him and agreed with a diagnosis of MDD with possible borderline traits. He refused psychotherapy and medications.

All attempts at placing him at an HD center failed given a history of a weaponized altercation. He eventually left against medical advice without an HD center and currently pursues emergency-only HD at various emergency departments across the city.

IMPACT/DISCUSSION: Psychiatric disease such as MDD is comorbid in up to 20-30% of ESRD patients. Being mindful of this aids the clinician in diagnosing MDD in ESRD. However, it can be a difficult diagnosis to make in ESRD patients because the symptoms of MDD often overlap with those of chronic uremia. With our patient, the clinical interview elicited feelings of shame unique to MDD. It has been suggested that the interview be the gold standard for diagnosing MDD in ESRD.

It is important to recognize MDD is ESRD, because mortality correlates with severity of comorbid MDD. These patients more often miss HD, utilize the ED, are hospitalized, and require critical care admissions. Much of this applies to our patient who due to MDD now only has access to emergency-only HD, which is inferior to scheduled HD in terms of mortality, ED visits, and hospitalizations.

CONCLUSION: 1. MDD is comorbid with ESRD in 20-30% of patients.

2. Clinical interview may distinguish MDD from chronic uremia in ESRD patients.

3. Mortality correlates with severity of MDD in ESRD.

4. More research is needed on US citizens whose only access to HD is emergency-only, as this is not well- studied in citizens. Outcomes data presented here come from immigrants.

MALIGNANCY-ASSOCIATED REFRACTORY CHYLOTHORAX: WHEN PALLIATIVE MANAGEMENT ISN'T REALLY PALLIATIVE

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LEARNING OBJECTIVE #1: Review options for palliative treatment of chylothorax, including dyspnea and downstream nutritional effects

LEARNING OBJECTIVE #2: Recognize how barriers to care can impact palliative symptom management and quality of life

CASE: A 63-year-old male presented to the ED after a week of progressive dyspnea. Two weeks prior, he was diagnosed with esophageal adenocarcinoma metastasized to the mediastinal and supraclavicular nodes. CT showed bilateral pleural effusions. Thoracentesis revealed milky fluid with triglycerides of 646 mg/dL, meeting criteria for chylothorax (triglycerides > 110 mg/dL). Pleural cytology was negative for malignant cells.

He was treated with diet modification, octreotide, and chemotherapy, yet his effusions rapidly reaccumulated within two weeks. Options for intervention included surgical ligation, lymphatic embolization, pleurovenous shunting, and placement of indwelling pleural catheters (IPC). Given high surgical risk and lack of insurance coverage of alternate procedures, bilateral IPC were placed.

Over the next three months, his tumor burden and oral intake were stable on chemotherapy. However, he averaged 1L of chylous output daily and suffered hypovolemia, 14kg weight loss, and fatigue leading him to transition to hospice care. Despite adequate control of dyspnea, the inability to definitively treat the chylothorax led to progressive symptoms and reduced quality of life, likely due to nutritional losses.

IMPACT/DISCUSSION: Treatment of high output chylothorax in a patient with metastatic esophageal cancer required two key considerations: palliation of dyspnea and management of nutritional complications affecting quality of life. Drainage of the pleural space with IPC or frequent thoracentesis manages dyspnea but poses the risk of nutritional depletion. Procedures such as shunt placement or thoracic duct embolization provide a more permanent solution without risk of nutritional losses.

After conservative treatment failed, we pursued IPC placement based on prior studies that failed to demonstrate significant adverse nutritional outcomes to their use. However, the studied patients experienced spontaneous pleurodesis whereas ours sustained high output over time. Lymphovenous shunting was considered given the patient's high surgical risk and lack of institutional availability of lymphangiography required for thoracic duct embolization. We planned to pursue shunt placement based on positive results reported in case reports; however, the procedure was declined by insurance, limiting treatment options.

CONCLUSION: Managing this patient's chylothorax was complicated given financial barriers to obtaining advanced procedures and limited evidence evaluating treatment options. It is possible that an earlier definitive procedural intervention may have improved quality of life. Though it is unclear whether our approach hastened his decline, it is worth considering how the decisions we make for palliative intent may not be palliative at all.

MANAGEMENT OF SPONTANEOUS MRSA ARTHRITIS IN A PATIENT WITH UNCONTROLLED TYPE 2 DIABETES MELLITUS

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LEARNING OBJECTIVE #1: Recognize how community acquired Methicillin-Resistant Staph Aureus (CA-MRSA) septic arthritis can present indolently in patients with minimal predisposing risk factors

LEARNING OBJECTIVE #2: Recognizing the sensitivities of serum tests as surrogate markers for septic arthritis

CASE: A 48-year-old male with a history of uncontrolled diabetes presented with worsening left hip pain over the past 2 months. He denied any history of osteoarthritis or any prior trauma. He noted sharp hip pain that was worse with movement and did not radiate. He had also been taking NSAIDs every day to help his hip pain. The physical exam of the left hip did not reveal any swelling or erythema but was tender to palpation with a full range of motion. X-rays of the hip and ultrasound were normal, however, MRI showed cortical loss of the posterior left acetabulum concerning for septic arthritis and swelling concerning for myositis of the muscles nearby. Vancomycin was started for possible septic arthritis. Blood cultures grew MRSA on the second day in the hospital. Interventional radiology aspirated the left hip joint and the synovial fluid grew MRSA as well. After the positive aspirate, an incision and drainage of the left hip was done in the OR. The patient clinically improved and was discharged with a tunneled catheter for long term IV antibiotics for treating MRSA osteomyelitis.

IMPACT/DISCUSSION: Acute septic arthritis is a medical emergency that requires prompt diagnosis and medical treatment. The typical presentation includes restricted range of motion, joint swelling, pain, and redness. Most septic joint infections are due to methicillin-sensitive Staphylococcus aureus with few reports of MRSA septic joint infections. MRSA septic joint infections are typically seen in patients with prior hospital stays, hardware implantation, or preexisting rheumatic disease. Fortunately, there are only a few cases on septic arthritis secondary to CA-MRSA. This case brings attention to the rising prevalence of CA- MRSA septic arthritis in patients with few predisposing risk factors. Although leukocytosis can be seen with septic arthritis, this patient with a history of uncontrolled diabetes shows how leukocytosis is not a sensitive marker for septic arthritis. Inspection of the synovial fluid and synovial fluid white blood cells, % PMN, and CRP of synovial fluid are more useful clinically. There have been conflicting studies on the sensitivities and specificities of procalcitonin for predicting infectious arthritis. Inflammatory, diabetic, nutritional pathologies should also be recognized as causes of altered biomarkers as this patient's uncontrolled diabetes may have contributed to his normal white blood cell count initially.

CONCLUSION: 1. There are no good serum studies to definitively diagnose septic arthritis, and the gold standard continues to be culturing the presumed infected site.

2. This case reinforces the possible indolent nature of septic arthritis and the need for a high index of suspicion when treating patients with hip pain.

MANAGING MENORRHAGIA MEDICALLY

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LEARNING OBJECTIVE #1: Manage menorrhagia secondary to uterine fibroids in a medically complex patient

CASE: A 44-year-old African American female with severe persistent asthma, unprovoked DVT's requiring life-time anticoagulation and abnormal uterine bleeding due to extensive uterine fibroids presented to the emergency department with chief complaint of severe menorrhagia. Vital signs were normal and admission labs showed a stable microcytic anemia with hemoglobin of 7.1 g/dL and MCV of 75 fL. MRI of her pelvis showed greater than 50 fibroids. Prior treatment for her menorrhagia included use of Provera and uterine artery embolization. Given that she had no further desire to bear children, a hysterectomy was discussed but she was deemed too high a risk for general anesthesia due to poorly-controlled asthma. Medical therapy was determined to be the best option and a long-acting progesterone-only implant was offered.

IMPACT/DISCUSSION: This case highlights a woman battling with a known and common side effect of premenopausal leiomyomata. Menorrhagia can be defined as greater than 80mL of blood loss per cycle, excessive uterine bleeding occurring at regular intervals or prolonged bleeding for more than seven days. Premenopausal uterine fibroids are four times more common in African-American women than in Caucasian women and incidence increases with age. Treatment options for menorrhagia are broad and include oral contraceptive therapy, implantable progesterone therapy, endometrial ablation as well as hysterectomy, novel cryotherapy techniques and uterine artery ablation. The wide range of treatment options allows women and physicians to tailor their treatment on a case-by-case basis. Our case in particular describes a woman in need of medical management for her ongoing menorrhagia as she was deemed not a surgical candidate. This case is important for primary care physicians as menorrhagia and other causes of abnormal uterine bleeding can be effectively managed by internists. In most cases, medical management of menorrhagia is often the preferred initial treatment modality to avoid invasive surgery. The most effective medical treatment shown to reduce menorrhagia is the Levonorgestril-releasing intrauterine system (Mirena). Multiple studies show that internal medicine residents among other primary care specialties lack the training and competency of intrauterine device (IUD) insertion. A formal curriculum for IUD insertion for residents in primary care specialties should be considered given their broad indication for use, including effective treatment of menorrhagia.

CONCLUSION: 1. Menorrhagia and other causes of abnormal uterine bleeding can be effectively managed by internists

2. The most effective medical treatment shown to reduce menorrhagia is the Levonorgestril-releasing intrauterine system

3. Formal training of IUD insertion should be considered for residents in primary care specialties given their broad indication for use

MARCHIAFAVA-BIGNAMI DISEASE: CONNECT THE DISCONNECTED

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LEARNING OBJECTIVE #1: Recognize the clinical features of Marchiafava-Bignami disease (MBD) including callosal disconnection syndrome in patients with alcoholism and malnutrition.

CASE: 60-year-old right-handed man with a 40-year-plus history of alcohol abuse presented to our hospital with anorexia and difficulty moving. His wife stated that for the past year, he tended to stay at home, refusing social engagements. He also experienced the sensation that his hands were fighting each other when he tried to pick up the remote control for the television. He has hypertension, but has been lost to follow-up for one year. He has consumed 210 grams of alcohol daily for more than 40 years.

On admission, his vital signs were within normal limits. He was oriented to time, place, and person, but his response was slow. Other than being emaciated, his physical examination was unremarkable. His Mini- mental State Examination was 26 out of 30. His serum gamma aminotransferase level was 357 mg/dL, serum albumin 3.4 mg/dL, and vitamin B_1 13 IU/L. Brain MRI showed moderate frontotemporal lobe atrophy, and increased signal intensity in the posterior aspect of the corpus callosum on T2-weighted and FLAIR images, while DWI showed hypointensity in the same area. Diffusion Tensor Imaging (specialized MRI viewing the nerve fibers) showed a deficit of fiber connection in the corpus callosum. Based on the history including alien hand syndrome, the clinical examination indicating callosal disconnection syndrome, and radiological findings, we made a diagnosis of chronic MBD. To confirm this diagnosis, we tested higher-level brain functions based on prior case reports. He exhibited left agraphia (unable to write a sentence with his non- dominant left hand), transfer impairment of right-left symmetrical function (inability to reproduce a hand symbol on both sides with his eyes closed), and frontal lobe dysfunction including apathy, perseveration and inattention. He was treated with high dose vitamins B_1, B_6, and B_{12}. Though his symptoms persisted, they were better managed with home rehabilitation. In addition, he remained abstinent with the help of social workers.

IMPACT/DISCUSSION: In patients with alcoholism and malnutrition who develop neurological symptoms or disorders of higher-level brain functions, not only should Wernicke-Korsakoff syndrome be considered, but also MBD. MBD is a rare disorder of demyelination or necrosis of the corpus callosum that occurs predominantly in malnourished alcoholics. Although callosal disconnection symptoms affect their activities of daily living and quality of life, the diagnosis is often missed. Delay in diagnosis affects outcome and prognosis.

CONCLUSION: MBD is a rare disorder of demyelination or necrosis of the corpus callosum that occurs predominantly in malnourished alcoholics. The clinical features described above could be useful in diagnosing MBD and providing appropriate treatment using a multidisciplinary approach.

MASQUERADING MALIGNANCY PRESENTING AS OBSTRUCTIVE HYPERBILIRUBINEMIA

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LEARNING OBJECTIVE #1: Identify potential causes of obstructive jaundice/hyperbilirubinemia including: choledocholithiasis, cholangitis, malignancy, lymphadenopathy, and biliary stricture.

LEARNING OBJECTIVE #2: Identify common sites of metastases for small cell lung carcinoma.

CASE: A 69-year-old male with past medical history of alcohol abuse, 75 pack-year tobacco smoking history, and untreated anal squamous cell carcinoma presented to hospital with yellowing of his skin for two weeks. He endorsed concomitant right upper quadrant pain in his abdomen described as dull which was not worsened or relieved with meals. He denies history of liver cirrhosis or hepatitis, family history of liver disease, or recent medication changes. Physical exam was significant for widespread jaundice and tenderness to deep palpation of right upper quadrant of abdomen without rebound tenderness or guarding. Laboratory values were significant for aspartate aminotransferase 99, alanine aminotransferase 80, alkaline phosphatase 477, total bilirubin 28.7, and direct bilirubin 19.5. Computed tomography (CT) of the abdomen showed hypodense mass from head of pancreas obstructing and infiltrating the distal portion of the common bile duct (CBD) with associated extra- and intra-hepatic duct dilatation and a low density mass of the right lobe of the liver. CT Thorax and Pancreas revealed mediastinal and hilar lymphadenopathy, large left infrahilar mass, widespread upper abdominal lymphadenopathy, and previously described pancreatic mass not definitely identified, thought to be lymphadenopathy. Patient underwent endoscopic retrograde cholangiopancreatography (ERCP) with biliary stent placement and subsequent downtrend of total bilirubin. Biopsy of mass of right lobe of the liver revealed metastatic small cell carcinoma. Patient was started on palliative chemotherapy with carboplatin and etoposide.

IMPACT/DISCUSSION: This case presents a patient with obstructive hyperbilirubinemia, which has a broad differential diagnosis. This patient has a significant tobacco use history, untreated anal squamous cell carcinoma, and history of alcohol abuse. Considering this patient's past medical and social history, a thoughtful approach to etiology of the obstructive hyperbilirubinemia should be always be sought to consider further treatment options after ERCP and biliary stent placement for decompression.

CONCLUSION: This patient's CT imaging was initially consistent with pancreatic mass with invasion of the CBD, further imaging and a liver biopsy confirmed the diagnosis of small cell lung carcinoma, and obstructive hyperbilirubinemia was secondary to portacaval lymphadenopathy. The most common site of metastases for small cell lung cancer are liver, bone, brain, and lungs. This case highlights the importance of knowing the multiple causes of obstructive hyperbilirubinemia and their treatment, metastatic patterns of malignancies, and further discussion of imaging results with radiologists to narrow the differential diagnosis and predict further treatment plans.

MEMORY LOSS WITH PARKINSONIAN FEATURES: A CASE STUDY

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LEARNING OBJECTIVE #1: To assess and understand the overlap between parkinsonian features and progressive memory loss.

CASE: We present the case of a 78-year-old woman with three years of worsening memory loss (occurring in a stepwise fashion) and increasingly frequent falls in the same time period. She had difficulty with word finding, naming and recognizing loved ones, and was often disoriented in familiar places. Her weekly falls were attributed to slowed reflexes. The patient denied hallucinations, nightmares, depression, syncope, or urinary incontinence. Family history included Alzheimer's Dementia in her mother.

Her past medical history was complicated by vascular disease, hypertension, upper extremity venous thrombus, and lower extremity neuropathy. Physical exam showed cogwheel rigidity, intention tremor, diffusely hypoactive deep tendon reflexes, and wide based, ataxic gait. Mental status exam was significant for flat affect with masked facies, logorrhea, and disorientation to time and place. MOCA exam score was 12/30, demonstrating difficulty with recall and word finding but with none with clock drawing or attention. Routine labs were within normal limits. MRI showed diffuse cerebral volume loss with signs of chronic microvascular ischemia in the periventricular and subcortical white matter.

IMPACT/DISCUSSION: Parkinson features can present with many underlying pathologies. While many patients who demonstrate both parkinsonian features and memory loss are diagnosed with a movement disorder (Parkinson Disease, Lewy Body Dementia (LBD), Multiple System Atrophy, Progressive supranuclear palsy, and Normal Pressure Hydrocephalus (NPH)), it is important to recognize that these overlapping conditions may be present in other disease processes. Our patient developed memory loss before or simultaneously with falls. Movement disorders that follow this pattern are limited and include: LBD and NPH. Additionally, her past history included vascular disease, and neurological exam was clouded by her notable paucity of memory. Thus, neurology concluded memory loss was unlikely to be related to her other neurological symptoms and the patient did not meet criteria for a specific movement disorder. Lab work demonstrated no other underlying source of her presenting features. Finally, imaging showed marked volume loss and microvascular changes. While initially, this patient appeared to have a movement disorder, with a more thorough, multidisciplinary evaluation, she was ultimately diagnosed with mixed dementia with parkinsonian features.

CONCLUSION: Memory loss and Parkinsonian features are present in multiple disease processes.

While LBD is well documented, few cases of Parkinsonian features in the setting of mixed dementia exist in recent literature.

Evaluation of the overlapping features requires a broad differential of neuropsychiatric diseases. Workup should include separate memory and neurological testing with interdisciplinary collaboration.

MENACING MOBILE MASSES

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LEARNING OBJECTIVE #1: Review the pathophysiology of tumor emboli.

LEARNING OBJECTIVE #2: Recognize the clinically significant embolic potential of invasive renal cell carcinoma.

CASE: A previously healthy 39 year-old man presents with one week of cough with blood-streaked sputum, left flank pain and hematuria. He reported a 7 kilogram weight loss, night sweats, and fever over the last month.

He was febrile with a temperature of 38.2 degrees, tachycardic with a pulse of 113 bpm and tachypneic with a respiratory rate of 25 bpm. Examination revealed clear breath sounds and abdomen was soft. Laboratory studies revealed white blood cell count of 20.5 $x10^{3}$/uL, creatinine of 1.3 mg/dl, troponin of 0.17 ng/ml, and a urinalysis with 21 white blood cells, 29 red blood cells. CT pulmonary angiogram revealed multiple pulmonary emboli in the bilateral lower lobes and multifocal pulmonary infarcts. CT Abdomen and Pelvis demonstrated a right renal lesion withing the collecting system and right renal vein thrombus extending into the inferior vena cava (IVC).

The patient was treated with heparin and underwent mechanical thrombectomy of the right renal vein and IVC, as well as aspiration thrombectomy of the bilateral pulmonary arteries. Pathology from both sites identified tumor thrombus, confirming the diagnosis of Renal Cell Carcinoma with invasion of the renal vein complicated by pulmonary tumor emboli. He deteriorated after developing additional pulmonary emboli and a hemothorax, and subsequently passed away.

IMPACT/DISCUSSION: Tumor embolism occurs when solid tumors seed the systemic circulation. Manifestations vary from large tumor masses that mimic pulmonary embolism to the more common progressive microvascular obstruction which can progress to pulmonary artery hypertension. While thromboembolism is a commonly encountered phenomena, tumor embolism is relatively rare and often overlooked.

Tumor emboli are often associated with renal cell carcinomas, as up to 10% of these involve local vessel wall invasion of the renal vein or inferior vena cava (1). They are also commonly associated with mucin-secreting adenocarcinomas of the breast, lung and stomach (2). Suspicion for tumor emboli may be raised with a history of malignancy, findings concerning for tumor invasion into the vasculature, or a pattern of numerous bilateral peripheral subsegmental defects. Definitive diagnosis requires sampling and cytological analysis.

This case illustrates an uncommon cause, tumor emboli, of a commonly encountered diagnosis, pulmonary embolism. Physicians should consider tumor emboli in patients at risk especially those presenting with tumors that can invade the vasculature.

CONCLUSION: Renal cell carcinoma has a propensity to invade local vessels and can cause tumor thrombus and emboli.

METASTATIC BASAL-CELL CARCINOMA ASSOCIATED WITH GUNSHOT WOUND TRAUMA

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LEARNING OBJECTIVE #1: Recognize features of advanced basal cell carcinoma (BCC) and review treatment options

CASE: A 76-year-old fair-skinned man with a history of chronic homelessness returned to primary care clinic with a 10-centimeter, tender, erythematous, draining left groin mass and chronic left

lower extremity edema. The patient suffered a gunshot wound (GSW) in the left buttock in 1962. Twenty years ago, the patient was diagnosed with BCC of the left groin and underwent resection. Ten years ago, the patient developed a draining surgical site wound. Biopsy showed BCC. The patient's wound was resected with negative margins on pathology; however it is unclear if the site fully healed. He engaged sporadically with the health care system and reported seeking care from outside providers with multiple courses of antibiotics for wound infection without sustained healing.

Three years ago, the patient developed lower extremity edema distal to the wound. Positron emission tomography-computed tomography (PET-CT) identified a large hypermetabolic cutaneous/subcutaneous left inguinal mass with extensive metastases to the lungs, abdomen, and pelvis indicating advanced BCC. The patient started palliative Vismodegib with PET-CT four months later showing reduced metabolic activity and no new lesions. The patient stopped Vismodegib due to side effects including weight loss and ageusia.

Two years later, the patient presented to our clinic and resumed Vismodegib treatment. At initiation, PET-CT showed progression of metastatic BCC with enlargement of the primary groin mass and diffuse involvement of the abdomen, pelvis, retroperitoneum, vertebrae and lungs. The patient again stopped Vismodegib due to side effects. In 2 months, he was hospitalized for sepsis from wound site cellulitis and left femoral DVT, then discharged to a wound care facility. He engaged with homeless services to develop a permanent housing plan, but ultimately chose to relocate. The patient declined additional BCC treatment and ultimately agreed to palliative care in his new location.

IMPACT/DISCUSSION: Common risk factors for BCC are exposures to radiation, including ultraviolet radiation, arsenic, and long-term immunosuppression. BCCs associated with trauma from gunshots are rare but documented. Homelessness and inconsistent primary care engagement were contributors to our patient's advanced BCC.

The majority of BCCs are identified early and treated definitively. Metastatic BCC is uncommon due to slow tumor growth. Vismodegib, a hedgehog pathway inhibitor, is an efficacious treatment of advanced BCC in small trials and for our patient.

CONCLUSION:

-BCC can occur in sites of prior trauma, including GSW. Non-healing wounds should be biopsied to exclude malignancy.

-Providers caring for homeless patients should incorporate comprehensive skin examination into their practice

-Homeless populations benefit from health system mechanisms to promote engagement and maintenance in health care

METASTATIC EMBRYONAL CARCINOMA OF THE TESTICLE PRESENTING AS A COUGH

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LEARNING OBJECTIVE #1: Recognize that symptoms of metastatic disease can be the first presenting symptoms in an undiagnosed malignancy.

CASE: The patient is a 28 year old male with a past medical history of T1DM presenting to his primary care office for a cough. The patient reported a cough x3 weeks that had been minimally productive. On review of systems the patient endorsed intermittent episodes of diaphoresis and heat intolerance as well as "lumps" on his chest underneath his breast tissue and a right sided testicular mass. Denied hemoptysis, chest pain, weight loss, fevers, penile discharge, dysuria and hematuria. On further discussion of the testicular mass he notes that he first noticed it approximately 3 months ago. Family history of maternal grandmother with breast cancer diagnosed in her 40s and mother with recent lymphoma diagnosis. On exam the testicular mass was firm and tender to palpation. His lungs were clear to auscultation bilaterally and there was presence of gynecomastia. An ultrasound of the scrotum was done outpatient and showed irregular intratesticular masses on the right, raising concern for a neoplasm. Follow up CT chest, abdomen and pelvis revealed multiple pulmonary masses and subcarinal, left hilar and retroperitoneal adenopathy all concerning for metastatic disease. Following right radical orchiectomy, pathology showed embryonal carcinoma with lymphovascular invasion.

IMPACT/DISCUSSION: This case of a young man presenting with a common, simple chief complaint of a cough highlights the importance of a thorough review of systems in making an accurate diagnosis. Thorough evaluation can uncover key clues to a diagnosis that the patient believes are unimportant or irrelevant, such as the testicular mass in this case. Ensuring that your review of systems is tailored to rule out the worst case scenarios for common chief complaints will prevent a physician from missing symptoms that could lead to an alternative diagnosis.

It is also important to note that the presenting symptom of many malignancies that patients decide to seek care for can be due to the metastatic lesions and not to the primary tumor. In this case, the lung metastases led to a nagging cough which brought the patient to his PCPs office, where the cough ended up being due to metastatic embryonal carcinoma of the testical. Embryonal carcinoma is a type of nonseminomatous germ cell tumors that is among the most rapidly growing and potentially aggressive testicular tumor types that often first metastasizes to the lungs.

CONCLUSION: Patients do not always recognize symptoms that point to a more nefarious origin, such as the testicular mass in our case report, and instead are bothered by the more nagging symptoms, such as a cough, which can be easily overlooked as benign. It is our responsibility as physicians in the primary care setting to ensure that our evaluations are thorough, as metastatic neoplasms can present with symptoms from the metastases before the patient complains of symptoms from the primary neoplasm.

METASTATIC MALIGNANCY OR SARCOIDOSIS? A DIAGNOSTIC DILEMMA

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LEARNING OBJECTIVE #1: Evaluate different imaging modalities, lab test, and histopathology techniques in distinguishing sarcoidosis from a malignant or infectious cause.

CASE: A 44-year-old African American male presented with an 8-month history of 40-lb. weight loss. He also reported persistent headaches and occasional left eye blurriness. He denied any significant past medical history except a ½ ppd remote smoking history. His review of systems was negative. His physical exam was unremarkable. Due to the weight loss, an abdominal CT was performed which showed multiple hepatic lesions with upper abdominal lymphadenopathy and multiple lucent lesions throughout the bones. These findings were suspicious for a metastatic malignant disease. The patient was admitted for work-up of his hepatic lesions, and lab work demonstrated hyponatremia. Chest CT showed bilateral lymphadenopathy with multiple perilymphatic nodules in the bilateral upper lobes, along with calcified granulomas. Sarcoidosis was considered, however malignancy and tuberculosis could not be ruled out. Serum levels of angiotensin- converting enzyme (ACE) were ordered.

Biopsy of a left iliac bone lesion revealed granulomatous inflammation with giant cell reaction without evidence of malignant cells.

Given the patient's headaches eye blurriness, a brain MRI was performed and revealed diffuse leptomeningeal nodular enhancement of the CNS.

PET scan was necessary to stage the sarcoidosis. PET revealed extensive lymphadenopathy, evidence of skeletal involvement, metabolically active liver lesions, and large left hilar consolidation with bilateral upper lobe nodules.

After explaining the results, the patient was started on Prednisone 80 mg daily for four weeks. The patient's condition improved vastly, and he has been treated continuously since discharge.

IMPACT/DISCUSSION: Sarcoidosis is a multisystemic granulomatous disease of unknown cause. Thought it may affect any organ in the body, pulmonary involvement is the most common. Extrapulmonary involvement is reported in 30% of all cases, but only 5% of these cases show multiple hypodense nodules scattered in the liver such as the case presented here. Additionally, bone involvement in sarcoidosis is rare (7%), and involvement of the vertebrae is even rarer. Disseminated sarcoidosis should be considered as a differential diagnosis when metastatic malignancy or tuberculosis are suspected. Serum levels of ACE, PET scan, and biopsy may be a valuable diagnostic tool of unusual sarcoidosis presentations.

CONCLUSION: Disseminated sarcoidosis present similarly to malignancy and disseminated infections, and these processes need to be ruled out. This case attempted to highlight both the variability in disease presentation and illustrate the utility of several imaging modalities, lab tests, and histopathology techniques in distinguishing sarcoidosis from other cause. We anticipate that this review may be useful for clinicians who face diagnostic dilemmas and management decisions for this complex and variable condition.

METHADONE INDUCED SUDDEN CARDIAC ARREST

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LEARNING OBJECTIVE #1: Physicians prescribing Methadone Maintenance Therapy should know the risk of methadone induced QT interval prolongation and associated torsades de pointes and weigh the benefits agaist the risks.

LEARNING OBJECTIVE #2: Clinicians should inform patients of arrhythmia risk when they prescribe methadone.

CASE: A case of a 38-year-old male with past medical history of untreated Hepatitis C and polysubstance abuse on methadone maintenance therapy (MMT) was brought to the ED after being found down. Upon examination, the patient was alert and oriented to person and time but did not recall what happened. Labs were pertinent for troponin of 0.27 NG/ML, CPK 3626 U/L, UDS positive for methadone, amphetamines, and cocaine. The ECG on admission was noted to have a QTc of 618ms. A review of the patient's medication revealed that he was on methadone 300 mg/day. In the ED, the patientdeveloped pulseless ventricular tachycardiac followed by ventricular fibrillation requiring ASCLS protocol. Patient regained ROSC after one round. Throughout his hospital course, the patient continued to have multiple episodes of polymorphic ventricular tachycardia requiring isoproterenol drip and a washout period of 11 days to remove the methadone from his system. The discontinuation of methadone was accompanied by normalization of the QTc within 12 days. The patient was started on buprenorphine asan alternative to methadone.

IMPACT/DISCUSSION: Methadone maintenance therapy has shown benefits in reducing the useof illegal substances, has decreased the mortality due to excessive use of drugs, has decreased criminal activity, and reduced the transmission of HIV and viral hepatitis. Methadone-induced QTP and associated TdP is a well- documented side effect of this medication. Methadone causes an inhibition of the cardiac ion channel and causes QTP in a dose dependent manner. The management of an MMT patient presenting with QTP and polymorphic ventricular ectopy or TdP includes magnesium supplementation, isoproterenol, and temporary pacing if arrhythmia persists. Long term treatment includes buprenorphine, naltrexone, or slow-release oral morphine. Other options, such as an implantable cardioverter-defibrillators, have been suggested for MMT patients with symptomatic ventricular arrhythmias, but due to the high procedure-related complications and recurrent shocks, this is often excluded.

CONCLUSION: Methadone is a synthetic opiateand is currently the drug of choice for the treatment of opioid addiction. Side effects of using this medication includes nausea, vomiting, and constipation to more serious adverse effects such as: arrhythmias, QT interval prolongation (QTP), torsade de pointes (TdP), and death. We present a case of a patient with multiple episodes of cardiac arrest secondary to ventricular tachycardia and ventricular fibrillation in the setting of chronic methadone use. Physicians prescribing MMT should weigh the benefits against the increasingly well-documented risk of methadone induced QT interval prolongation and associated TdP.

MEXILETINE INDUCED VISUAL HALLUCINATIONS

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LEARNING OBJECTIVE #1: Use of Mexiletine, a class IB antiarrhythmic, may lead to the development of rare adverse effects such as visual hallucinations in certain cases

CASE: A 79-year-old male with a past medical history of coronary artery disease status post-CABG, ischemic cardiomyopathy and HFrEF with Dual Chamber ICD which was recently upgraded to CRT-D presented to the ED with visual hallucinations of masked men inside his house trying to rob him for the past 3 weeks. These complex visual hallucinations were corroborated by family members. He reported no other symptoms. His medications were GDMT for CAD and HFrEF. He was also taking amiodarone and mexiletine for refractory ventricular tachycardia. On physical examination, he was awake, alert and oriented. He had no neurological deficits and his vision was intact. Laboratory values and urine drug screen were unremarkable. A CT head showed no acute disease. MRI and EEG were also both unremarkable. The usual causes of visual hallucinations including metabolic encephalopathy, alcohol withdrawal, and drug intoxication were ruled out. Despite extensive investigation, the patient's symptoms continued throughout his hospitalization. Thus, his history and medication list were reviewed again. It was noted that he had just been started on Mexiletine 4 weeks prior due to repeated firing of his AICD for ventricular tachycardia. This medication was thought to be the culprit and therefore it was discontinued. Within one day the patient stopped experiencing visual hallucinations. He was discharged home without this medication and he remained free of visual hallucinations after discontinuing the drug.

IMPACT/DISCUSSION: Mexiletine is a Class IB antiarrhythmic, structurally similar to lidocaine, used frequently for treating ventricular arrhythmias. It acts by inhibiting the inward sodium current, decreasing the rate of rise of phase 0 and, as a consequence, decreases cardiac automaticity, increases refractory periods and slows conduction. Common adverse effects include nausea, vomiting, appetite changes, vision changes, rash, dizziness, dry mouth, and weakness. Even though the GI side effects

are more common, neurological side effects, including visual hallucinations as in our case, may occur.

CONCLUSION: With the initiation of the medication occurring directly prior to the symptom onset and the ceasing of symptoms occurring directly after discontinuation, it is fair to say the medication was the true culprit for the complex visual hallucinations. Extensive investigations for visual hallucinations were also unremarkable. Our literature review revealed no reported cases of visual hallucinations associated with Mexiletine use. If patients report symptoms such as visual hallucinations after starting Mexiletine it is important to have a multi-disciplinary approach including the Cardiology team to balance the risks and benefits of the medication in order to treat refractory ventricular tachycardia.

MICROSCOPIC COLITIS: AN EASILY OVERLOOKED ETIOLOGY OF PERSISTENT DIARRHEA

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LEARNING OBJECTIVE #1: Recognize the clinical presentation, complications, and workup of microscopic colitis (MC).

LEARNING OBJECTIVE #2: Review the common risk factors for the development of MC and its relationship to autoimmune diseases.

CASE: A 60 year old female presented to the ED with a 3 week history of frequent, watery, non-bloody stools, abdominal pain, and emesis. Past medical history was significant for rheumatoid arthritis and Sjogren's Syndrome, managed with etanercept, and depression, recently started on fluoxetine. She presented 4 days after discharge from an outside hospital with ciprofloxacin for presumed segmental colitis with no resolution of symptoms. Patient noted associated hypotension, oliguria, and lightheadedness. Vitals were temperature of 36.4C, heart rate of 120, and blood pressure of 119/54. Her physical exam was remarkable for diffuse abdominal tenderness to palpation without rebound tenderness or guarding. Labs showed hypovolemic hyponatremia with sodium of 129 mmol/L, metabolic acidosis with pH 7.3, pCO2 of 25, pO2 94, and HCO3 of 14.6 and severe acute renal failure with BUN 27 mg/dL and Cr 3.33 mg/dL. Inflammatory marker results showed ESR of 87mm/hr and CRP 5.69 mg/dl. Non-contrast CT showed fluid throughout the colon. An enteric pathogen panel, C. difficile toxin test, and stool parasite test were negative. Gross findings on colonoscopy were insignificant. However, colonoscopy with biopsy showed new inflammatory cells and intraepithelial inflammation, consistent with lymphocytic microscopic colitis (MC). Gastroenterology recommended treatment with budesonide, leading to clinical improvement.

IMPACT/DISCUSSION: MC is a disease that is poorly understood. MC has two subsets: collagenous colitis and lymphocytic colitis. It is commonly seen in women between the ages of 60-70 and is often associated with autoimmune diseases and medication usage, particularly nonsteroidal anti-inflammatory drugs, PPIs, statins, and SSRIs. Of note, diarrhea is a common adverse effect of these medications. Additionally, smoking is associated with an increased risk of developing MC. MC presents with insidious onset of persistent, non-bloody diarrhea with associated abdominal pain, emesis, and weight loss. It can be difficult to diagnose as these non-specific symptoms are observed in many gastrointestinal pathologies. Hence, the diagnosis of MC is often preceded by a workup that excludes common causes of diarrhea using CBC, electrolyte, stool, and celiac studies. If initial studies are negative, colonoscopy with mucosal biopsy and histological analysis are needed. Paradoxically, colonoscopies often reveal normal gross mucosa, resulting in missed diagnosis as biopsies are deemed unnecessary.

CONCLUSION: This case of MC demonstrates the importance of awareness of an often missed cause of prolonged diarrhea. Obtaining biopsy and histopathological examination are crucial for diagnosis of MC. There should be a high index of suspicion for MC for persistent diarrhea in the setting of new medications and autoimmune diseases.

MIGRAINE, MOOD, OR MARFANS?

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LEARNING OBJECTIVE #1: Recognize bicuspid aortic valve as a risk factor for intracranial aneurysm (9.8% versus 1.1% compared to control group).

LEARNING OBJECTIVE #2: Other conditions associated with intracranial aneurysm formation include coarctation of the aorta, autosomal dominant polycystic kidney disease, glucocorticoid-remediable aldosteronism, Ehlers-Danlos syndrome, and pseudoxanthoma elasticum.

CASE: A 24-year-old male with a history of depression, migraines, tobacco abuse, and bicuspid aortic valve (BAV) presented to clinic with a headache that was sudden in onset while dancing 3 days prior. The pain was primarily left frontal with some pain in the left neck and different from his prior headaches. He reported new vertigo and blurry vision in the left eye without diplopia. No chest pain or mid-scapular pain. The pain was not relieved by acetaminophen, ibuprofen, or sumatriptan. He also reported severe depression with a PHQ-9 score of 20, which had been worsening in prior weeks. Neurological exam was nonfocal. Cardiac exam unremarkable with congruent blood pressures in all extremities. Mild tenderness to manipulation of the neck. Mild joint laxity of the upper extremities. He was sent for non-contrasted CT head and CT angiography (CTA) of the chest, neck, and head. There was no subarachnoid hemorrhage, but CTA revealed sinus of Valsalva dilation at 48 mm and a 6 mm saccular left supraclinoid internal carotid (ICA) aneurysm. No vertebral dissection or stenosis. Lumbar puncture was negative for xanthochromia. He was admitted and evaluated by neurosurgery. He underwent cerebral angiogram with subsequent pipeline embolization of the left ICA aneurysm. He was discharged on clopidogrel and aspirin with plans to deescalate to aspirin monotherapy in 6 months. He was scheduled to see cardiology to address the sinus of Valsalva dilation and consider early intervention as well as genetics to screen for heritable connective tissue disorders.

IMPACT/DISCUSSION: Headaches in young, healthy patients are easy to dismiss as tension headaches or migraines associated with stress, depression, or poor lifestyle. Careful consideration of patient factors and symptoms should guide the diagnostic process to avoid missing intracranial aneurysms (IA) in patients with occult risk factors, like BAV. Other conditions associated with IA include coarctation of the aorta, autosomal dominant polycystic kidney disease, glucocorticoid-remediable aldosteronism, Ehlers-Danlos syndrome, and pseudoxanthoma elasticum. Benefits of screening BAV patients for IA have not been formally evaluated. Many BAV experts have a low threshold to screen, and imaging is certainly warranted if there are clinical signs or symptoms.

CONCLUSION: Intracranial aneurysms are present in approximately 10% of bicuspid aortic valve patients and should be considered when these patients present with headaches.

MILLER FISHER SYNDROME: AN EYE OPENING CASE

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LEARNING OBJECTIVE #1: Recognize the symptoms and signs of the Miller Fisher variant of Guillain- Barre Syndrome (GBS)

LEARNING OBJECTIVE #2: Describe the role of GQ1b antibodies in Miller Fisher Syndrome (MFS)

CASE: A 24-yo woman with a history of pseudotumor cerebri presented with numbness, tingling, and weakness throughout her body and diplopia for 1 day. Her prior symptoms of pseudotumor included lightheadedness, diplopia, and headache, but not numbness. She denied recent illness, fever, chills, rash, trauma, headache, blurry vision, and gait instability.

Diamox was discontinued 4 months prior to presentation. Family history revealed only diabetes. She did not use recreational drugs.

On exam, she was awake and alert. Vital signs 111/62-79-14-36.4. HEENT showed blurring of the left optic disc. Neurologic exam revealed impaired eye abduction bilaterally. DTRs were 1+ in the upper extremities and trace in the lower extremities. The remainder of the physical exam including a complete neurologic exam was otherwise normal.

WBC 11, protein 8.5. The remainder of the CBC and CMP were normal. ESR 37, CRP 33.9. CT brain revealed an empty sella without change from the prior CT. MRI of the orbits and brain revealed changes suggestive of intracranial hypertension. LP opening pressure was 37. The CSF was normal. EMG was unremarkable.

Acetazolamide was begun. She developed a change in speech quality and worsening ophthalmoplegia. These findings suggested MFS. She was begun on IVIG and her symptoms improved. Anti-GQ1b then returned positive.

IMPACT/DISCUSSION: MFS, a variant of GBS, is a demyelinating condition characterized by ophthalmoplegia, ataxia and hyporeflexia. Patients may also develop dilated pupils, slurred speech, difficulty swallowing and weakness of the extremities. Like GBS, a viral illness may precede the development of MFS. Immunoglobulins that result from these viruses and share antigenic epitopes with them are thought to target gangliosides (including GM1, GD1a and GQ1b) in nodes of Ranvier, nerve roots and end organs (including the brainstem), causing their demyelination. 85% of patients with MFS possess the GQ1b antibody, which is associated with oculomotor nerve involvement.

Imaging of the brain and spinal cord is usually normal. Nerve conduction studies may demonstrate reduced sensory response without decreased sensory conduction velocity. LP may reveal elevated CSF protein.

Like GBS, treatment for MFS is supportive care, IVIG and plasma exchange. Although most patients do well with recovery beginning 2-4 weeks after symptom onset, some develop respiratory compromise, so patients with MFS are typically hospitalized for observation. Patients most often recover in full within 3 months. Relapses occur rarely.

CONCLUSION: -MFS presents with the unique triad of ophthalmoplegia, ataxia, and areflexia

- GQ1b gangliosides, abundant in the motor nerves of the extraocular muscles, are the targets of the primary antibody that causes this syndrome
- Recurrence rates of MFS are low and are associated with increased anti-GQ1b antibody levels

MISSING THE GUIDE WIRE

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LEARNING OBJECTIVE #1: Describe the emergent treatment options for cardiac tamponade

LEARNING OBJECTIVE #2: Manage patient safety standards under physician and patient duress

CASE: A 68-year-old man with end-stage renal disease was evaluated for hypotension. He was lethargic with systolic blood pressure in the 80s, and a normal heart rate. He had decreased heart sounds, cool extremities but no evidence of jugular venous distention. Echocardiogram revealed a pericardial effusion without right ventricular collapse. Cardiology recommended transfer for a pericardial window. While awaiting transfer, blood pressure remained low despite adequate fluid resuscitation. An emergent central venous catheter (CVC) was placed in the right femoral vein. Afterwards, he had a successful pericardial window placed, and vital signs improved. Following the procedure, a retained guide wire was noted on routine chest x-ray. Interventional radiology was able to remove the catheter and guide wire concurrently. No remnants were identified on post-procedure chest x-ray. The patient experienced no complications.

IMPACT/DISCUSSION: Cardiac tamponade is a medical emergency that happens when fluid in the pericardial sac causes compression of the cardiac chambers leading to shock. When diagnosed, the patient should undergo emergent pericardiocentesis, pericardial window or removal of the pericardium. Fluids and vasopressors are temporizing measures until a more definitive treatment is available, which may require CVC placement.

Insertion of a CVC is a common intervention in the intensive care unit (ICU) with an estimation of 15 million CVC days each year in the United States. Despite preventative efforts, guide wire retention continues to occur, with one study reporting a rate of 1:3291 procedures over 6 years. Loss of the guide wire carries a 20% fatality rate which is usually caused by embolization of guide wire remnants. Standard operating procedures require the guide wire to be held at the tip at all times to avoid loss. This technique can be overlooked due to operator fatigue, inexperience, and/or urgency. The use of multiple central line kits must also be considered. Unfortunately, central lines are commonly done in urgent situations; therefore, it is imperative to find ways to manage patient safety standards in challenging settings. Cases like these may benefit from a post-procedure checklist documented in the medical record with a systematic count of critical items. Several facilities have moved towards requiring post-procedure checklists or reminder stickers. Since guide wire loss is such a rare complication, it is difficult to assess whether this has made any impact.

CONCLUSION: Cardiac tamponade may require insertion of a CVC for vasopressor support while awaiting a more definitive treatment, which includes pericardiocentesis or a pericardial window. CVC insertion carries many risks including retention of the guide wire. This complication may be prevented by standardizing post- procedure checklists.

MONOCLONAL B-CELL LYMPHOCYTOSIS: RECOGNITION AND ASSESSMENT IN PRIMARY CARE

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LEARNING OBJECTIVE #1: Recognize the need to assess adult patients with unexplained chronic lymphocytosis with peripheral blood flow cytometry.

LEARNING OBJECTIVE #2: Evaluate the risk of malignant progression of monoclonal B-cell lymphocytosis by clone size.

CASE: A 71-year-old female with a history of HTN, resected DCIS, and osteopenia was found in late 2017 to have a WBC of 9,800 with a differential of 58% lymphocytes (absolute lymphocyte count 5,680), 35% neutrophils, 4% monocytes, 2% eosinophils, and 1% basophils. Review of her medical records revealed a chronic mild lymphocytosis with otherwise normal findings on serial CBCs since at least 2011. She denied fever, drenching night sweats, pruritis, weight loss, LUQ abdominal pain, early satiety, or symptoms of acute or chronic infection. Her physical examination was essentially normal with no palpable cervical, axillary, or inguinal lymphadenopathy or splenomegaly. Additional testing included a normal hemoglobin and platelet count with no LFT, renal, or electrolyte abnormalities. Her peripheral smear revealed a mild predominance of normal appearing lymphocytes with otherwise normal leukocyte, RBC, and platelets. The patient was assessed with peripheral blood flow cytometry revealing a clonal B-cell population with a CLL phenotype (CD5+, CD19+, CD20 dim, CD23+) measuring 3.9 x 109/L. She has since been monitored with annual CBC/differentials demonstrating a stable mild lymphocytosis without concurrent cytopenias. She has not developed symptoms or physical examination findings suggestive of evolving CLL.

IMPACT/DISCUSSION: Monoclonal B-cell lymphocytosis (MBL), a clonal population of peripheral blood B cells measuring < $5X10^9$/L with absent clinical findings of underlying myeloproliferative disease, is detectable in 4-9% of healthy adults. MBL clones are detected, quantitated, and immunophenotypically characterized by peripheral blood flow cytometry. A significant majority of cases of MBL display a CLL immunophenotype with coexpression of CD5 and B-cell markers (CD19, dim CD20, CD23); less commonly, circulating B cells with a marginal zone lymphoma phenotype are detected. The clinical relevance of MBL is largely determined by clone size. Low-count MBL (with a B-cell clone measuring < $0.5x10^9$/L) confers no increased risk of CLL progression. High-count MBL (clone size > $2x10^9$/L) is associated with a 1-2% risk per year progression to CLL requiring treatment.

CONCLUSION: An adult patient with no clinical findings suggestive of underlying lymphoproliferative disease (lymphadenopathy, splenomegaly, cytopenias, unexplained fever, night sweats) and with a peripheral blood lymphocytosis unexplained by secondary causes (infection, autoimmune disease) persisting for more than three months should be assessed by peripheral blood flow cytometry.

If flow cytometry detects a monoclonal B-cell population measuring 2-$5x10^9$/L in this context, annual monitoring with a CBC and clinical assessment is indicated due to a 1-2% yearly risk of progression to symptomatic lymphoproliferative disease.

MORE THAN A FEELING: WHY CHRONIC DYSPNEA SHOUD NOT BE DISCOUNTED

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LEARNING OBJECTIVE #1: Identify key clinical features of interstitial lung disease

LEARNING OBJECTIVE #2: Distinguish pulmonary sarcoidosis from other etiologies of interstitial lung disease

CASE: A 68-year-old African American woman presented with 1 year of dyspnea on exertion and nonproductive cough. Symptoms had been attributed to deconditioning. She had been taking nitrofurantoin for months as prophylaxis for urinary tract infections and lisinopril for hypertension. She had never smoked and had no family or personal history of autoimmune disease. She had fine bibasilar crackles. Labs were unremarkable. Chest X-ray showed patchy perihilar and diffuse interstitial opacities. Transthoracic echocardiogram was normal. Chest CT demonstrated mediastinal and hilar lymphadenopathy, ground glass opacities, honeycombing, and hypoattenuating splenic lesions. Right heart catheterization revealed pulmonary hypertension with normal pulmonary artery wedge pressure. Lymph nodes were negative for granulomas, but lung tissue demonstrated microgranulomatous foci. She was diagnosed with sarcoidosis and started on methotrexate with significant improvement in her symptoms.

IMPACT/DISCUSSION: Interstitial lung diseases (ILD) are a diverse group of disorders which originate in the interstitium but are associated with disruption of alveolar and airway architecture. They typically present as progressive dyspnea with exertion and nonproductive cough. They are often mistaken for a separate disease (i.e. heart failure, COPD) or attributed to deconditioning, aging, or obesity. Early diagnosis relies on a thorough history of risk factors including family history, medications, and occupational or environmental exposures. Crackles may be observed on exam even before radiographic abnormalities. Digital clubbing is the main extrapulmonary finding. The most common features on imaging include reticular or nodular opacities, while only a few demonstrate hilar/mediastinal adenopathy.

The lifetime incidence of sarcoidosis is under 1% for Caucasians but 2.4% in African Americans. Nearly 25% of patients with sarcoidosis die of respiratory failure, which emphasizes the importance of early diagnosis and treatment. More than half of patients present only with chronic respiratory complaints. Common laboratory findings include cytopenias, eosinophilia, and hypercalcemia. Angiotensin converting enzyme (ACE) is elevated in 40-80% of patients but can be suppressed by ACE inhibitors. Radiographic evidence of intrathoracic disease is present in up to 97% of patients, particularly mediastinal adenopathy. Identification of non-caseating granulomas is a key component of the diagnosis but can also be seen in lymphoma, fungal infections, inhalation-related ILD, drug- induced ILD, and vasculitis.

CONCLUSION: The challenge of diagnosis of sarcoidosis stems from the variable presentation in combination with the lack of a single diagnostic test to confirm or rule out disease. Despite this, a thoughtful clinician can identify when chronic dyspnea is more than a feeling.

MORE THAN A TROPE: HER HEART WILL GO ON

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LEARNING OBJECTIVE #1: Develop a differential diagnosis for an elevated troponin level

LEARNING OBJECTIVE #2: Recognize patient-centered decision making and its impact on delivery of care

CASE: A 54-year-old female phlebotomist requested a troponin be drawn with her routine lab draw. She reported 2 weeks of cough productive of white sputum, sinus congestion, myalgias, and subjective fevers. She denied chest pain and shortness of breath. Her past medical history included myocardial infarction two years prior and Sjogren's syndrome. Her previous myocardial infarction had presented with severe shortness of breath.

Her vitals and exam were within normal limits. Initial troponin was found to be 0.58 ng/ml, which subsequently trended down. A respiratory viral panel returned negative. No ischemic changes were appreciated on EKG, and no acute abnormality was identified on chest x-ray.

Transthoracic echocardiogram revealed an asymmetric septal bulge of the basal and mid septum. Cardiac MRI showed acutely edematous, enhancing mid myocardial septal and lateral walls suggestive of myocarditis. Elevated troponin level was attributed to viral myocarditis.

IMPACT/DISCUSSION: Troponin, a protein expressed only in cardiac muscle, has been used routinely used to determine whether a patient with chest pain is having a myocardial infarction. This is due to the high sensitivity and specificity of the biomarker for myocardial injury. However, the clinician must remain mindful of non-ischemic causes of myocardial injury. An elevated troponin level may also be due to myocarditis, decompensated heart failure, cardiac procedures, cardiotoxic medications, hypertensive emergency, trauma, and demand ischemia. Noncardiac causes like septic shock and pulmonary embolism should also be considered. Presentations of myocarditis may be subclinical, and the etiology can often be identified based on the patient's history. The general internist can utilize the differential diagnosis of elevated troponin and combine it with history and EKG findings to determine if an acute cardiac process is ongoing.

Patient requests for additional testing, referral, or medication are common, occurring in 23% of office visits in one study. These requests are often fulfilled. However, if these requests are not clinically indicated, physician communication with a patient-based perspective is crucial to avoid ordering unnecessary labs or tests. This approach includes exploring the context of the patient's request and providing alternative explanations for their symptoms. Patients may persist on a particular lab or test but providing education or offering a more cost-effective option could be a way to mitigate their ongoing concerns. In doing so, associated current and future healthcare costs would be cut while still providing exemplary patient care.

CONCLUSION: Using a shared decision model in which the patient is involved and exploring their narrative has been shown to lead to greater patient satisfaction and can assist physicians in making a diagnosis.

MORE THAN ONE WAY TO HYPERCAPNIA

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LEARNING OBJECTIVE #1: Identify common cognitive diagnostic errors through differential of acute hypercapnic respiratory failure.

LEARNING OBJECTIVE #2: Consider Lambert-Eaton myasthenic syndrome (LEMS) in the differential diagnosis of patients with hypercapnic respiratory failure and long standing smoking history.

CASE: A 72 year-old woman with COPD and tobacco use, presented to the emergency department confused and in respiratory distress. She was recently admitted for two months of progressive vertigo, diplopia, nausea, and weight loss. She was treated for hyponatremia and discharged to a rehabilitation facility due to debility where she had been for 2 weeks prior to this admission. She was unable to provide history due to clinical condition.

On exam the patient was tachycardic to 102, tachypneic to 26, hypertensive and satting 90% on room air. Diffuse pulmonary crackles and respiratory distress were noted along with pitting edema in bilateral lower extremities. EKG revealed atrial fibrillation and chest radiograph revealed bilateral lower lobar infiltrates. Arterial blood gas showed acute on chronic respiratory acidosis. Non-invasive positive pressure ventilation (NIPPV) was initiated and she was admitted to the intensive care unit with treatment for acute exacerbation of COPD and new onset heart failure. She required intubation week 1 and antibiotics were initiated. She failed multiple extubation trials due to recurrent hypercapnia. Week 3 of hospitalization chest CT showed hilar and subcarinal lymphadenopathy. Biopsy of subcarinal nodes confirmed small cell lung cancer (SCLC). Electromyography and nerve conduction studies were diagnostic of postsynaptic neuromuscular junction transmission disorder, consistent with Lambert Eaton Myasthenic Syndrome. Treatment with pyridostigmine and plasma-exchange resulted in improvement and extubation to NIPPV. Anti-P/Q voltage-gated calcium channel (VGCC) antibody returned positive. Oncology initiated a trial of chemotherapy for definitive management of SCLC and LEMS. Despite initial improvement, the patient ultimately died of septic shock.

IMPACT/DISCUSSION: The differential diagnosis of hypercapnic respiratory failure must be considered in order to implement effective treatment. System 1 thinking is necessary in urgent situations where pattern recognition and intuition may allow for prompt treatment of a condition, however it may lead to premature closure which is cited in 74% of diagnostic errors in Internal Medicine. In this case, the differential diagnoses of COPD exacerbation, CHF, and pneumonia were maintained for three weeks prior to evaluation for neuromuscular causes of hypercapnia including LEMS. When treatment of common causes of hypercapnia results in no clinical improvement, utilizing a more analytical system 2 thinking approach with re-evaluation of clinical symptoms and consideration of less common causes of hypoventilation is warranted.

CONCLUSION: Neuromuscular causes of hypercapnia should be considered in patients who fail to respond to initial treatment of common causes.

MORE THAN RECURRENT HYPOKALEMIA

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LEARNING OBJECTIVE #1: Include thyrotoxic periodic paralysis as part of the differential diagnosis for a patient presenting with recurrent hypokalemia.

LEARNING OBJECTIVE #2: Recognize clinical presentation and diagnose thyrotoxic periodic paralysis.

CASE: A 37-year-old Hispanic man with a past medical history of asthma and recurrent hypokalemia presented to the emergency department (ED) with lower-extremities weakness and myalgias. Upon presentation, the patient denied any other symptom. He was only taking albuterol inhaler as needed for shortness of breath, but he had not used it for the last 3 weeks before presentation.

At arrival patient was hypertensive and tachycardic. Physical exam was just remarkable for decreased motor strength in lower extremities.

Initial laboratory evaluation showed hypokalemia of 2.3 and a suppressed Thyroid stimulating hormone (TSH) with elevated free thyroxine (fT4) levels. Further work-up revealed an elevated free triiodothyronine (fT3) levels, elevated TSH receptor antibodies (Ab), elevated thyroid peroxidase Ab and negative thyroglobulin Ab. The diagnosis of thyrotoxic periodic paralysis (TPP) was made and patient was started on potassium (K) supplementation, propranolol, and methimazole with satisfactory clinical response.

IMPACT/DISCUSSION: Recurrent hypokalemia is a very common medical condition mistreated by internists. Frequently, hypokalemia is empirically treated just with K replacement without an adequate workup.

Hypokalemia can present asymptomatically; however, muscle weakness and cardiac dysrhythmias are common clinical presentations. Hypokalemia can be caused by two mechanism: total body K deficit either due to

decreased oral intake or to gastrointestinal/renal losses; or K shifting into the intracellular space. Thyroid hormone directly stimulates the sodium-potassium adenosine triphosphate (Na-K ATPase) pump causing intracellular shifting of K.

The triad of TPP is acute hypokalemia without total body K deficit, muscle paralysis, and thyrotoxicosis. Paralysis is usually symmetrical and affects more severely the proximal muscles of the lower extremities. Although hyperthyroidism has predominance for females, TPP occurs mostly in young Asian males due to activation of the Na-K ATPase by androgens. Since the clinical presentation is not specific and the symptoms of hyperthyroidism are not always present, the diagnosis of TPP can be challenging and a high index of clinical suspicion is needed.

Because TPP occurs only in the thyrotoxic state, definitive treatment consists in achieving an euthyroid state.

CONCLUSION: -Thyrotoxic periodic paralysis may be the initial presentation of hyperthyroidism, however, in many patients the signs and symptoms are subtle.

- Any young male without a family history of hypokalemic periodic paralysis presenting with neuromuscular symptoms and hypokalemia should be assessed for hyperthyroidism independently of the presence or absence of other thyrotoxic signs or symptoms.

MORPHINE, DON'T LEAVE ME BROKENHEARTED

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LEARNING OBJECTIVE #1: Recognize the presentation of stress cardiomyopathy.

LEARNING OBJECTIVE #2: Recognize atypical etiologies of stress cardiomyopathy including opiate withdrawal.

CASE: A 69-year-old female with COPD and osteoarthritis managed by chronic opiate use presented with one day of shortness of breath that the patient described as "morphine withdrawal." She takes daily morphine and had not taken morphine for 72 hours. She denied chest pain, jaw pain, palpitations, diaphoresis, and cough. Vital signs were within normal limits. Physical exam noted benign cardiac and pulmonary exams. Initial troponin was 3.05, and repeat was elevated to 12.57. Her urine drug screen was positive for opiates. Other labs were within normal limits. Chest radiograph did not reveal any cardiopulmonary abnormalities. Initial EKG showed normal sinus rhythm and no signs of ischemia; a repeat study 8 hours later revealed sinus rhythm with diffuse T-wave inversion. Echocardiogram revealed LVEF of 34% with grade 1 diastolic dysfunction and extensive akinesis of the apex and surrounding segments consistent with stress cardiomyopathy. Coronary angiography was not performed during hospitalization as she had a normal study 6 months prior with LVEF of 74%. The patient did not report a history of emotional or physical stress. Her home medications of aspirin, lisinopril, and simvastatin were continued during her hospitalization. Morphine was continued at her home dosage in order to prevent worsening cardiomyopathy. She was discharged with a new prescription for beta-blocker therapy and instructions to continue morphine with plans to slowly taper in the outpatient setting in order to avoid withdrawal and cardiac complications. A repeat echocardiogram performed 3 months after hospitalization revealed improved LVEF of 50-55% without signs of apical akinesis.

IMPACT/DISCUSSION: Stress cardiomyopathy, i.e. Takotsubo or Broken Heart Syndrome, is a cardiomyopathy involving regional systolic dysfunction that is transient in nature and mimics acute coronary syndrome. First described in 1990, it now represents up to 2% of patients with troponinemia and suspected ACS. It is theorized that the syndrome is caused by direct toxicity of or induced vascular spasm by catecholamine elevation. Case reports have identified catecholamine elevation as the culprit, citing this syndrome in patients with acute brain injury or pheochromocytoma.

CONCLUSION: While narcotic use/abuse and stress cardiomyopathy are not independently rare, few reports of narcotic withdrawal instigating stress cardiomyopathy exist. Opiate withdrawal leads to a catecholamine surge that can directly or indirectly damage cardiac tissue and ultimately lead to cardiomyopathy. Many reports of stress cardiomyopathy cite a physical trigger (36%), emotional trigger (27.7%), or both (7.8%). Patients with psychiatric or neurologic disease may also be predisposed. Physicians should be aware of possible triggers of stress cardiomyopathy, including opiate withdrawal.

MULTIPLE STROKES IN LATIN AMERICAN PATIENT

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LEARNING OBJECTIVE #1: To recognize Chronic Chagas cardiomyopathy (CCC) as potential cause of stroke in Latin American patients

CASE: A 56-year-old El-Salvadorian male patient without significant prior medical history presented to our hospital with new onset of left sided weakness.

Upon arrival to the hospital, his vitals were unremarkable except for elevated blood pressure. Clinical examination showed 4/5 muscle strength in both left upper and lower extremities. His labs showed LDL of 115 mg/dl with normal hemoglobin A1C.

Brain magnetic resonance imaging (MRI) showed an acute infarct in the right middle cerebral artery along with remote cortical infarcts in the left frontal, parietal and occipital lobes. His electrocardiogram (ECG) showed normal sinus rhythm with right bundle branch block and left anterior fascicular block. Carotid duplex was normal. Both echocardiogram and contrast echocardiogram were limited, but showed low normal left ventricular (LV) systolic function.

Because the patient's clinical presentation was so consistent with Chagas disease, a cardiac MRI was obtained to evaluate for the typical LV apical aneurysm that is associated with this illness. This showed both a focal LV apical aneurysm, which was the most likely source of his cardioembolism, and basal inferolateral scarring which is typical for CCC. A *Trypanosoma Cruzi* serology was obtained and came back positive.

IMPACT/DISCUSSION: Chagas disease is a chronic parasitic infection caused by the protozoan *Trypanosoma Cruzi* that is transmitted to humans through the feces of infected bloodsucking bugs in endemic areas of Latin America. The disease affects about 6 million people in Latin America and is currently considered the most common cause of non-ischemic cardiomyopathy in that region.

Chagas cardiomyopathy typically appears decades after the initial infection and can lead to heart failure, sudden cardiac death, or stroke. The latter is usually attributable to an embolus from an LV apical aneurysm either in the setting of otherwise normal or dilated cardiac chambers and/or atrial fibrillation.

Found in up to 50% of patients with CCC, bifascicular block on ECG is a classic finding for this illness. In a study in Latin American immigrants to the Los Angeles area with this finding on ECG, 18% were found to have Chagas disease. Beyond an ECG, additional evaluation in patients suspected of Chagas-associated cardioembolism should include an echocardiogram to evaluate for focal scarring or LV apical aneurysm. However, if echocardiography is nondiagnostic, a cardiac MRI should be pursued to assess ventricular structure and function. Ultimately, diagnosis

of Chagas disease is based on positive serology for *Trypanosoma Cruzi* IgG, which must be confirmed with additional serologic analysis by the CDC.

CONCLUSION: Ischemic stroke may be the first manifestation of patients with CCC, and should be suspected in any Latin American patient from a Chagas-region with cardioembolism.

MYCOBACTERIUM SHIMOIDEI PRESENTING AS SUSPICIOUS PULMONARY NODULES

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LEARNING OBJECTIVE #1: Recognize increasing prevalence of non-tuberculous pulmonary infections

LEARNING OBJECTIVE #2: Recognize Mycobacterium Shimoidei as a rare etiology of pulmonary infection.

CASE: A 76 year old male with history of chronic obstructive pulmonary disease, coronary artery disease, hypertension, hypothyroidism, and a 2 month history of night sweats with recent finding of an FDG avid large right upper lobe (RUL) nodule and bilateral pulmonary nodules status post endobronchial ultrasound with biopsy negative for malignancy presented for an elective VATS RUL wedge resection. The procedure was complicated by pneumothorax and persistent air leak with subcutaneous emphysema that was managed with a chest tube and endobronchial valve placement. Pathology from the wedge resection returned with AFB positive necrotizing granulomas consistent with Mycobacterium. This was further analyzed with broad range PCR which returned positive for Mycobacterium Shimoidei. Therapy was thereafter initiated with azithromycin, rifabutin and ethambutol with plan for close follow up.

IMPACT/DISCUSSION: Non-tuberculous mycobacterium (NTM) are organisms ubiquitous in the environment that can cause a wide range of infections, with pulmonary infections being the most frequent.

Mycobacterium shimoidei is a rare subspecies with less than 50 cases reported upon our review of literature. Based on a review of 23 cases by Baird et al the most common symptoms include cough/sputum production, dyspnea, fever/sweats weight loss, and fatigue. With respect to treatment regimens, M. shimoidei is known to be resistant to isoniazid and rifampicin with susceptibilities to ethambutol and rifabutin (2). Therefore accurate diagnosis of this rare isolate is imperative to appropriate treatment and subsequent patient outcome.

CONCLUSION: M. shimoidei is a rare form of non-tuberculous mycobacterium with increasing prevalence and clinical similarities to tuberculous pulmonary disease and primary neoplasms of the lung.

MYOPATHY: A "COLCHIN-ARY" TALE

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LEARNING OBJECTIVE #1: Recognize renally cleared drugs that induce myopathy

LEARNING OBJECTIVE #2: Motivate clinicians to reconcile medications for appropriate renal dosing

CASE: Pt is a 37yoM with PMH of HTN, ESRD 2/2 cocaine use on PD, HTN, and HFrEF presenting with one week of sharp, left sided abdominal pain, cramping, fevers and fatigue. The pain started in the LLQ and spread to his whole body. He developed progressive weakness and by the end of the week, he was unable to get out of bed. He performed peritoneal dialysis earlier that day prior to admission. Pt was admitted 45 days for pericarditis and discharged on Colchicine 0.6mg BID for 3 months, Ibuprofen 200mg and Protonix 40mg. Physical exam was notable for 3/5 strength in lower extremities and 4/5 strength in upper extremities. Pt was unable to get out of bed without support. Labs pertinent for CPK of 2700, AST of 136 and ALT of 63. Medication reconciliation revealed that the appropriate dosing of colchicine for ESRD was an upper limit of 0.3 daily. Colchicine was discontinued and pt regained function in a couple of days.

IMPACT/DISCUSSION: Colchicine-induced myopathy has been reported in several previous case studies. In this case colchicine, a medication with known side-effects of myopathy, was dosed inappropriately in an ESRD patient. This patient has been getting four times the appropriate amount of colchicine for more than a month before presentation. There have been many adverse patient outcomes due to inappropriate dosing in CKD patients. A study from 2009 show that 21.9% of prescriptions were nonadherent to renal dosing guidelines and there were adverse drug events (ADE) 21.3% of the time. Pharmacy guided dosing decreased the ADE to 16%. In the outpatient setting, approximately 25% of patients with CKD were receiving inappropriately dosed prescriptions. Moreover, discrepancies between sources makes it difficult for clinicians to identify renally dosed medications. One article studied five pharmaceutical databases and concluded that there was only slight agreement among the sources with poorly defined qualitative data and lack of consistency in quantitative values.

Signs of myopathy include myalgias, hyperkalemia, weakness and myogloninuria. Anticholesterol (statins), antirheumatic (D-penicillamine, colchicine), immunosuppressive (steroids, tacrolimus) and antinucleoside analogues are classically associated with myopathy. Illicit substances including cocaine, heroin, amphetamines, PCP and alcohol have also been known to cause myopathy. Particularly, colchicine, simvastatin, gemfibrozil, D-penicillamine, Cyclosporine, Tacrolimus and Zidovudine are myopathy-inducing medications that need to be dose-adjusted or are contraindicated in ESRD.

CONCLUSION: Physicians must be more vigilant when prescribing renally cleared medications to avoid adverse events, especially in ESRD patients. It is vital to conduct a thorough medication reconciliation on ESRD patients both in the inpatient and outpatient setting to diagnose symptomatology and prevent adverse events.

NAVIGATING THE MAZE OF AUTOIMMUNE ENCEPHALITIS FOR THE INTENIST

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LEARNING OBJECTIVE #1: Recognize clinical scenarios in which the internist should suspect autoimmune encephalitis (AE).

LEARNING OBJECTIVE #2: Diagnose AE early in the clinical course to avoid irreversible neuronal loss.

CASE: A 36-year-old man with childhood epilepsy, not on antiepileptic therapy, and hydrocephalus requiring ventriculoperitoneal (VP) shunt six years ago presented with one week of confusion and increased muscle tone with bilateral hand tremors. He was febrile, tachycardic and

tachypneic. Physical exam was notable for disorientation to time, paucity of speech, impaired short-term memory, increased muscle tone, bilateral resting tremors of upper extremities, and hyperreflexia. Labs demonstrated elevated inflammatory markers, but normal lactate and white cell count. Broad spectrum antibiotics were started. Electroencephalogram showed shaking spells without electrical correlate. Magnetic resonance imaging of the brain revealed a right frontal VP shunt without acute abnormality. Cerebrospinal fluid (CSF) studies revealed <5 nucleated cells per microliter with 88% lymphocytes, presence of oligoclonal banding, elevated protein, low glucose, and elevated angiotensin-converting enzyme. Infectious workup including urine and blood cultures; CSF bacterial, fungal and acid-fast bacilli cultures; meningitis PCR panel, HIV, syphilis, and chest x-ray were negative. Thus, the diagnosis pointed towards autoimmune causes and empiric intravenous steroids were started. Serum AE panel revealed elevated titers of acetylcholine receptor ganglionic neuronal and glutamic acid decarboxylase 65 antibodies, but CSF antibody panel was negative. A dedicated work up for systemic sarcoidosis was negative as well. AE was diagnosed and patient underwent plasma exchange (PLEX) with symptomatic improvement.

IMPACT/DISCUSSION: AE is a challenging diagnosis given the diverse clinical presentation. A high index of suspicion is needed and even empiric initiation of immunotherapy with further assessment of clinical response plays an important role in the diagnostic process. Since many patients with AE do not present with a well-defined syndrome, the detection of serum and CSF antibodies is a crucial step for definitive diagnosis.

However, access to these panels is limited and results are often not available early during the clinical course. Given that some antibodies in the AE panel have been found in asymptomatic patients and that many other autoimmune diseases with CNS involvement may respond to steroids/PLEX, these diagnostic steps are not completely specific. Nonetheless the patient presented with a compatible clinical presentation and positive serology, the diagnosis was confirmed with response to steroids and PLEX.

CONCLUSION: Internists should include AE in the differential for patients presenting with unspecified encephalopathy in which infective causes have been ruled out.

A low threshold for ordering AE panels is recommended for early initiation of specific therapy preventing irreversible neuronal loss.

NECK PAIN AS THE CHIEF COMPLAINT FOR INFECTIVE ENDOCARDITIS

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LEARNING OBJECTIVE #1: Recognize signs of epidural abscess on physical exam

LEARNING OBJECTIVE #2: Diagnose neurological complications of infective endocarditis

CASE: Male, 66, with coronary artery disease s/p quadruple vessel CABG, aortic stenosis s/p surgical AVR, hypertension, insulin-dependent diabetes mellitus, severe diverticulitis s/p partial colectomy, degenerative spine disease, obstructive sleep apnea, and hypothyroidism who was referred to the emergency department for hypoxemia. Two weeks prior to presentation, he developed severe left-sided neck pain worse than his chronic pain. He went to his primary provider, who prescribed tinazidine and soft neck collar. The pain continued to worsen until he presented to an urgent care where he was found to be hypoxic. He was admitted to the general medicine service, and physical exam revealed 2/6 systolic ejection murmur over the RUSB, bibasilar crackles, and exquisite tenderness over the left trapezius with only 20 degrees of neck motion. Blood cultures were positive for *Streptococcus bovis*. Chest x-ray showed pulmonary edema, and EKG had new atrial fibrillation in the 140s. A TTE was largely unremarkable, but TEE revealed a 1.6cm vegetation on the posterior mitral valve leaflet with mild mitral regurgitation, in addition to severe bioprosthetic aortic stenosis. MRI spine showed C4-5 discitis/osteomyelitis with epidural abscess. While undergoing operative planning, the patient developed difficulty typing phone numbers on his cellphone, and neurological exam revealed normal cranial nerves, strength, and sensation but subtle difficulties with right hand coordination. Emergent MRI revealed acute right occipital and cerebellar infarctions secondary to septic emboli. The patient underwent emergent aortic and mitral valve replacement, and during surgery, he was found to have a large mitral vegetation extending into the left atrium and ventricle with an associated aortic root abscess. He was ultimately discharged on a 6-week course of ceftriaxone.

IMPACT/DISCUSSION: The patient initially presented to his outpatient physician with worsening neck pain and limited range of motion. He was prescribed a muscle relaxant, but upon admission to the hospital, he was diagnosed with *Streptococcus bovis* bacteremia, likely secondary to his severe diverticulitis, with associated epidural abscess and infective endocarditis. While musculoskeletal complaints are one of the most common presentations in the outpatient setting, careful physical exam can reveal alarm symptoms that warrant inpatient evaluation. Further, subtle changes in his inpatient neurological exam were the first sign of an acute neurological complication. This highlights the importance of careful daily physical exam of patients with infective endocarditis to monitor for life-threatening complications.

CONCLUSION: Internists should be comfortable with assessing musculoskeletal complaints for alarm symptoms for severe infections and familiar with manifestations of complications of infective endocaritis to initiate appropriate management.

NECROTIC SCALP ESCHAR AND NECK LYMPHADENOPATHY WITH SEPSIS

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LEARNING OBJECTIVE #1: Recognize possible infectious causes of eschars in the U.S.

CASE: A 25-year-old man presented in June with a painful black eschar on his scalp for 3 days with 1 day of fever and chills. He had a bilateral retroorbital headache. He had no shortness of breath, cough, changes in vision, or neck stiffness. Six days prior to presentation, he visited a state park, spending time outdoors in grassy areas and swam in a pond. He checked himself for ticks and did not find any. He has two cats, one of which goes outdoors and is not given flea/tick prevention. He had no recent out of state travel. He had no past medical history and did not take any medications. On physical exam, he was febrile to 38.2C and tachycardic to 130 bpm. There was a 5cm black eschar on the occiput, with surrounding erythema. A 1cm, tender, right occipital lymph node was present. Diagnostic studies showed a WBC count of 16.8×10^9/L. The patient was admitted for sepsis management and infectious work-up. A tick- or flea-borne exposure was presumed based on his time outdoors. Given this and the systemic response, ulceroglandular tularemia was considered most likely. The lack of rash and uncommon regional presentation made a rickettsial etiology such as rickettsialpox from Rickettsia akari less likely. Y. Pestis was also considered less likely as it is not endemic to the region. Cutaneous anthrax was unlikely given the scarcity in the U.S., lack of farm animal exposure, and negative blood cultures. Scrub typhus is not found in the U.S. Other tick-borne diseases are not

typically associated with eschars and present with rash, myalgias, GI symptoms, or hematologic abnormalities. The patient received gentamicin and doxycycline. His vitals normalized after the first day of antibiotics, and the eschar decreased in size, so the patient was discharged with a ten-day course of doxycycline and ciprofloxacin.

Tissue testing, including Bartonella stain was negative. Follow-up at the infectious disease clinic 4 weeks later demonstrated resolution of the eschar. No repeat antibodies or cultures turned positive.

IMPACT/DISCUSSION: Eschar causing infections including cutaneous anthrax and scrub typhus are extremely uncommon or non-existent in the U.S. Ulceroglandular tularemia is a much more common cause of eschars in the U.S. and most commonly reported in the month of June, particularly in males. Of note, the CDC reports the incidence of ulceroglandular tularemia between 2007 and 2017 was 0.02 per 100,000 in Pennsylvania, with no reported cases in Southwest Pennsylvania making this case unusual.

CONCLUSION: Ulceroglandular tularemia should be considered in patients in the U.S. with risk factors such as potential tick bite or animal exposure and present with fever, an eschar and lymphadenopathy.

NEOPLASTIC FEVER: A CHALLENGING DIAGNOSIS

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LEARNING OBJECTIVE #1: Recognize Clinical Indicators of Neoplastic Fevers

LEARNING OBJECTIVE #2: Distinguish neoplastic fever from other etiologies of fever

CASE: 71yo male with recently diagnosed metastatic pancreatic adenocarcinoma with extensive liver metastases presented with intermittent fevers for two weeks. He endorsed a sore throat, loss of appetite and fatigue for a week. He denied chest pain, dyspnea, vomiting, headaches, rash, dysuria, increased frequency, diarrhea, myalgias, medication changes, sick contacts, travel, indwelling catheters or lines, or tick/insect bites. On presentation, T 36.2, BP 97/63, HR 115 and SaO2 99%. Labs were remarkable for WBC 28.8 (84% neutrophils), AST 46, ALT 58, & Alk phos 225. CXR was unremarkable. CT C/A/P with contrast demonstrated an enlarging pancreatic mass and multiple enlarging hepatic mets compared to previous CT. Empiric antibiotics were started; however, they were discontinued when RUQ US returned negative for biliary obstruction and blood cultures remained negative autoimmune and thromboembolic etiologies seemed unlikely based on history and physical exam. Drug fever was felt to be unlikely as patient had not started chemotherapy. Fevers were felt to be secondary to malignancy and patient elected to go home with hospice

IMPACT/DISCUSSION: Clinical manifestations of neoplastic fevers differ slightly from those of infectious fevers. Fever correlated to infection is often associated with chills, tachycardia and sometimes altered mental status. However, neoplastic fevers often are associated with diaphoresis and warmth but not chills or mental status changes.

Fevers of infectious etiologies are often constant lasting the duration of the infection and resolve with source control. Meanwhile, neoplastic fevers are often intermittent. Cyclical fever patterns can indicate neoplastic origin, but this finding is often rare and not sensitive to neoplastic fever.

Another important clinical indicator is suppression by naproxen (naproxen test). A small study demonstrated neoplastic fevers defervesced after the administration of naproxen in 14 out of 15 patients while 5 patients with infectious fevers saw no resolution. In a follow-up study of 68 cancer patients with FUO, the naproxen test had a sensitivity of 92% (95% CI, 80–97%), specificity of 100% (95% CI, 78–100%), positive predictive value of 100% (95% CI, 90–100%), and the negative predictive value of 82% (95% CI, 59–94%) for neoplastic fever.

Lastly, recognizing common culprits of neoplastic fevers including hodgkin's and non-hodgkin's lymphoma, renal cell carcinoma, hepatocellular carcinoma, AML, hairy cell leukemia, glioblastoma multiforme, atrial myxoma and ovarian cancer can be helpful in the diagnostic evaluation.

CONCLUSION: Malignancy induced fever is one of the most challenging diagnoses due to its overlapping presentation with other causes of fever. The discussed clinical manifestations can only be helpful in raising suspicion for the diagnosis when utilized in conjunction with the clinical presentation and history of the patient.

NEW-ONSET RAYNAUD'S PHENOMENON IN A 50-YEAR-OLD MALE WITH UNDERLYING LIMITED SCLERODERMA

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LEARNING OBJECTIVE #1: Recognize the clinical findings that may distinguish primary from secondary etiologies of Raynaud's phenomenon

LEARNING OBJECTIVE #2: Determine the appropriate diagnostic evaluation of secondary etiologies

CASE: A 50-year-old Caucasian man with GERD, HTN, and HLD presents with episodic, triphasic discoloration of bilateral fingers with associated discomfort. His symptoms began two years ago and are notably worse during the winter months, although can occur anytime his hands are cold. He denies any digital ulceration, but feels like episodes are becoming more frequent. There have been no new skin rashes, muscle weakness, fatigue, joint discomfort, or dyspnea. GERD has been well controlled. No family history of Raynaud's. His only medication is lisinopril. Physical exam without any digital calcinosis, sclerodactyly, pitting, or ulcerations. 2+ radial artery pulse bilaterally. There were mild telangiectasias present over the upper chest. Heart RRR and lungs CTAB with normal work of breathing on room air. A screening ANA returned with high titers (1:640) in centromere pattern. Anti-centromere antibodies also positive. These findings were consistent with limited scleroderma. Additional work-up included normal spirometry. He was initiated on nifedipine ER 30 mg once per day with successive reduction in pain episodes.

IMPACT/DISCUSSION: This case represents when to explore secondary etiologies of Raynaud's phenomenon. The majority of clinical Raynaud's will be benign, but being aware of clinical features of secondary etiologies is key to avoid missing the correct diagnosis while avoiding excessive work-up.

CONCLUSION: Raynaud's phenomenon has a prevalence of 5-15% within the general population. The majority of these cases, 80-90%, are classified as primary Raynaud's phenomenon and are due to spontaneous arterial vasospasm. Secondary etiologies may include systemic sclerosis, mixed connective tissue disease, SLE, Sjogren's syndrome, dermatomyositis, or rheumatoid arthritis. Additionally, certain drugs like vasoactive agents, trauma, arterial disease, or hematologic disorders can result in finger discoloration. Certain clinical features are more frequently associated with secondary etiologies and include: asymmetrical involvement, more frequent and painful episodes, digital ulcerations, male gender, age > 35, or manifestations of autoimmune/connective tissue disorders. The presence or absence of these clinical features can help with clinical decision-making and extent of evaluation. In this case, a screening ANA titer should be obtained. This test has high sensitivity and good negative predictive value for rheumatologic disorders. The specificity increases with the higher the titer. An ANA centromere pattern is highly associated with limited scleroderma, along with an anti-centromere antibody. Also known as CREST syndrome, exam findings may include digital

Calcinosis, Raynaud's phenomenon, Esophageal dysmotility, Sclerodactyly, and Telangiectasias. PFT monitoring is important due to risk for pulmonary fibrosis.

NIPPLE DISCHARGE WITHOUT A PALPABLE MASS DIAGNOSED AS MALE BREAST CANCER (MBC)

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LEARNING OBJECTIVE #1: Recognize male breast cancer does not always present as a palpable mass.

LEARNING OBJECTIVE #2: Recognize the clinical significance of unilateral nipple discharge in men.

CASE: An obese 69-year-old African-American male without a history of breast pathology or family history of breast cancer presented to his primary care physician with one year of clear, intermittent unilateral nipple discharge without an evident palpable mass on physical exam. His laboratory findings were significant for mild hyperprolactinemia at 28.9ng/mL (reference range 4.0 – 15.2 ng/mL). The diagnostic evaluation included right-sided mammography, breast ultrasound, and excisional biopsies. Histology revealed both grade II ductal carcinoma in situ and papillary carcinoma that were strongly estrogen and progesterone positive (ER+/PR+). Genetic testing for a gene panel containing the 9 most high-risk genes associated with breast cancer was negative. The patient was treated with a right total mastectomy and placed on adjuvant hormonal therapy with tamoxifen. About 1.5 months after starting therapy, tamoxifen was discontinued due to adverse side effects. The patient remained without signs of recurrent disease 4 months from initiation of treatment.

IMPACT/DISCUSSION: Male breast cancer (MBC) constitutes less than 1% of all breast cancer cases. The prognosis of MBC is based on staging at diagnosis. Nipple discharge without a palpable mass presents in as few as 1 - 12% of all MBC cases, making it easy to overlook the significance of this finding. Being able to recognize this uncommon presentation may allow clinicians to make an earlier diagnosis and, therefore, improve outcomes. A review of literature shows 22 - 57% of men with nipple discharge have underlying cancer. Prolactin has been involved in the pathogenesis of breast cancer in animal studies, but no definitive causal relationship has been established in humans. Since our patient presented with hyperprolactinemia, we discuss evidence that prolactin may impact MBC by both binding prolactin receptors and elevating total estrogen levels. This case adds to literature highlighting the importance of recognizing nipple discharge in men. It also adds to the few reports of MBC presenting in the presence of hyperprolactinemia.

CONCLUSION: MBC may present as nipple discharge without a palpable mass. Nipple discharge in men shows a strong association with MBC. Hyperprolactinemia may be invovled in the pathogenesis of MBC.

NO APPETITE FOR ERROR: ANOREXIA AND ALTERED MENTAL STATUS IN A PATIENT WITH ANOREXIA NERVOSA

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LEARNING OBJECTIVE #1: Recognize the danger of anchoring bias in misdiagnosis of patients with psychiatric comorbidities

LEARNING OBJECTIVE #2: Review the limitations of imaging in diagnosing cirrhosis

CASE: A 37-year-old woman with anorexia nervosa (AN) and depression was brought to the ED by family for months of worsening appetite and binging/purging behavior. She had been diagnosed with AN at 14 and briefly followed with psychiatry, but was lost to follow up and never treated. She drank 3 glasses of wine daily for 15 years.

Exam revealed BMI 15, cachexia, hepatomegaly, and flat affect. Labs showed: WBC 15, Hgb 10, Plt 331, K 2.7, AST 180, ALT 35, alk phos 174, albumin 1.8, INR 1.4. Ultrasound, MRCP, and CT A/P revealed hepatomegaly, steatosis, trace perihepatic ascites, and small paraesophageal varices. Hepatitis, lipid, autoimmune, and iron panels were normal.

Psychiatry diagnosed worsening AN. She was admitted for nutritional support, but her course was complicated by fluctuating altered mental status (AMS). MR brain, infectious workup, vitamin b12, folate, TSH, RPR, and CSF were normal. Ammonia was mildly elevated at 51, but her AMS was attributed to delirium from malnutrition.

She also had recurrent bleeds, including oral bleeding, post-lumbar puncture subdural hematoma, and hematochezia; colonoscopy showed rectosigmoid ulcers. During colonoscopy prep, her AMS improved.

Rifaximin and lactulose were started for presumed hepatic encephalopathy (HE), and her mental status and appetite greatly improved. Liver biopsy revealed cirrhosis and likely alcoholic steatosis. Hematology found her bleeds secondary to dysfibrinogenemia from cirrhosis. Psychiatry re-evaluated her anorexia as secondary to cirrhosis/HE, and she was discharged to alcohol rehabilitation.

IMPACT/DISCUSSION: The diagnosis of cirrhosis should be suspected in patients with sequelae of liver disease/portal hypertension. The diagnosis of HE should likewise be entertained in patients with AMS and stigmata of cirrhosis. In this case, anchoring—a bias in which too much weight is placed on initial information—delayed both diagnoses despite evidence of coagulopathy, varices, ascites, and alcohol abuse. Misdiagnosis in patients with psychiatric comorbidities is common: a study of 658 psychiatric patients found that 9% had actual somatic disorders, treatment of which resolved their symptoms. Another found that 46 of 100 psychiatric inpatients had a somatic illness that caused/exacerbated their psychiatric illness. Psychiatric symptoms should portend somatic disease until proven otherwise.

The diagnoses were also obfuscated by imaging that did not identify frank cirrhosis. However, imaging alone is not sensitive for cirrhosis. Studies show that ultrasound carries only a 65-95% sensitivity, while CT/MR have sensitivities of 77-84%. Thus, the absence of cirrhosis on imaging should not prompt its exclusion.

CONCLUSION: Misdiagnosis of psychiatric patients is common and can be facilitated by anchoring bias. The absence of cirrhosis on imaging alone should not prompt its exclusion.

NON KETOTIC HYPERGLYCEMIA: FOCAL SEIZURES AS A SYMPTOM OF TYPE 2 DIABETES MELLITUS

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LEARNING OBJECTIVE #1: Recognize the acute neurologic manifestations of non-ketotic hyperglycemia in adults with type 2 diabetes.

LEARNING OBJECTIVE #2: Management of chronic disease in non-English speaking patient populations with low health literacy.

CASE: 44 year old Mandarin speaking male with a history of hypertension and type 2 diabetes (DM2) presented with five days of intermittent episodes of involuntary right arm movement associated with urinary incontinence. Episodes occurred at least ten times daily and were not associated with alteration of consciousness. Of note, he was diagnosed with DM2 in the past year, but had limited understanding of the disease and was not taking any medications.

The patient takes no medication. He has no family history of seizures or other neurological problems. He smokes rarely and does not drink alcohol or use drugs.

On presentation he had stable vital signs and physical exam revealed no focal neurological deficits and was otherwise normal. Labs including a blood count, hepatic panel, urine toxicology, and metabolic panel were normal apart from a glucose at 616 mg/dL with a HbA1C at 14.1%. After a normal non-contrast head CT, these episodes were confirmed as focal seizures on EEG and were refractory to 1500mg levetiracetam twice daily. He was placed on a basal-bolus regimen of insulin, with improvement of his glucose and cessation of his seizures with no further abnormal activity on EEG.

Before discharge, the patient was counseled on his diagnosis of DM2 with culturally appropriate, Mandarin based educational materials as well as individual teaching on glucose monitoring and insulin administration using an interpreter.

IMPACT/DISCUSSION: Non-ketotic hyperglycemia (NKHG) is a complication of DM2, and often is triggered by metabolic stressors. Classically, this presents as polyuria, polydipsia, lethargy, confusion, and ataxia. Other neurologic findings such as increased motor tone, hemiparesis, or focal seizures are rare.

The pathophysiology of focal seizures in NKHG is not fully understood. Hypertonicity is unlikely to be the cause as these seizures are not present in diabetic ketoacidosis, and serum osmolarity is normal during these seizures. A prominent theory is that there may be increased metabolism of the neurotransmitter GABA, decreasing the seizure threshold. Managing these focal seizures is often difficult due to delay in diagnosis and treatment. Focal seizures tend to be refractory to antiepileptic drugs, and phenytoin can worsen these seizures by reducing insulin secretion. Management of focal seizures in NKHG is control of the hyperglycemic state, with insulin and rehydration.

CONCLUSION: In our patient, treatment of hyperglycemia was successful in terminating seizure activity, representing a rare case of focal seizures presenting as a symptom NKHG. In addition, usage of culturally and language specific educational materials is vital for the proper management of chronic conditions such as DM2, in order to prevent further complications of chronic disease.

NON-NECROTIZING GRANULOMAS IN THE BONE MARROW OF A PATIENT WITH A HISTORY OF ANGIOIMMUNOBLASTIC T-CELL LYMPHOMA (AITL) AND A REMOTE HISTORY OF TUBERCULOSIS PRESENTING WITH FEVERS

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LEARNING OBJECTIVE #1: Recognize that AITL can present with fever, generalized lymphadenopathy, and granulomas that makes it a diagnostic challenge to differentiate from active tuberculosis.

CASE: An 87-year-old man with a history of AITL treated most recently with Brentuximab with complete response on prior PET-CT had recurrent high fevers daily up to 104 °F for several months without obvious etiology on multiple infectious workups, and fevers were attributed to recurrence of AITL. Repeat PET-CT came back negative for metabolic lymphadenopathy, and patient was admitted to undergo further workup for infection and occult lymphoma in the bone marrow. Patient was started on broad spectrum antibiotics for neutropenic fever. Bone marrow biopsy was performed which revealed multiple non-necrotizing granulomas, etiology for which was non-diagnostic for AITL with flow cytometric analysis and immunohistochemical analysis. Patient was known to have a remote history of tuberculosis (TB) that was treated in 1960s. Although the granulomas were nonnecrotizing, given the history, there was a high index of suspicion for tuberculous infiltration of the bone marrow and patient was started on multidrug-resistant TB treatment regimen. Chest CT demonstrated bilateral pleural effusions with new left and right upper lobe infiltrates.

Thoracentesis revealed transudative fluid with no growth in cultures and negative AFB smear. Bronchoscopy and lavage revealed CMV pneumonitis and aspergillus pneumonia and patient was started on appropriate treatment. Repeat bone marrow biopsy confirmed AITL involvement but was also positive for auramine– rhodamine stain concerning for TB. Patient continued to have high fevers throughout the hospital course and became hypotensive, requiring ICU care. Workup of CSF and paracentesis fluids were unrevealing. Patient's life expectancy was expected to be weeks from AITL without chemotherapy, and patient was deemed not a candidate for further chemotherapy. Patient was transitioned to inpatient hospice care and soon thereafter expired. The etiology of death was attributed to bone marrow infiltration of AITL and TB.

IMPACT/DISCUSSION: AITL is a type of peripheral T cell lymphoma that often leads to immunodeficiency and increased risk for opportunistic infections. Patients typically present with systemic B symptoms, generalized lymphadenopathy, and advanced disease with bone marrow involvement. Rarely, granuloma formation has been implicated leading to a diagnostic challenge in patients with multiple risk factors for granuloma formation. This case illustrates that AITL can lead to fever and granuloma formation that can be challenging to differentiate from TB. Obtaining a thorough past medical history and social history can shed light to appropriate differential and management.

CONCLUSION: AITL can be challenging to differentiate from TB. Obtaining a thorough past medical history and social history can shed light to appropriate differential and management.

NON-UREMIC CALCIPHYLAXIS: A CHARACTERISTIC LESION WITH AN EXTENSIVE WORK UP

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LEARNING OBJECTIVE #1: To consider the broad etiologies and work up of calciphylaxis

LEARNING OBJECTIVE #2: To recognize the classic appearance of calciphylaxis

CASE: The patient is a 72 year old female that spent the better part of two months at separate outside hospitals before being transferred for a second opinion regarding her acute encephalopathy, and for ENT evaluation. Prior to transfer, her course was complicated by encephalopathy, sepsis, acute renal failure, GI bleed, anemia, Type 2 NSTEMI, atrial fibrillation, thrombocytopenia, and concern for mastoiditis. On presentation, several extensive non-painful lesions were seen on the patient's lower extremities. The wounds were necrotic appearing encircled by a ring of erythema. Per the family, the wounds had developed over the past 1-2 months while hospitalized. Dermatology, hematology, rheumatology, nephrology, and surgery were all consulted for further evaluation and wound treatment. The diagnosis of calciphylaxis was made based on classic wound appearance and x-ray imaging displaying fine reticular calcifications in the lower extremities, as biopsies taken were inconclusive. The etiology, however, was never fully understood. Calcium and phosphate were within normal limits, Vitamin D levels were minimally decreased and PTH was mildly elevated. Hypercoagulable workup was notable for low protein C and antithrombin III. The patient's renal function had recovered such that she no longer required hemodialysis. Expansive autoimmune and vasculitis testing was negative. Initiation of sodium thiosulfate (STS) treatment was

discussed with the patient and family, but was not started given concern for adverse effects and limited benefits of therapy in the setting of multiple medical comorbidities.

IMPACT/DISCUSSION: Calciphylaxis is a rare condition with a high rate of morbidity and mortality.

While usually associated with end-stage renal disease, it is also associated with warfarin use, connective tissue disease, systemic corticosteroid use, liver disease, hypercoagulable states, as well as calcium and phosphate derangements. Outside of wound care, sodium thiosulfate (STS) is considered a mainstay of treatment. However, STS has questionable efficacy. This case illustrates the characteristic appearance and extensive evaluation required for those presenting with non-uremic calciphylaxis, as well as the current limitations in treatment.

CONCLUSION: - Being able to recognize the classic appearance of calciphylaxis is an important first step in work up and possible treatment without delay.

- When considering the etiology of calciphylaxis, it is important to maintain a broad differential. Although end-stage renal disease is the most recognized cause, it is important to consider other possibilities when renal failure is not present.

NON-UREMIC CALCIPHYLAXIS: A RARE AND DECEPTIVE ADVERSE EFFECT OF WARFARIN

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LEARNING OBJECTIVE #1: Recognize the history and physical exam findings for calciphylaxis.

LEARNING OBJECTIVE #2: Differentiate classic uremic calciphylaxis from warfarin-associated non- uremic calciphylaxis.

CASE: An 88-year-old woman with history significant for type II diabetes, hypertension, atrial fibrillation on warfarin, and CKD stage III was transferred from an outside hospital for a severely painful, progressively worsening left calf wound. Prior to presentation, the wound was unresponsive to serial debridement and antibiotic therapy. Pertinent positives on exam included a 11x17cm well demarcated left leg ulceration with Achilles tendon exposed; ulcer was clean appearing with no areas of purulence. Pertinent labs included a Cr of 1.7 mg/dL, GFR 33 mL/min, PT 20.9 secs, INR 1.8, Ca 8.6 mg/dL, PO^4 2.4 mg/dL, and a Mg of 2.2 mg/dL. Further workup included ultrasound, which did not show any evidence of a DVT. ABI was consistent with mild to moderate peripheral artery disease. CT scan and x-rays showed mild arterial calcifications with no signs of infection. Tissue biopsy was obtained, and pathology showed subcutis calcific stippling of fat lobules and calcification of the walls of small and rare medium-caliber vessels. Biopsy results in conjunction with the patient's clinical presentation led to the diagnosis of warfarin-associated non-uremic calciphylaxis. The patient's warfarin was discontinued, and she was discharged to inpatient rehab with wound care, sodium thiosulfate, and outpatient follow up with nephrology.

IMPACT/DISCUSSION: Classic uremic calciphylaxis is a rare condition characterized by vascular calcifications that occlude microvessels in the subcutaneous adipose tissue and dermis resulting in intensely painful, ischemic skin lesions. Initial skin manifestations may include a nodule or induration that expands with dusky discoloration, reticular areas of erythema, and progression to malodorous ulcers with black eschars.[1] Risk factors for calciphylaxis include obesity, diabetes mellitus, female sex, hemodialysis, and end stage renal disease. There are currently no FDA approved therapies for calciphylaxis but clinical trials for sodium thiosulfate and vitamin K are underway. Non-uremic calciphylaxis is defined as histopathologic evidence of calciphylaxis without severe kidney disease (creatine >3mg/dL), GFR <15ml/min, dialysis, or renal transplant. Warfarin increases chances of calcification 10-fold, and the mortality of non-uremic calciphylaxis is 17% compared to the staggering 50-80% in classic calciphylaxis. Non-uremic calciphylaxis occurs an average of 32 months after warfarin initiation.[2]

CONCLUSION: Warfarin-associated calciphylaxis presents in the absence of ESRD as this case highlights and the diagnosis can be delayed due to this complication arising years after warfarin initiation.

1) Nigwekar SU, Thadhani R, Brandenburg VM. Calciphylaxis. *N Engl J Med*. 2018; 378(18):1704-1714.

2) Yu WY, Bhutani T, Kornik R, et al. Warfarin-Associated Nonuremic Calciphylaxis. *JAMA Dermatol*. 2017;153(3):309-314

NO SIGN IS NOT A GOOD SIGN: ATYPICAL PRESENTATION OF ACUTE CHOLECYSTITIS

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LEARNING OBJECTIVE #1: Recognize clinical features and risk factors that distinguish acute cholecystitis (AC) and gangrenous cholecystitis (GC) in older adults

LEARNING OBJECTIVE #2: Identify the significance of a negative sonographic Murphy's sign in GC

CASE: An 82-year-old gentleman with dementia presented with severe right upper quadrant (RUQ) abdominal pain of 12 hours duration. He was acutely encephalopathic at presentation, which was worse than his baseline. On exam, his abdomen was mildly distended and soft with RUQ tenderness and abdominal guarding. Labs showed leukocytosis at 10.8 K/μL, which worsened to 22.8 K/μL by the afternoon. However, a contrast-enhanced CT and bedside RUQ ultrasound showed a mildly distended gall bladder with no wall thickening, cholelithiasis, or pericholecystic fluid. A sonographic Murphy's sign was also not elicited. He was admitted and empirically started on ampicillin-sulbactam for possible sepsis from an undetermined gastrointestinal source. Emergency General Surgery (EGS) was consulted and recommended a HIDA scan. This scan showed a non-filling gallbladder consistent with a cystic duct obstruction concerning for acute cholecystitis. Emergent laparoscopic cholecystectomy was performed that evening. A necrotic, tensely filled gallbladder covered by adherent omentum was found. Needle aspiration removed purulent fluid, and the gallbladder burst with gentle manipulation and spilled more fluid and a stone. Pathology showed necro- inflammatory fluid consistent with GC. He tolerated the surgery without complications and was discharged home 3 days later.

IMPACT/DISCUSSION: AC is defined as inflammation of the gallbladder, commonly due to ductal obstruction. This disease typically presents with RUQ pain, nausea and vomiting, and fever. GC is a complication of AC, where transmural inflammation of the gallbladder wall causes ischemia and subsequent necrosis. Risk factors of GC include age >45, male, leukocytosis, history of diabetes mellitus or cardiovascular disease, and increased time from admission to OR. Our patient's initial equivocal imaging findings and negative sonographic Murphy's sign belied his underlying disease. His worsening abdominal exam the following day is what triggered emergent surgical intervention. However, literature review suggests that a negative sonographic Murphy's sign should actually increase the suspicion of GC, due to necrotic denervation of the gallbladder. Additionally, our patient had multiple risk factors. It should be noted that our patient was acutely encephalopathic at admission; this likely impacted the description of his symptoms and duration of pain resulting in increased the time until surgical intervention.

CONCLUSION: - A negative sonographic Murphy's sign in an elderly patient with risk factors should increase suspicion for GC, even with bland imaging findings.

- Sonographic Murphy's sign positive in >95% of acute cholecystitis but in only 33% of gangrenous cholecystitis.

NOT EVERY HOT, TENDER, INFLAMED JOINT IS INFECTED (OR GOUT)

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LEARNING OBJECTIVE #1: Diagnose calcific tendinitis in an atypical anatomical location

LEARNING OBJECTIVE #2: Recognize the clinical features of calcific tendinitis

CASE: A 36-year-old physician without any significant medical history presented with right thumb pain for two days. The pain was throbbing and localized to the thumb's interphalangeal (IP) joint. She tried Tylenol, Ibuprofen, and immobilization of the thumb without relief. She denied fevers, chills, night sweats, skin rashes, and other joint pain. She also denied trauma and strenuous activity.

On exam, the right thumb was swollen, held in extension, and erythematous on the volar aspect of the IP joint. The skin around the thumb and nail were intact. There was warmth and severe tenderness on palpation of the IP joint. Active and passive flexion of the IP joint was limited due to pain, but extension was intact.

X-ray of the right hand was unremarkable. It was thought patient had an infection of the first right IP joint and she was given antibiotics. Despite antibiotic use, symptoms progressed. The patient saw an orthopedic hand surgeon, who recommended urgent exploratory surgery for possible flexor tenosynovitis of the thumb. The patient then went to another orthopedic hand surgeon for a second opinion and another x-ray was done. This x-ray provided a better lateral view of the thumb and showed flexor pollicis longus tendon calcification. The patient was started on a Medrol dose pack and used Ibuprofen for pain. Her symptoms improved within the first twenty-four hours and full range of motion was achieved in three weeks.

IMPACT/DISCUSSION: Calcific tendinitis is a rare condition that classically involves the rotator cuff. In fact, calcific tendinitis is considered a painful "shoulder disorder." Our case is noteworthy, as it describes calcific tendinitis in an uncommon location: the flexor pollicis longus of the thumb. Onlly isolated case reports exist of the disease affecting other anatomical locations.

Our patient's presentation was similar to the typical presentation seen in acute calcific tendinitis of the shoulder: sudden onset of pain unassociated with trauma. Nevertheless, diagnosis upon presentation was unclear. In the absence of trauma, gout and infection were also considered. Calcific tendinitis is best diagnosed by imaging—plain radiography and ultrasound are both helpful for detecting calcifications. In our case, diagnosis was confirmed with plain radiography after visualizing calcifications. The diagnosis of calcific tendinitis in the hand has a higher rate of missed or delayed diagnosis, as its presentation shares features of other conditions, and there is a lack of familiarity with its presentation.

CONCLUSION: Calcific tendinitis should be on the differential diagnosis for acute musculoskeletal pain— even pain not at the rotator cuff.

Pain that is associated with a tender, inflamed joint can be more than either infection or gout.

It is important to recognize calcific tendinitis as a potential diagnosis, as this could prevent unnecessary interventions and therapy.

NOT FOR THE FAINT OF HEART: SPONTANEOUS CORONARY ARTERY DISSECTION AFTER FIRST TIME COCAINE USE

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LEARNING OBJECTIVE #1: Understand the importance of obtaining a thorough social history in assessing young women presenting with chest pain.

LEARNING OBJECTIVE #2: Recognize spontaneous coronary artery dissection in a young woman with no traditional cardiac risk factors.

CASE: A 35-year-old woman with no past medical history presented with two hours of unremitting chest pain. She never experienced pain like this in the past. She described the pain as severe, pressure-like, and substernal. It woke her from sleep and was not relieved with anything. She denied any triggers, including recent emotional or physical stress, or upper respiratory illness. She also initially denied drug use, however when alone, admitted to first time intranasal cocaine ingestion 24 hours prior to presenting. Her EKG showed nonspecific ST-T segment changes. Troponin was initially 0.4 ng/mL and peaked at 14.2 ng/mL. Given the patient's presentation and lab findings, she was taken urgently to the cardiac catheterization laboratory. Coronary angiography revealed 99% occlusion of the third obtuse marginal artery due to spontaneous coronary artery dissection. No coronary intervention was performed, and she was managed conservatively with close outpatient follow-up.

IMPACT/DISCUSSION: Though our patient initially denied substance use, when questioned alone without her mother she admitted to using cocaine for the first time the day prior. Cocaine is known to cause sympathetic activation, vasoconstriction, and hypercoagulability and is known to be associated with SCAD. This proved to be a crucial part of the history, as her acute presentation was surely related. As SCAD patients generally have few traditional cardiac risk factors, they are at risk of being discharged early on in their clinical course. High initial suspicion is thus very important and a thorough social history can be of great clinical utility.

Since the first description of SCAD in 1931, our understanding of the disease has expanded significantly. Thought to initially be a rare entity that almost always resulted in death, recent studies have shown it to be more common than previously believed, occurring in up to 2% of all acute coronary syndrome cases, especially in young women. Conditions associated with SCAD include fibromuscular dysplasia, connective tissue disorders, systemic inflammatory disease, and substance use.

In regard to treatment, more work needs to be done to determine the best course of action. Multiple studies have demonstrated a higher rate of complications in SCAD patients that undergo percutaneous coronary intervention. At present, observational studies at least suggest that conservative management is prudent in a hemodynamically stable patient, as 70-97% of SCAD lesions may actually heal.

CONCLUSION: Spontaneous coronary artery dissection is more likely in young women and should be considered in these patients, especially in the setting of cocaine use.

NOT JUST ANOTHER CASE OF KIDNEY STONES

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LEARNING OBJECTIVE #1: Include cancer in the diffential of hematuria, even in pateints under 35 yr.

LEARNING OBJECTIVE #2: Identify patients who may be at risk for renal medullary carcinoma.

CASE: 27 yr. AA male with no PMH presented with episodic right flank pain over 4 months and 2 weeks of hematuria. On ROS he described a 5 kg weight loss, night sweats, and new cough and dyspnea. He smoked marijuana daily, but no tobacco. FH was notable for sickle cell trait in his father and brother. In the preceding 2 weeks, he had sought ER care 3 times for escalating symptoms. He first received tamsulosin and percocet for presumed nephrolithiasis; then, 4 days later, ciprofloxacin and referral to urology for worsening pain, blood clots, and right sided hydronephrosis on US. A week later, CT scan of abdomen/pelvis showed an enlarged, right kidney with possible mass, small right pleural effusion and bilateral peribronchial opacities. On arrival to clinic, vitals were stable, lungs clear, no mass was palpated, and there was no CVA tenderness. Labs included urinalysis with moderate blood, creatinine 1.33 (baseline 0.9), nl CBC, and negative HIV. Imaging of chest/abdomen/pelvis confirmed an infiltrative mass with diffuse lymphadenopathy and likely metastases to bilateral lungs. The patient was admitted for further evaluation with bronchoscopy and biopsy. Pathology confirmed renal medullary carcinoma (RMC). The patient died of respiratory failure two months after diagnosis.

IMPACT/DISCUSSION: Renal medullary carcinoma is a rare and highly aggressive form of renal cancer almost exclusively found in young people of African descent with sickle cell trait or, less commonly, sickle cell disease. Men are 2x as likely as women to be affected. Median age at onset is early 20's (range 10-40). Our patient screened negative for sickle cell disease, but otherwise fits a high-risk profile. He presented with dyad of hematuria and flank pain. While RMC remains poorly understood, studies consistently suggest that, as in our patient, most disease is right sided and metastatic at the time of diagnosis (generally to lymph nodes, lung, liver and/or contra-lateral kidney). RMC is poorly responsive to treatment. Median survival from time of diagnosis is under 8 months. If caught early and localized, treatment of choice is radical nephrectomy. Platinum based chemotherapy has shown benefit in case studies; but overall, RMC has proven relatively resistant to most chemotherapeutic and biologic agents. Referral to clinical trials remains essential to better elucidate effective treatment. Further research should also be targeted to possible screening for this "seventh sickle cell nephropathy."

CONCLUSION: Gross hematuria associated with weight loss is unlikely to be benign stone disease. Clinicians should have a low threshold to consider RMC in patients with SCD or SCT presenting with hematuria and/or flank pain. Further investigation is needed to identify more effective treatments for this highly aggressive disease associated with poor prognosis (young AA men).

NOT SIMPLY A HEPARIN BRIDGE

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LEARNING OBJECTIVE #1: Develop an approach to the evaluation of thrombocytopenia

LEARNING OBJECTIVE #2: Recognize the importance of prompt diagnosis and treatment of thrombotic thrombocytopenic purpura

CASE: A 39-year-old woman presented with 1-day headache and blurry vision. Symptoms were similar to presentation of previous strokes, however MRI and MRV of the brain did not reveal any evidence of acute stroke, and symptoms resolved spontaneously. Prior medical history included previous ischemic strokes and systemic lupus erythematosus (SLE). INR was found to be 0.9 so heparin infusion was initiated. No new focal neurologic deficits, petechiae, bruising, or lymphadenopathy was appreciated. Hemoglobin level returned at 8.7g/dl with an MCV 86fL and the platelet count was 30k/uL. Peripheral blood smear revealed 4+ schistocytes per high power field. A D dimer 2.4mcg/mL, fibrinogen 470mg/dL, reticulocytes 1.3%, haptoglobin 24, lactate dehydrogenase 400 on admission which increased to 554mg/dL on repeat, negative direct and indirect Coombs test, Creatinine 1.1mg/dL, and a negative pregnancy test.

With unexplained neurologic deficits, evidence of microangiopathic hemolytic anemia (MAHA) on peripheral blood smear, and a PLASMIC score of 6, clinical suspicion was high for thrombotic thrombocytopenic purpura (TTP), and plasma exchange was promptly started. Additional therapy also included high dose steroids and rituximab. On admission day four, ADAMTS13 activity resulted < 2% and ADAMTS13 antibody was detected, confirming diagnosis of TTP.

IMPACT/DISCUSSION: An internist needs a methodical approach to determining the cause of thrombocytopenia as it is mportant to distinguish between life threatening causes that require prompt treatment. In any patient with unexplained thrombocytopenia and anemia, a peripheral blood smear should be obtained to evaluate for MAHA diagnosed by presence of schistocytes. Once MAHA is confirmed, systemic disorders that can manifest these findings should be excluded and work up including coagulation assay of PT/PTT/INR, D dimer, fibrinogen, haptoglobin, lactate dehydrogenase, Coombs test, indirect bilirubin, BUN, creatinine, pregnancy test, ADAMTS13 should be collected.

TTP must be treated promptly with plasma exchange as mortality rate is high (90% prior to plasma exchange). TTP is a severe deficiency of the protease ADAMTS13 (activity level <10%), which cleaves large von Willebrand multimers. Deficiency of ADAMTS13, which can be hereditary or acquired, promotes formation of micro thrombi leading to MAHA and thrombocytopenia. In our patient with SLE, the ADAMTS13 deficiency was acquired, caused by autoantibodies. As ADAMTS13 activity level and antibody test can take days to result, the PLASMIC score can be used to estimate the likelihood of severe ADAMTS13 deficiency with a sensitivity of 91%.

CONCLUSION: TTP should be considered in any patient with MAHA, thrombocytopenia, and any other clinical indicators including unexplained neurologic findings and minimal to no acute kidney injury.

NOT SO SWEET jennifer zakko. Internal Medicine, Rush University Medical Center, Chicago, IL. (Control ID #3392051)

LEARNING OBJECTIVE #1: Review Diagnostic Criteria for Sweet Syndrome and Differentiate Classical, Malignancy-Associated, and Drug-Induced Sweet Syndrome

LEARNING OBJECTIVE #2: Recognize Dermatologic and Extradermal Manifestations of Sweet Syndrome

CASE: A 72 year-old man with relapsing polychondritis on chronic prednisone and recent leflunomide presented with an acute-onset visual defect in his left eye after 2 weeks of bilateral scleritis. Rash and fever began 3 days prior to presentation.

He was febrile to 103.3 on arrival. Erythematous papular and vesicular rash was noted on the trunk, face, and extremities. C-reactive protein was 193.5. He was pancytopenic with hemoglobin 9, platelets 114, and absolute neutrophil count 550. Given fever and prednisone use, broad spectrum antimicrobial drugs were started including acyclovir for presumed disseminated varicella zoster. Ophthalmology diagnosed central retinal artery occlusion. Stroke workup was unremarkable. Skin lesion biopsy showed dense, diffuse dermal neutrophilic infiltrate consistent with Sweet syndrome. Fevers slowly improved on prednisone. C-reactive protein decreased to 73.9 by day 10 of admission. Bone marrow biopsy and age-appropriate malignancy workup were normal.

IMPACT/DISCUSSION: Acute febrile neutrophilic dermatosis, or Sweet syndrome, is a rare cause of febrile rash in hospitalized patients. Major diagnostic criteria are rapid-onset of erythematous plaques or nodules with dense neutrophilic infiltration. Minor criteria include fever, elevated erythrocyte sedimentation rate or C-reactive protein, and leukocytosis with over 70% neutrophils.

Classical Sweet syndrome is idiopathic and often preceded by respiratory infections. Drug-induced Sweet syndrome is most often seen with granulocyte-stimulating factors. 21% of Sweet syndrome is malignancy-related, usually with acute myeloblastic leukemia or adenocarcinoma of the breast, gastrointestinal, or genitourinary organs. Therefore, age appropriate cancer screening is warranted as well as risk assessment for asymptomatic hematologic malignancies. Given his negative malignancy work-up and lack of causative drug exposure, our patient met criteria for Classical Sweet syndrome.

Skin lesions may appear vesicular given edema of the papillary dermis, making biopsy crucial for accurate diagnosis. Extradermal manifestations like malaise, arthralgias, and ocular involvement may occur. Our patient had scleritis, then developed central retinal artery occlusion shortly after onset of skin rash. Anterior ocular inflammation such as scleritis or conjunctivitis is common in Sweet syndrome. Posterior inflammation such as retinal vasculitis is rarer, presenting as blurred or otherwise impaired vision. Retinal vasculitis requires urgent assessment as it may lead to retinal ischemia with permanent visual impairment if the underlying cause is not treated promptly.

CONCLUSION: Biopsy is crucial for correct diagnosis: lesions may vary in appearance

Age-appropriate cancer screening is imperative

Visual impairment requires urgent fundoscopic examination

NOT SO SWEET: EUGLYCEMIC DIABETIC KETOACIDOSIS AND SGLT2 INHIBITORS

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LEARNING OBJECTIVE #1: Diagnose diabetic ketoacidosis in patients presenting with euglycemia

LEARNING OBJECTIVE #2: Identify SGLT-2 inhibitors as a risk factor for development of diabetic ketoacidosis

CASE: A 61-year-old man with hypertension and diabetes was admitted for evaluation of obstructive jaundice and 3 cm pancreatic mass in the setting of nausea and abdominal pain progressing over 3 days. His medications were hydrochlorothiazide, lisinopril, metformin, and ertugliflozin. On exam he was hemodynamically stable with dry mucus membranes, scleral icterus, and moderate epigastric tenderness. Labs revealed Na 133, K 4.5, Cl 105, HCO3 7, sCr 1.1, glucose 196, tBili 9.9, AST 356, ALP 920, gGTP 1410, lipase 255, lactate 0.9, and acetone 37. Arterial pH was 7.28. Ethanol and toxic alcohols were not detected. Urinalysis was notable for 3+ ketones and >1000 glucose. A diagnosis of diabetic ketoacidosis (DKA) without hyperglycemia was made and the patient was started on glucose and insulin infusions. Over the next 24 hours the anion gap resolved and the patient had resolution of abdominal pain. Work up for the obstructive jaundice included an ERCP with biopsies consistent with pancreatic adenocarcinoma.

IMPACT/DISCUSSION: Sodium-Glucose Transport Protein 2 inhibitors (SGLT2i) are increasingly being prescribed for patients with type 2 diabetes due to their beneficial effects on glycemic control, cardiovascular mortality, weight loss, and blood pressure. The primary mechanism of action is via inhibition of SGLT2 in the proximal renal tubule, leading to glycosuria and decreased serum glucose levels. As their use becomes more common, physicians must be aware of the potential for adverse reactions.

DKA is classically defined by the triad of hyperglycemia, elevated ketones, and acidosis (pH<7.3 and HCO3<18). Rarely, DKA may occur without hyperglycemia; this has been reported with increasing frequency for patients taking SGLT2i. The mechanism for DKA in patients taking SGLT2i is not completely understood but likely multifactorial: SGLT2i likely decrease endogenous insulin production as serum glucose levels decrease, directly stimulate glucagon production by islets alpha-cells, and possibly increase renal tubular absorption of ketone bodies. As insulin falls and ketones increase, ketoacidosis can occur.

Use of SGLT2i was a likely precipitant of DKA in this patient. There were no signs of infection and other etiologies of elevated anion gap (lactic acidosis) and ketosis (alcohol and toxins) were ruled out. Testing for autoantibodies was negative and a C-peptide level was detected but low, arguing against latent autoimmune diabetes of adults or misdiagnosed type 1 diabetes. In the presence of the new pancreatic mass, diabetes type 3c was considered but much less likely given the absence of any other symptoms of pancreatic exocrine function.

CONCLUSION: Euglycemic DKA should be considered in patients with anion gap metabolic acidosis when glucose levels are not elevated. SGLT2i increase risk for euglycemic DKA through multiple mechanisms.

NOT SWEET'N LOW: A CASE OF SEVERE HYPOGLYCEMIA WITH COMBINED CIPROFLOXACIN AND GLIMEPIRIDE

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LEARNING OBJECTIVE #1: Recognize that glimepiride in addition to glyburide and glipizide as sulfonylureas can cause severe hypoglycemia due to interactions with fluoroquinolones, specifically, ciprofloxacin

CASE: An 80-year-old male with a history significant for pancreatic cancer status post Whipple procedure on chemotherapy, bladder cancer, and non-insulin dependent diabetes type 2 presented after being found unresponsive at home. Patient was in a state of chronic debility with poor appetite; intermittent nonbloody, nonbilious emesis; and daily, chemotherapy - induced diarrhea. He was admitted two months prior for *Pseudomonas* bacteremia secondary to a UTI and continued on ciprofloxacin for asymptomatic bacteriuria. Medications also included glimepiride with daily compliance. Upon EMS arrival, the patient had blood glucose of 27 mg/dL and given one amp of D50 with improvement in mental status. In the hospital, he was given one dose of octreotide with D5NS drip and two ¼ amps of D50 rescue during the first four hours. The patient had subsequent improvement in his mental status and remained normoglycemic for 48 hours. Of note, hemoglobin A1c decreased from 9.0 to 5.2% over the preceding 3 months and glimepiride was discontinued along with transition of ciprofloxacin to cefepime.

IMPACT/DISCUSSION: This illustrates the importance of reviewing medication interactions in cases of severe hypoglycemia. Although this patient had diminished intake, this was chronic and unchanged, reflected in his last hemoglobin A1c of 9.0%. The interaction between fluoroquinolones and sulfonylureas may be complicated by hypoglycemia, which can be severe. Of the sulfonylureas, glyburide and glipizide have been identified, and with specific interactions with ciprofloxacin. This case is notable as the second published case of glimepiride and ciprofloxacin use associated with severe hypoglycemia. These interactions should be appreciated as prescriptions of antimicrobials and sulfonylureas are common and can cause

substantial morbidity with high costs to the healthcare system. Fluoroquinolones potentiate the sulfonylurea's effects on glucose by inhibiting ATP K+ channels in pancreatic B-cells; this causes overstimulation of pancreatic islet cells, excessively high levels of insulin and C-peptide, and subsequent hypoglycemia. It is important to note that fluoroquinolones are not initiators by itself, but solely enhancers of insulin secretion. Treatment involves octreotide with a central role in severe sulfonylurea-induced hypoglycemia by inhibiting further insulin secretion along with dextrose infusion.

CONCLUSION: This case expands existing literature as the second reported case to highlight the potential danger of the combination of glimepiride and ciprofloxacin as a cause of severe, symptomatic hypoglycemia. Octreotide is a safe and effective tool to restore normal glucose rapidly in drug-induced disease. Lastly, provider review of all potential drug-drug interactions is an essential tool to promote safe, value-based medical care.

NOT YOUR AVERAGE HYPERTENSION: DIAGNOSING AND TREATING POSTPARTUM PREECLAMPSIA IN PRIMARY CARE

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LEARNING OBJECTIVE #1: Distinguish postpartum preeclampsia (PPE) from chronic hypertension in period after birth

LEARNING OBJECTIVE #2: Review management of PPE

CASE: A 26 year-old African American woman G2P2002 with preeclampsia in her first pregnancy presented 7 weeks postpartum. She was normotensive during pregnancy with an uncomplicated vaginal delivery. One day postpartum, her blood pressure was 160/90. She was started on nifedipine 30 mg XL and discharged home where her blood pressure was persistently elevated. She denied headache, blurred vision, abdominal pain, nausea/vomiting, chest pain, shortness of breath, and edema. Her obstetrician thought her postpartum recovery was normal and recommended followup with her PCP for chronic hypertension.

OB history

1 prior pregnancy 2016 – uncomplicated preeclampsia

FH

Mother age 50, brother age 30 - hypertension

Labs

CMP and CBC normal. UA 100 protein (had been normal in pregnancy)

PE

Vitals normal except BP 170/90

BMI 24

Normal physical exam

Based on the above, the patient was diagnosed with PPE. Her nifedipine was increased to 60mg XL with home blood pressure monitoring and 1-week followup.

IMPACT/DISCUSSION: PPE is underdiagnosed and associated with significant morbidity. Up to ¼ of eclamptic seizures occur 48 hours to 6 weeks postpartum. Intracerebral hemorrhage and stroke are other devastating sequelae. PPE risk factors are similar to preeclampsia's, including preeclampsia in prior pregnancy, being black or Latino, age > 40, obesity, multiparity and gestational diabetes. The American College of Obstetricians and Gynecologists (ACOG) defines preeclampsia as blood pressure > 140/90 and one of the following: proteinuria, thrombocytopenia, renal insufficiency, abnormal liver function, pulmonary edema or cerebral/visual symptoms. PPE is the onset of these criteria > 48 hours postpartum. PPE generally presents < 6 weeks postpartum although some cases are reported up to 3 months after birth. In contrast, ACOG defines chronic hypertension as predating pregnancy. Given this patient had history of preeclampsia, no previous hypertension, and new proteinuria, she was diagnosed with PPE.

After immediate blood pressure control, maintenance therapy is selected based on comorbidities and breastfeeding. All antihypertensives pass into breast milk, albeit in negligible amounts. Similar to during pregnancy, beta/alpha blockers, calcium channel blockers, methyldopa and hydralazine are considered safe, well-studied and thus favored. Unlike in pregnancy, ACE inhibitors are safe postpartum but may cause hypotension in breastfed neonates; ARBs have never been studied. Diuretics theoretically reduce milk production but studies of hydrochlorothiazide demonstrate safety during lactation; furosemide also has never been studied.

This case demonstrates that patients at risk for PPE should be identified based on their history, monitored closely for PPE and treated promptly.

CONCLUSION: PPE risk factors and diagnostic criteria are similar to preeclampsia. Treatment should be selected based on comorbidities and breastfeeding.

NOT YOUR COMMON ATHLETIC HEART PROBLEM

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LEARNING OBJECTIVE #1: Diagnose SCAD through non-invasive methods such as coronary CTA

LEARNING OBJECTIVE #2: Recognize that SCAD can present with complications such as LV thrombus.

CASE: A 19 year old healthy male collegiate athlete presented with typical anginal symptoms for one month. Vitals and physical exam were unremarkable. Labs included a troponin of 0.12 ng/ml which peaked at 17.7 ng/ml and CK-MB of 28.1 ng/ml. EKG demonstrated diffuse biphasic T waves.

IMPACT/DISCUSSION: For young patients presenting with an NSTEMI, clinical suspicion should be raised for SCAD, myocarditis, or pericarditis. Our patient received a coronary Computed Tomography (cCTA) which demonstrated a 1.5 cm dissection in the LAD with a 1.9x1.8cm attenuation defect consistent with a thrombus. Subsequent coronary catheterization confirmed SCAD of the left anterior descending. Transthoracic echocardiogram demonstrated wall motion abnormalities in the region of the dissection along with a 1.4x0.7cm apical left ventricular thrombus. Patient was medically managed with warfarin and a beta blocker.

CONCLUSION: Spontaneous coronary artery dissection, although confirmed through invasive measures, could be reliably diagnosed through non-invasive methods such as a coronary CTA. Thorough investigation of every patient with ACS for intra-cardiac thrombi should be considered, even in younger populations.

NOT YOURE AVERAGE PE: A CASE OF ANTIPHOSPHOLIPID SYNDROME IN A MAN WITH RECURRENT CLOTS

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LEARNING OBJECTIVE #1: Diagnose and treat antiphospholipid syndrome

LEARNING OBJECTIVE #2: Identify indications for and recognize limitations of thrombophilia testing

CASE: A 22-year-old man presented with dyspnea and was diagnosed with a pulmonary embolus. He also had an unprovoked deep venous thrombosis five months prior. He was taking warfarin, but his INR was subtherapeutic. Plans were made to discharge him on a direct oral anticoagulant (DOAC) given his difficulty with warfarin adherence; however, review of his lab findings prompted further testing that changed his management. He had a remarkably low albumin of 2.4. Subsequent urinalysis revealed nephrotic-range proteinuria; creatinine was normal. Kidney biopsy showed lupus nephritis class five. He was started on prednisone and cyclophosphamide.

His recurrent clots and new diagnosis of systemic lupus erythematosus suggested a diagnosis of antiphospholipid syndrome, so he was restarted on warfarin therapy instead of a DOAC and provided additional support to ensure adherence. The diagnosis of antiphospholipid syndrome was later confirmed on outpatient labs.

IMPACT/DISCUSSION: This diagnosis significantly altered our patient's care. For most patients with venous thromboembolism, DOACs are effective treatment. However, warfarin remains the treatment of choice for antiphospholipid syndrome because it decreases the risk of clot in comparison to rivaroxaban.

Most cases of unprovoked clots warrant lifelong anticoagulation. Thus, hypercoagulability testing is generally irrelevant, as the results would not change management. There are, however, situations where testing may provide useful information or guide treatment decisions. Patients with a personal and family history of clots should be tested, as it may influence family members, particularly women of childbearing age. Furthermore, in patients with arterial clots or recurrent venous thromboembolism, testing for antiphospholipid syndrome should be considered, as the results will affect the choice of anticoagulation. Additionally, patients with clots in unusual locations, such as cerebral or splanchnic veins, should be evaluated further.

Antiphospholipid syndrome is diagnosed based on clinical and laboratory findings. Clinical criteria include venous or arterial clots and pregnancy complications. Lab criteria include antibody-based tests for anticardiolipin and anti-β_2-glycoprotein, which are reliable regardless of whether the patient is on anticoagulation, and a clot-based assay for lupus anticoagulant, which can be falsely positive if the patient is on anticoagulation. Hence, testing should be performed while off of anticoagulation, or otherwise interpreted with caution. Positive tests must be confirmed on repeat testing after at least 12 weeks.

CONCLUSION: This case exemplifies one of a few situations in which thrombophilia testing changes management. While DOACs are a convenient alternative to warfarin, clinicians should be aware of the diagnoses, including antiphospholipid syndrome, for which warfarin is the treatment of choice.

NOT YOUR HALLMARK CASE: AN UNUSUAL PRESENTATION OF ANAPLASTIC LARGE CELL LYMPHOMA

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LEARNING OBJECTIVE #1: Recognize lactic acidosis as a sign of underlying hematologic malignancy, in this case anaplastic large cell lymphoma

LEARNING OBJECTIVE #2: Identify Anaplastic large cell lymphoma that typically presents as a rapidly progressive T-cell lymphoma with peripheral lymphadenopathy, fevers, night sweats and weight loss

CASE: A 73-year-old female with a history of cirrhosis secondary to non-alcoholic steatohepatitis, gastric antral vascular ectasia (GAVE), heart failure with preserved ejection fraction, and type II diabetes mellitus presented to the hospital with melena after an elective endoscopy. She offered only complaints of fatigue. On exam, she was hemodynamically stable and was unremarkable except for mild left upper quadrant tenderness to palpation. Review of initial laboratory work revealed a leukocytosis of 23,000, thrombocytopenia of 137,000, INR of 1.5, AST 100, ALT 2.3, and a lactic acidosis measured at 12.6. A lactate measured one- month prior was 2.1. A CT angiogram of the abdomen and pelvis was performed that ruled out mesenteric ischemia, overt GI bleed or lymphadenopathy. During her hospitalization her lactate and white cell count continued to rise. Ultimately, flow cytometry revealed a clonal population positive for CD30, CD43, and CD2. Morphologic evaluation of the cells demonstrated large atypical cells with highly pleomorphic nuclei with convoluted and lobulated nuclear contour and multiple prominent nucleoli. Scattered hallmark cells were also seen. The pathology favored a diagnosis of ALK-negative anaplastic large cell lymphoma (ALCL). The patient and her family decided to pursue comfort focused care, and she passed away ten days after presentation.

IMPACT/DISCUSSION: This case, an example of type B lactic acidosis in the setting of leukocytosis, should raise suspicion of underlying malignancy, as the prognosis in this population is poor and often rapidly fatal. Type B lactic acidosis is seen in the absence of tissue hypoperfusion and can be caused by a large variety of etiologies, including diabetic ketoacidosis, medication including metformin and certain anti- retroviral agents, liver and kidney dysfunction and others. Elevated lactate in malignancy has been coined the Warburg effect and refers to the preference of cancer cells to metabolize pyruvate to lactate. ALCL is a rare T-cell hematologic malignancy that often presents with peripheral lymphadenopathy, fevers, night sweats and weight loss and has never been described in the literature as being associated with elevated lactate.

CONCLUSION: Lactic acidosis with no evidence of hypoperfusion is known as a type B lactic acidosis. Type B lactic acidosis in malignancy is known as the Warburg effect, where malignant cells favor anaerobic respiration over normal glycolysis even when oxygen is abundant. ALCL typically presents with peripheral lymphadenopathy, fevers and night sweats but should be considered in any patient with a rapidly progressive leukocytosis and type B lactic acidosis.

NOT YOUR REGULAR RASH: A RARE CASE OF AMYOPATHIC DERMATOMYOSITIS

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LEARNING OBJECTIVE #1: To differentiate amyopathic dermatomyositis from dermatomyositis.

LEARNING OBJECTIVE #2: To understand the risks of undiagnosed amyopathic dermatomyositis.

CASE: Our patient is a 42-year-old female with no significant past medical history, who presented with a pruritic rash for several months. The rash involved the dorsal hands, thighs, chest, and upper back. The patient denied any inciting event or the use of new medications. She had photosensitivity. along with non- specific joint pain in the bilateral wrists and interphalangeal joints, without stiffness or swelling. She denied muscle pain or weakness. On examination, there was a malar rash involving the nasolabial folds, Gottron's papules, and reddened area over the upper chest in a shawl-like pattern. Labs revealed a normal erythrocyte sedimentation rate, C-reactive protein, eosinophil counts, muscle enzymes, and complement levels. Infectious workup was negative for

Lyme's disease, hepatitis, and sexually transmitted diseases. Myositis panel was negative for muscle-specific antibodies except for anti-signal recognition peptide antibody. Skin biopsy revealed perivascular lymphocytes, sub-epidermal melanophages and dermal mucin deposition consistent with dermatomyositis. She was diagnosed with amyopathic dermatomyositis(ADM) and started on hydroxychloroquine as a steroid-sparing agent.

IMPACT/DISCUSSION: ADM is characterized by the presence of cutaneous dermatomyositis(DM) with normal muscle enzymes and no significant muscle weakness with debilitating fatigue. A population-based survey of ADM revealed that overall age and sex-adjusted incidence is 2.08 per 1 million, predominantly in middle-aged women. It has been proposed that amyopathic and myopathic forms exist as a continuum, and a proportion of amyopathic patients transform into a myopathic state. It is characterized by the presence of typical skin lesions like Gottron's papules, heliotrope rash, pink rash on the face, neck, and forearms. Diagnosis can be established by classical skin findings, negative electromyography findings, normal muscle enzymes, and skin biopsy demonstrating inflammatory changes consistent with DM. The presence of anti- MDA5 antibodies can serve as an important biomarker to predict prognosis in patients with inflammatory muscle diseases. A few cases have been associated with malignancies, delayed onset of DM, and fatal interstitial lung diseases. Some cases of ADM have been reported in association with breast cancer, lymphoma, and ovarian cancer. Hence, it is essential to classify these patients, as they may have prognostic significance. Although no specific guidelines exist, it is usually treated with steroids, antimalarial agents, immunosuppressive agents, or immunoglobulins.

CONCLUSION: Patients with ADM should undergo age-appropriate malignancy screening. Fatigue and rash are commonly overlooked in the outpatient setting. Hence, it is essential to have a broad differential to identify and manage such conditions.

NO WOMAN NO CRYO

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LEARNING OBJECTIVE #1: Discuss evluation of extreme leukocytosis in the hospitalized patient

LEARNING OBJECTIVE #2: Recognize myelodysplastic/myeloproliferative overlap neoplasms (MDS/MPN) as a rare form of myeloid malignancy

CASE: A 58-year-old man presented with a leukocytosis of 40 x 10 9 /L after one month of an intravenous antibiotic course for presumed osteomyelitis of the feet. He had a history of hepatitis C and cirrhosis. A purpuric rash was appreciated on the arms, and diffuse swelling was present in all extremities and dependent areas. Leukemia was suspected; however, no blasts were identified on blood smear and BCR-ABL returned negative. MRI of the feet revealed possible osteomyelitis, but ESR/CRP levels were normal and he had received adequate treatment with the extended antibiotic course prior to arrival. Cryoglobulinemia was considered with a positive cANCA, but C3 and C4 were low-normal. He was diagnosed with HCV-associated cutaneous vasculitis (non-cryoglobulinemic) and corticosteroid treatment was initiated, but the leukocytosis and thrombocytosis persisted. A core bone marrow biopsy returned with hypercellular marrow (80-90% cellularity) and negative cytogenetic studies, fitting the diagnostic criteria for myelodysplastic/myeloproliferative neoplasm, unclassifiable (MDS/MPN-U).

IMPACT/DISCUSSION: When a patient presents with a severe leukocytosis, causes can be categorized broadly as non-malignant and malignant etiologies. Regarding non-malignant causes of severe leukocytosis, the most common etiology is typically an infection. Other non-malignant causes of severe leukocytosis include a catecholamine- induced demargination of WBCs - which can be seen in the stress-inducing situations including surgery, exercise, or trauma – as well as medication reactions, namely to corticosteroids. Vasculitis can be considered but a lack of response to empiric treatment may prompt further investigation. Bone marrow biopsy should be considered to determine underlying malignancy as a cause of severe leukocytosis. A peripheral blood smear may reveal signs of leukemia but in this case, the bone marrow biopsy was crticial to the diagnosis.

Myelodysplastic (MDS)/myeloproliferative (MPN) neoplasm, unclassifiable diagnosis is a rare and distinct group of myeloid neoplasms with features of both MDS and MPN, and the unclassifiable diagnosis makes up 5% of all myeloid neoplasms. MDS/MPN neoplasms are predominantly diagnosed by findings in the bone biopsy. A number of somatic mutations need to be considered in order to improve diagnostic precision, including SF3B1, SETBP1, TET2, SRSF2, and ASXL1. Treatment includes hypomethylating, immunomodulatory, or cytoreductive therapies; however specific therapies for MDS/MPN overlap symptoms have not yet been developed.

CONCLUSION: When encountering marked leukocytosis, an internist may consider non-malignant or malignant etiologies. Through a systematic approach and testing, the correct diagnosis can be uncovered.

NUTRITIONALLY VARIANT STREPTOCOCCAL ENDOCARDITIS - A CASE SERIES

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LEARNING OBJECTIVE #1: Recognize nutritionally variant streptococcus as a rare cause of infectious endocarditis.

CASE: Case 1- A 44 year old gentleman presented with slurred speech, right leg weakness and low back pain for 2 months. He reported intermittent fever with night sweats, and joint pain. Medical co-morbidities included hypertension and bicuspid aortic valve with aortic insufficiency. His examination revealed scanning speech with word finding difficulty. Bilateral upper and lower extremity motor strength was preserved. MRI brain showed acute-subacte infarcts in left parietal region. Multiple blood cultures subsequently grew Granulicatella adiacens. A presumptive diagnosis of endocarditis with septic emboli was made and patient was started on IV vancomycin. A transthoracic echo showed bicuspid aortic valve with dilated aortic root and severe aortic insufficiency with severely dilated LV. He underwent AVR. Tissue cultures from aortic valve were positive for Granulicatella adiacens confirming diagnosis. Patient improved on Vancomycin and was discharge to rehab with six weeks of planned IV vancomycin therapy.

Case 2 -A 58 year old gentleman presented with fever, headaches with photophobia and neck pain for 2 days. Medical co-morbidities included hypertension. Lab investigations revealed leukocytosis and elevated ESR. Lumbar puncture was performed for suspected meningitis which showed elevated WBC count with 70% PMNL, low glucose and elevated protein suggestive of bacterial meningitis. He was started on IV vancomycin, ceftriaxone and ampicillin empirically. Subsequently, MRI brain showed multiple acute infarcts suggestive of septic emboli. Blood cultures grew Granulicatella adiacens. Antibiotic regimen was switched to only IV vancomycin. A TEE showed 12 x 25mm vegetation on anterior leaflet of mitral valve and 6 x 5 mm vegetation on aortic valve. Patient underwent mitral valve replacement and aortic valve repair and was discharged with planned 4 weeks of IV vancomycin therapy.

IMPACT/DISCUSSION: NVS are gram positive cocci that have fastidious growth requirements – growing as satellite colonies around other microorganisms or in complex media enriched with sulfhydryl compounds.

First identified in 1961, NVS is currently estimated to cause 3-5% of all streptococcal endocarditis. It has an indolent course, but diagnosis is often delayed due to difficulty isolating and culturing the organism. This leads to higher rates of complications such as heart failure, septic embolization, and death. It is interesting to note that both our patients presented with neurological symptoms secondary to septic emboli. Whether this reflects a specific feature of NVS endocarditis remains to be seen. AHA recommends treatment of NVS endocarditis with penicillin MIC $\geq$0.5 μg/mLwith Ampicillin and Gentamicin combination, though if Vacomycin is used, addition of Gentamicin is not recommended.

CONCLUSION: Nutritionally variant streptococcus (NVS) should be considered early in differential of infective endocarditis.

NXP2 DERMATOMYOSITIS WITH ABDOMINAL PAIN AND SEVERE CALCINOSIS

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LEARNING OBJECTIVE #1: Recognize a typical presentation of dermatomyositis

LEARNING OBJECTIVE #2: Recognize a phenotypic variant of dermatomyositis associated with the NXP2 autoantibody characterized by significant calcinosis

CASE: 72 year-old woman with dermatomyositis (DM) diagnosed by muscle biopsy in 2008 presented with dysuria and left lower quadrant abdominal pain for 2 weeks that had proven refractory to outpatient treatment for presumed urinary infection. Of note, patient had a recent admission for severe lower GI bleed treated with middle colic artery embolization, and a 2cm stomach ulcer in 2009. Physical exam revealed extensive calcinosis cutis, no significant muscle weakness, and mild Gottron papules. She had left sided abdominal tenderness. CT abdomen/pelvis showed diffuse wall thickening of the colon consistent with pancolitis, present on multiple prior studies. Colonoscopy findings were most consistent with regeneration of ischemic colitis. MRI of bilateral lower extremities showed no active myositis. Given the significant calcinosis and pancolitis in this known DM patient, myositis specific autoantibodies (MSA) were sent, revealing a positive nuclear matrix protein-2 (NXP2) antibody, consistent with this rare variant of DM. Patient was scheduled for initiation of treatment with intravenous immunoglobulin.

IMPACT/DISCUSSION: DM is an inflammatory myopathy typically presenting with proximal muscle weakness, and various skin manifestations. Several MSA have been identified and are causal to the disease, characterized histologically by perifascicular atrophy and perivascular inflammation. In addition, an increased rate of malignancies, specifically breast, lung, GI, and nasal malignancies, is seen in DM patients in comparison with the general population. NXP2-DM, which our patient had, has been associated with a phenotype that includes more severe muscle weakness, calcinosis cutis but otherwise milder skin disease, and gastrointestinal (GI) manifestations when compared to those without the NXP2 antibody. GI manifestations include abdominal pain, and gastrointestinal hemorrhage and/or ulcerations from vasculitis, more frequently seen in juvenile NXP2-DM patients. Adults with NXP2 autoantibodies may also present with dysphagia. Our patient had severe calcinosis and GI involvement (pancolitis and history of hemorrhage and ulceration), giving her two distinct manifestations of NXP2-DM. It is important to recognize that patients with DM do not always present with a classic rash, phenotype varies depending on the MSA associated.

CONCLUSION: - DM is caused by autoantibodies against muscle fibers yielding the presentation of muscle weakness and inflammation on biopsy.

- NXP2-DM is an unusual variant of DM characterized by calcinosis cutis, more severe muscle weakness, milder skin disease, and GI tract involvement.

OCCULT PERIVALVULAR ABSCESS: A TELL-TALE PROLONGATION

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LEARNING OBJECTIVE #1: Recognize a new PR prolongation in a patient with a bloodstream infection as a sign of complicated endocarditis with perivalvular abscess.

CASE: A 39-year-old man with a history of end-stage renal disease on hemodialysis (HD) and an *Enterococcus faecalis* catheter-related bloodstream infection complicated by native aortic valve endocarditis and severe aortic regurgitation requiring mechanical aortic valve replacement 3 months prior presented for one episode of fever at his nursing facility. Besides low-grade temperature and tachycardia, he had no localizing infectious signs or symptoms - including no new cardiac murmur upon admission. He had a right chest temporary dialysis catheter (TDC) in place for HD which did not appear infected. His two initial sets of peripheral blood cultures grew methicillin-resistant *Staphylococcus epidermidis* and *Corynebacterium jeikeium*. He was started on vancomycin and his cultures cleared within 48 hours. In light of his extremely poor vascular access, his TDC was initially exchanged over a wire instead of replaced. However, he was noted to have a first-degree atrioventricular block with a PR interval of 360 mm, new as of this admission. This prompted a transesophageal echocardiogram (TEE), which showed no vegetation but was remarkable for a perivalvular abscess associated with the aortic prosthesis. His TDC was subsequently removed and he was taken to the operating room for a homograft root replacement.

IMPACT/DISCUSSION: In patients with a diagnosis of endocarditis, we tend to vigilantly monitor their EKGs for development of a heart block suggesting the formation of a perivalvular abscess. This case demonstrates how careful interpretation of an EKG in a patient with bacteremia and no other overt signs of endocarditis completely changed clinical management by revealing an occult perivalvular abscess. Given his rapid clinical improvement upon initiation of antibiotics, the abscess might have been undiagnosed if the EKG was overlooked, possibly leading to a poor outcome.

CONCLUSION: Perivalvular abscess is a well-known complication of infective endocarditis, especially when affecting the aortic valve given its proximity to the native conduction system. Extension of an abscess cavity into the atrial septum leads to conduction delay, including bundle branch blocks and first-degree AV block. Therefore, any new conduction delay on EKG should prompt further evaluation with TEE, which has a much better diagnostic yield compared to transthoracic echocardiography. This is important given the significant morbidity and mortality of patients with untreated cardiac abscesses including further degradation of the cardiac conductive system and other major structural emergencies.

OCULAR SYPHILIS IN AN HIV-INFECTED PATIENT

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LEARNING OBJECTIVE #1: Identify, diagnose, and treat neurosyphilis with ocular involvement in an HIV-infected patient.

LEARNING OBJECTIVE #2: Recognize the risks posed by lack of adequate healthcare access in HIV- infected patients.

CASE: A 43-year-old male with a history of HIV and recent incarceration presented to HIV clinic with vision changes. He reported progressive blurred vision and floaters in his field of vision over the past few months. The patient was previously on antiretroviral therapy (ART); however, he was released from a one- month-long incarceration three months prior to this visit and had been off of ART since that time. Eye exam was notable for decreased visual acuity bilaterally and he was urgently referred to ophthalmology. In ophthalmology clinic, retinal exam was notable for optic nerve swelling and retinal pigment epithelium hyperreflectances, which were specifically concerning for syphilis. The patient was admitted for expedited work-up.

Magnetic resonance imaging of the brain was obtained and notable for subtle leptomeningeal enhancement, which raised concern for several infectious etiologies including neurosyphilis. Labs on admission were notable for serum RPR of 1:1024 and CD4 cell count of 47 cells/mm^3. CSF analysis revealed lymphocytic pleocytosis, positive VDRL, and elevated protein. Empiric treatment for neurosyphilis with intravenous penicillin was initiated immediately after lumbar puncture. VDRL of the CSF returned positive at 1:8, confirming the diagnosis of neurosyphilis with ocular involvement. Additional infectious work-up was negative. The patient completed a 14-day course of intravenous penicillin G. Repeat RPR six months later had appropriately decreased to 1:16 and the patient reported improved vision.

IMPACT/DISCUSSION: Neurosyphilis is diagnosed by CSF analysis demonstrating positive VDRL, elevated protein, and lymphocytic pleocytosis. Ocular syphilis is one manifestation of neurosyphilis, although ocular syphilis without central nervous system involvement is also an entity. Treatment of neurosyphilis and ocular syphilis is identical, typically consisting of a 10-14 day course of intravenous penicillin G 4 million units every 4 hours.

Neurologic manifestations of syphilis may be seen earlier in HIV-infected patients than in non-HIV-infected patients. The patient described in this case had multiple risk factors for the development of neurosyphilis including male gender, CD4 count under 350 cells/mm^3, and RPR titer greater than 1:128. The patient's recent incarceration may have contributed to his exposure to syphilis and progression to neurosyphilis. Among HIV-infected patients, recent incarceration has been associated with detectable HIV viral loads and lower CD4 counts.

CONCLUSION: 1. Ocular syphilis is a manifestation of neurosyphilis and should be considered HIV-infected patients with vision disturbances.

2. Recent incarceration has been associated with poorer health outcomes in HIV-infected patients.

OH SCHISTOCYTES! ALCOHOL-RELATED HEMOLYTIC ANEMIA

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LEARNING OBJECTIVE #1: To recognize Zieve syndrome

LEARNING OBJECTIVE #2: To identify risk factors and opportunities for alcohol use screening and counseling for transgender patients

CASE: A 45 year-old transgender woman on estrogen therapy with history of unhealthy alcohol use presents with acute onset RUQ abdominal pain which began soon after consuming 6 alcoholic beverages. She also notes weekly marijuana and methamphetamine use. On exam, she was hemodynamically stable with scleral icterus and RUQ tenderness. Labs were notable for transaminitis (AST/ALT 346/340), indirect bilirubinemia (3.9), and hyperproliferative macrocytic anemia (Hgb 10.0, MCV 102, retic 5.3%). A broad hepatitis workup was unrevealing. MRCP revealed cholelithiasis without cholecystitis or biliary dilatation. Anemia workup was concerning for acute intravascular hemolysis. Coombs antibody and G6PD were negative. Given the patient's alcohol use history, a unifying diagnosis for her presentation is Zieve syndrome (ZS), a condition that manifests as a triad of jaundice, Coombs-negative hemolytic anemia, and hyperlipidemia secondary to alcohol-induced liver injury that frequently presents with abdominal pain. Because ZS was not on the differential until late in the patient's hospital course, a lipid panel was not obtained to confirm the diagnosis.

IMPACT/DISCUSSION: ZS was first described in 1958. With only 120 reported cases published mostly in non-English literature, ZS is an under recognized and frequently undiagnosed or misdiagnosed. In addition to the clinical triad described above, features of ZS include abdominal pain, which was present in all 20 cases reported by Dr. Zieve, as well as nausea, vomiting, and constitutional symptoms. Hyperlipidemia was present in 50% of the patients from the same study. Patients presenting without hyperlipidemia are described to have atypical ZS. Symptoms typically resolve within several weeks of illness onset, though fatal cases have been reported. Accurate and timely diagnosis of ZS is important in allowing appropriate management and provision of alcohol use counseling to prevent recurrence.

This case also demonstrates the importance of recognizing opportunities for screening for substance use and counseling for transgender patients. Unmet treatment need for substance use disorder is thought to be disproportionately high among transgender populations given unique barriers they may encounter in accessing healthcare.

CONCLUSION: Zieve syndrome is an under recognized cause of acute hemolysis in patients with a history of unhealthy alcohol use. The syndrome presents as a triad of jaundice, hyperlipidemia, and Coombs-negative hemolytic anemia and can be accompanied by abdominal pain. Treatment of Zieve syndrome involves supportive care and abstinence from alcohol.

It is important to recognize opportunities for alcohol use counseling for LGBT patients, particularly transgender patients, who may be at higher risk of developing unhealthy alcohol use and may face greater barriers in accessing medical care.

ONCE BITTEN: A CASE OF SEPSIS, THROMBOCYTOPENIA, AND PURPURA FROM CAPNOCYTOPHAGA CANIMORSUS BACTEREMIA

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LEARNING OBJECTIVE #1: Recognize the importance of obtaining an exposure history in cases of infection of unknown source

LEARNING OBJECTIVE #2: Recognize the key role of molecular lab tests in diagnosing Capnocytophaga canimorsus

CASE: A 75 year-old woman with a remote history of breast cancer and macrocytic anemia presented to the Emergency Department with malaise and a painful bilateral lower extremity rash for 3 days. Her vital signs were within normal limits and examination was notable for non-blanching scattered purpuric macules of her lower extremities. She was admitted to the hospital after being found to have platelets of 28,000 and serum

creatinine of 3.4 mg/dL (both values were normal one week prior). She had no evidence of hemolysis on her labs.

Her creatinine normalized with intravenous fluids. However, she developed a new fever to 39° C along with nausea and encephalopathy. A chest X-ray, urinalysis and head CT where normal. Blood cultures were drawn, and, due to concern for meningitis, empiric antibiotic coverage with cefepime, vancomycin, ampicillin, and acyclovir was started after unsuccessful attempts at lumbar puncture.

By hospital day 6, fever and encephalopathy resolved, and blood cultures from 72 hours prior became positive for anaerobic gram negative rods (GNRs). A detailed exposure history revealed that she had sustained several bites from a new kitten at home the week prior to admission. Over the ensuing days, her antibiotics were narrowed to ampicillin-sulbactam, and she remained afebrile with normalization of her labs. One week later, the identification of the anaerobic organism from her initial blood cultures performed via MALDI-TOF mass spectrometry assay returned as Capnocytophaga canimorsus.

IMPACT/DISCUSSION: Capnocytophaga canimorsus is an anaerobic GNR that is a part of the normal oral flora of cats and dogs, and is usually transmitted by bites or scratches. It is a fastidious organism, and the laboratory should be alerted if Capnocytophaga is suspected so that enriched agar can be used. In many cases, even with a culture environment tailored to growth of Capnocytophaga, culture data alone will be insufficient, and specialized molecular testing is necessary.

Infection with Capnocytophaga canimorsus can cause severe sepsis often accompanied by disseminated purpura, encephalopathy and AKI, and is associated with a high mortality rate, with immunocompromised patients at greatest risk of infection. This patient was potentially immunocompromised from suspected underlying myelodysplastic syndrome as the cause of her macrocytic anemia.

CONCLUSION: This case emphasizes the importance of obtaining an exposure history and continually reframing the differential diagnosis based on evolving clinical data. Having a high clinical suspicion for Capnocytophaga canimorsus is necessary to ultimately secure the diagnosis given the need for specialized lab testing. In this case, the positive zoonotic exposure along with developing fever, purpuric rash, AKI, and thrombocytopenia ultimately led to a correct diagnosis.

ONE IN A MILLION ...

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LEARNING OBJECTIVE #1: Describe the features of the choriocarcinoma syndrome

LEARNING OBJECTIVE #2: Recognize choriocarcinoma syndrome as a medical emergency that warrants urgent oncologic consultation

CASE: A 29-year-old male presented to the emergency department with dyspnea and hematuria of 2-week duration. On further questioning, the patient reported left testicular swelling and hematospremia of 4-month duration. Medical and surgical histories were negative and family history was noncontributory. On physical examination, left testicular swelling with scrotal nodularity was noted in addition to diffuse lung crackles. Laboratory evaluation was significant for mild anemia with hemoglobin of 11.7 and urinalysis showed significant hematuria without red blood cell casts. Testicular ultrasound showed solid mass containing micrcalcifications measuring 3.4 x 4.9 x 5.4 cm. Chest/abdomen/pelvis CT scan showed large right-sided pleural effusion with near total collapse of the right lung, innumerable pulmonary masses, and multiple enlarged lymph nodes in the chest and abdomen. The patient underwent pigtail catheter placement in the right pleural space which drained bloody pleural effusion. Further laboratory tests showed significantly elevated LDH at 767 U/L (122-222), alpha-fetoprotein at 362 ng/ml (<6) and beta-hCG at 94482 IU/L (<1.4). Brain MRI was performed and showed 4 hemorrhagic cerebral metastases, the largest of which measures 11 mm. The diagnosis of choriocarcinoma syndrome was confirmed. Urgent oncologic consultation was placed and the patient was immediately started on BEP (bleomycin, etoposide, paclitaxel-cisplatin) chemotherapy even without tissue confirmation of the underlying choriocarcinoma. The patient tolerated his first cycle of chemotherapy and was discharged for outpatient ongoing treatment.

IMPACT/DISCUSSION: Testicular choriocarcinoma is and aggressive form of non-seminoma germ cell tumors that typically presents with elevated hCG and diffuse metastases. The choricocarcinoma syndrome is diagnosed in the presence of rapid hematologic spread of the tumor with diffuse hemorrhagic pulmonary metastases, hemorrhagic brain metastases, in the presence of beta-hCG level > 50,000. Spontaneous tumor lysis syndrome and hyperthyroidism can also occur but are not required for the diagnosis. It is considered a medical emergency due to the high mortality rate and patients need to be started on chemotherapy immediately even without tissue diagnosis as the diagnosis can be established using the aforementioned criteria. It is exceedingly rare with estimated prevalence of 0.1/100,000.

CONCLUSION: Choriocarcinoma syndrome is diagnosed in patients presenting with diffuse hemorrhagic metastases (pulmonary and brain) in addition to markedly elevated beta-hCG (> 50,000). The diagnosis is established using this criteria without the need for tissue diagnosis. It is considered a medical emergency and chemotherapy must be started immediately due to the high mortality rates.

ONE OF THE HEREDITARY DISEASES CAN BE DIAGNOSED BY THE PRESENTATION OF INTUSSUSCEPTION AT AN ATYPICAL AGE OF ONSET

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LEARNING OBJECTIVE #1: Peutz-Jeghers syndrome which is one of the hereditary diseases may miss until intussusception occurs.

LEARNING OBJECTIVE #2: Brown spots on the lips may be clues for diagnosis of Peutz-Jeghers syndrome.

CASE: The patient was a 16-year-old woman with Iron deficiency anemia. She presented to our emergency room with intermittent abdominal pain that suddenly developed on the day of consultation. There were no melena or black stools. Her blood pressure was 120/97 mmHg, the pulse rate was 90 beats/min, and the body temperature was 36.8 degrees. She had tender throughout the abdomen, especially from the navel to the upper right abdomen. Brown spots were observed on the lips and fingers. She had previously visited a dermatologist for the brown spots but had been diagnosed as just nevuses. Blood tests showed increase the levels of WBC ($12\times10^3/\ \mu L$) and the levels of AST, Alt, ALP, γGTP and CRP were normal. Abdominal enhanced CT showed intussusceptions at the hepatic flexure and small bowel and a tumor in the sigmoid colon. She was admitted to be conducted emergency CS and the intussusception at the hepatic flexure was released. Her abdominal pain improved temporarily. However, the abdominal symptoms recurred the next day. Re-examined abdominal CT showed the small bowel intussusception was

unchanged. Then, laparoscopic small bowel resection was performed for the small bowel intussusception and laparoscopic colon resection and polypectomy in the sigmoid colon were also performed. After the surgery, her condition improved and she was discharged on the 14th day without any symptoms. Pathological examination didn't reveal a malignant tumor but found out hamartomatous lesions which were consistent with pathological features of Peutz-Jeghers syndrome (PJS).

IMPACT/DISCUSSION: PJS is a rare, but life-threatening, autosomal dominant disease characterized by melanocytic macules of the lips and toes and multiple hamartomatous polyps on the entire gastrointestinal tract except the esophagus. The estimated incidence of PJS is about 1/200,000.

The polyposis can cause intussusception by enlargement. PJS patients initially have only brown spots and is often diagnosed only after developing an intussusception. The median age of first intussusception due to PJS is around 16 years and almost all cases are performed bowel resection, whereas the common age of intussusception on childhood is less than 2 years and non-invasive reduction such as endoscopic reduction is selected in 70-90% cases. In this regard, the treatment policies differ greatly betwen an intussusception due to PJS and an ordinal one. Although PJS is a rare disease, we should consider brown spots on the lips tell diagnostic clues for PJS and intussusception can occur at atypical ages due to it, as in this case.

CONCLUSION: PJS is rare and often missed until intussusception occurs. If we meet a intussusception at an atypical age of childhood, bowel resection surgery must be considered to treat it whereas ordinally intussusception is treated by non-invasive reduction.

ONE STROKE WITH BILATERAL SYMPTOMS: ACUTE BILATERAL PARAMEDIAN MEDULLARY INFARCTION

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LEARNING OBJECTIVE #1: Recognize the clinical features of acute bilateral paramedian medullary stroke

LEARNING OBJECTIVE #2: Diagnose and treat acute bilateral paramedian medullary stroke

CASE: A 76-year-old man woke up with new bilateral arm and leg weakness as well as numbness throughout his entire body. He was transferred to our hospital two days after symptom onset without a definitive diagnosis for care escalation. On neurological examination he had severe dysarthria, mild weakness of both arms (4/5), moderate right leg weakness (4-/5), and mild left leg weakness (4/5) in all muscle groups. With his eyes closed, he could not identify where his limbs were in space but with eyes open had no dysmetria; sensation was intact to light touch and pinprick with diminished vibration throughout all extremities. Vessel imaging demonstrated diffuse intracranial and extracranial atherosclerotic disease with a complete occlusion of the left vertebral artery in the V3 segment. Brain MRI showed a bilateral paramedian medullary infarct. He was started on aspirin, clopidogrel, and atorvastatin for secondary stroke prevention and received a PEG tube for dysphagia. He was discharged to acute rehab.

IMPACT/DISCUSSION: Bilateral paramedian medullary infarcts are challenging to diagnose as, unlike many acute ischemic stroke syndromes, deficits are bilateral. These infarcts typically present with acute onset quadriparesis (78.4%), bulbar weakness with dysarthria (48.4%), hypoglossal palsy (40.5%), and sensory, specifically proprioceptive, deficits (43.2%). This presentation can easily be confused for many neuromuscular diseases, such as Guillain-Barre syndrome (GBS), myasthenia gravis, botulism, tick paralysis, as well as spinal cord infarction and brain stem encephalitis. Early diagnosis of this stroke syndrome is challenging with high rates of morbidity and mortality.

Rates of false negative stroke diagnosis (stroke chameleons) in the emergency setting are roughly 9%. Delay in stroke diagnosis can lead to adverse patient outcomes precluding time-sensitive thrombolysis. Key features to that may distinguish bilateral paramedian stroke from other neurological symptoms are: acute symptom onset, occurrence in patients with cerebrovascular risk factors, and an upper motor neuron pattern of cranial nerve involvement associated with motor weakness. A heart-shaped infarction on brain MRI is pathognomonic for bilateral paramedian medullary infarct most commonly due to atherosclerosis of the vertebral artery with artery to artery embolism affecting the small perforating arteries of the medulla or the anterior spinal artery.

CONCLUSION: Acute bilateral paramedian medullary infarcts present with a stroke syndrome that can be difficult to diagnose given the bilaterality of clinical signs. Physicians must have a high clinical degree of suspicion to pursue a brain MRI to diagnose this rare but devastating stroke subtype to reduce morbidity and mortality.

OPENING A CAN OF WORMS: ANISAKIASIS FOLLOWING RAW FISH CONSUMPTION

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LEARNING OBJECTIVE #1: To discuss the need for a broad differential for abdominal pain

LEARNING OBJECTIVE #2: To define the clinical features of anisakiasis, the diagnostic criteria and current treatment options

CASE: A 49-year-old female with an unremarkable medical history, presented to the Emergency Department (ED) with acute onset abdominal pain associated with non-bilious, non-bloody emesis, fevers, and decreased appetite that started 4 days after eating fresh, cured Alaskan salmon and poke-style raw tuna from Alaska. Physical exam was remarkable for mild abdominal distension with guarding. Labs showed eukocytosis to 19.9 K/Lwith 1% eosinophils and 17.3K/LANC. An abdominal CT showed severe diffuse gastric wall thickening with perigastric varices, adenopathy, and surrounding fat stranding with infiltrative changes of the omentum, concerning for lymphoma or gastric cancer as well as small volume ascites and moderate free fluid in the pelvis. An esophagogastroduodenoscopy (EGD) visualized nematodes in the gastric body and antrum, burrowed in the gastric wall. Results revealed as Pseudoterranova decipiens. The patient was subsequently treated with Albendazole 400mg twice daily for 21 days. Stool studies showed moderate white blood cells but were negative for ova or parasites.

IMPACT/DISCUSSION: Our patient presented with non-specific abdominal symptoms, initially concerning for malignancy. However, a broad differential diagnosis helped us zero in on her recent exposure to raw fish. In all, the signs and symptoms were typical for the invasion of the gastric mucosa including severe abdominal pain, nausea, vomiting following ingestion.

Four major syndromes, characterized by site-specific symptoms, have been identified as part of anisakiasis infection: gastric, intestinal, ectopic and allergic disease. Intestinal anisakiasis starts 5-7 days following infection and presents with abdominal pain, ascites and/or peritoneal signs. The ectopic syndrome arises following mechanical penetration of the larvae into the stomach resulting in extensive chronic infection with mesenteric masses. Severe allergic reactions have also been reported.

Definite diagnosis of anisakiasis is made by direct visualization of larvae via EGD. Obtaining a detailed diet history as well as an anti-A simplex Immunoglobulin E can aid in diagnosis. Delayed endoscopy may result in

lack of visualization of worms. Treatment includes surgical and/or endoscopic gastric or intestinal removal as well as 400-800mg of Albendazole daily for 6 to 21days. Anisakids are resistant to freezing, microwaving, heating, and salting.

CONCLUSION: This is the case of a middle aged woman presenting with acute onset diffuse abdominal pain, nausea, vomiting, and anorexia following consumption of salt-cured salmon and raw tuna. We stress the need to consider a broad differential diagnosis for abdominal pain, as well as describe the clinical features of anisakiasis, the diagnostic criteria and treatment options to date.

OPIOID-INDUCED SECONDARY ADRENAL INSUFFICIENCY (SAI)

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LEARNING OBJECTIVE #1: Raise level of awareness that chronic opioid therapy can induce SAI

LEARNING OBJECTIVE #2: Recognize SAI can present with normal cosyntropin test as adrenal glands are not completely atrophied

CASE: A 48-year-old female with past medical history of ovarian carcinoma, Crohn's disease on chronic methadone and oxycodone, complicated by rectovaginal fistula status post subtotal colectomy 3 months ago, further complicated by inferior STEMI on POD1, was admitted to the hospital for progressive diffuse abdominal pain since the surgery. On admission, vitals were notable for blood pressure 75/51. Exam was significant for diffuse abdominal pain without rebound tenderness. Lab results revealed normal electrolytes and no leukocytosis. Our differential diagnosis included sepsis, right heart failure and adrenal insufficiency. CT abdomen/pelvis was obtained, and results were consistent with post-operative changes without acute pathology. Blood cultures on admission did not show growth. An echocardiogram was performed which showed normal biventricular function without wall motion abnormalities. Given high suspicion for adrenal insufficiency, a stress dose dexamethasone was initiated while waiting for confirmative consyntropin stimulation test. Adrenal functions were evaluated, which revealed low morning cortisol (1.1 μg/dL), low morning ACTH (<5 pg/mL), and borderline cosyntropin stimulation test (19.7 μg/dL 60 minutes after 250 μg IV cosyntropin). MRI of the head with contrast revealed normal pituitary and hypothalamus. She was then transitioned to stress dose hydrocortisone with which blood pressure significantly improved. Subsequently, abdominal pain resolved shortly. She was discharged on oral hydrocortisone.

IMPACT/DISCUSSION: This case demonstrates SAI induced through chronic narcotic use. The most common etiologies of SAI include exogenous glucocorticoid therapy, brain surgery, and infiltrative disease to pituitary. Multiple case reports demonstrated the association between SAI and chronic opioid use by suppressing HPA axis; however, opioid induced SAI is not well recognized. Given the opioid endemic in America, clinicians should raise level of awareness about it.

SAI can be difficult to diagnose due to the low sensitivity of cosyntropin stimulation test (57%) secondary to incompletely atrophied adrenals, which should be used to rule in rather than rule out SAI. If clinical suspicion is high, glucocorticoid treatment should be administered. Dexamethasone is preferred considering the lack of mineralocortical component and minimal interference with cosyntropin test.

CONCLUSION: Chronic narcotic use can induce secondary adrenal insufficiency by suppressing HPA axis

Diagnosis is rendered difficult due to the low sensitivity of the cosyntropin test. If clinical suspicion is high for SAI, glucocorticoid should be administered immediately.

Dexamethasone is preferred prior to consyntropin test

OUTPATIENT MANAGEMENT OF ORTHOSTATIC HYPOTENSION AS A CHRONIC COMPLICATION OF UPPER SPINAL CORD INJURY

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LEARNING OBJECTIVE #1: Recognize patterns of autonomic dysfunction as complications of spinal cord injury.

LEARNING OBJECTIVE #2: Describe the management approach to chronic orthostatic hypotension in the outpatient setting.

CASE: AL is an 18-year-old man with a history of incomplete tetraplegia following traumatic cervical spinal cord injury (SCI), complicated by orthostatic hypotension (OH), neurogenic bladder, and neuropathic pain, who presented to the clinic to establish care. He reported chronic episodes of pre-syncope and diaphoresis several times daily with no loss of consciousness, provoked by rapid positional changes and partially alleviated by leaning forward. Pre-syncopal episodes had persisted despite treatment with 5 mg midodrine twice daily for OH since inpatient admission 14 months prior. On exam, AL's blood pressure was 96/64, wearing an abdominal binder. Cardiovascular auscultation was unremarkable. The dose of midodrine was increased to 10 mg in the morning and afternoon. At follow up, AL reported subjective improvement and denied adverse effects including symptoms of hypertension, such as headache, flushing or blurred vision.

IMPACT/DISCUSSION: SCI superior to the T6 vertebra can cause autonomic dysfunction resulting in hypertension or hypotension. Resting hypotension and OH in upper SCI patients occurs due to impairment of sympathetic cardiovascular inputs, which leaves vagally mediated parasympathetic pathways unopposed. In one study, nearly 75% of SCI patients demonstrated OH during postural changes, but fewer than 60% of individuals were symptomatic. Pre-syncopal episodes are disruptive to daily activities, can limit participation in rehabilitation, and pose a fall risk during positional transfers. Unaddressed, dramatic blood pressure fluctuations may also contribute to long-term cognitive impairment in SCI patients through effects on cerebral vasculature.

A recent systematic review found that among pharmacologic agents used to control OH in SCI patients, only midodrine, a selective alpha-adrenergic agonist, had evidence from a randomized controlled trial (pilot study, n=4) to support its use. Outpatient practitioners can initiate midodrine at low doses (2.5 or 5 mg in the morning and afternoon) and rapidly uptitrate. Twice daily dosing may be preferable to avoid an evening dose, which can predispose patients to supine hypertension. Home blood pressure monitoring complements subjective reporting of symptoms. Fludrocortisone, a mineralocorticoid, is commonly initiated prior to midodrine for management of OH in general, but its use lacks rigorous evidence in SCI patients specifically. Physical interventions such as abdominal binders, compression stockings, and increased fluid and salt intake are also common but lack specific evidence in SCI patients.

CONCLUSION: Patients with upper SCI can experience chronically recurring OH, disrupting daily activities and rehabilitation. Outpatient providers can initiate and rapidly uptitrate midodrine to mitigate OH.

OVERCOMING COGNITIVE BIAS IN PRIMARY CARE CLINIC BY UTILIZING A REVIEW OF SYSTEMS: A CASE OF COMMON COLD OR CANCER?

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LEARNING OBJECTIVE #1: Cognitive bias impacts clinical decision making, and a thorough review of systems is a checklist physicians can implement to examine their daily heuristics in the primary care setting.

CASE: A 72 year-old white male with hypertension and hyperlipidemia presented to the walk-in resident clinic complaining of a sore throat ongoing for 2 weeks in October. The clinic had seen a plethora of common cold cases recently, so the history focused on relevant questions. The patient denied rhinorrhea, nasal congestion, sinus headache, cough, shortness of breath, fevers, chills, or sick contacts. Given the lack of associated infectious symptoms, a more comprehensive review of systems was taken to expand the differential. This revealed unilateral, left-sided throat soreness, dysphagia, and weight loss. This prompted questions that revealed a 50 pack-year smoking history and significant previous alcohol consumption. Physical exam showed cachexia and a left submandibular, hard, immobile nodule approximately 1 x 3 cm in size. His exam along with his history was concerning for malignancy, so a CT of his neck was done promptly. This showed an epiglottic mass and a biopsy showed squamous cell carcinoma. A PET scan revealed metastatic spread to lymph nodes and the lungs, and he was diagnosed with Stage IVa squamous cell carcinoma. He received a PEG to assist with nutrition and established care with hematology with plans to start cisplatin.

IMPACT/DISCUSSION: Diagnostic accuracy is central to the practice of medicine but is impaired by cognitive bias. Approximately 5% of patients in the outpatient setting will experience a diagnostic error every year. Due to time constraints, physicians rely on heuristics to make quick medical decisions, but this is prone to cognitive biases. Two examples of cognitive bias are premature closure (deciding on a diagnosis before all the information is considered) or availability bias (believing a patient has a diagnosis because another patient with similar symptoms recently had this diagnosis). Studies show the utilization of checklists is one strategy in overcome cognitive bias. Medical students learn to take a review of systems as part of a medical history, a checklist of sorts to ensure important symptoms are not missed. This patient presented with a sore throat to clinic during common cold season. Availability bias and premature closure could have easily influenced clinical reasoning. However, a thorough review of systems revealed the essential clues of weight loss, dysphagia, and a substantial smoking and alcohol history that questioned the common cold heuristic and led to a diagnosis of cancer.

CONCLUSION: The review of systems is often an overlooked component of the medical history but can serve as a checklist to reevaluate one's initial diagnostic heuristic to avoid cognitive bias in making clinical decisions.

OVERDOSE RISK DURING A ROCKY REENTRY: A TALE OF SECOND CHANCES

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LEARNING OBJECTIVE #1: Assess the overdose risk factors that are common among justice-involved patients with opioid use disorder (OUD)

LEARNING OBJECTIVE #2: Recognize critical touch points for engaging these high-risk, hard-to-reach patients in addiction care

CASE: A 33-year-old man with multiple substance use disorders (opioid-predominant) and depression was brought to the emergency department (ED) after an accidental polysubstance overdose. He has a long history of contact with the criminal justice system, and most of his prior experiences with health care occurred while in prison. He current lacks stable housing and employment. Due to outstanding warrants, he was recently arrested and detained in the local county jail for 5 days. His overdose, which was his first, occurred when he resumed intranasal heroin use upon release. Emergency medical services found him unconscious in a public space. He was successfully resuscitated in the field with intranasal naloxone.

Upon arrival to the ED, he had normal vital signs and was awake and lucid, though mildly distressed at first. There were no other notable findings on physical exam. Hepatitis A vaccination was administered, an intranasal naloxone kit was provided, and a peer navigator with the hospital's addiction outreach team met with the patient. He was accompanied to the low-barrier addiction medicine clinic on campus and initiated buprenorphine therapy that day.

IMPACT/DISCUSSION: This patient's overdose following release from jail demonstrates a missed opportunity. Individuals recently released from criminal justice institutions have an exceptionally high risk of opioid overdose due to an array of factors: lost tolerance to opioids, lack of or interruptions in medical and behavioral health care, social isolation, unstable housing and other forms of material insecurity, and psychological stress. Despite the demonstrated efficacy of medications for opioid use disorder to prevent overdoses in both general and justice-involved populations, few prisons and jails in the US provide them during incarceration or at release.

While neither the criminal justice nor the health care system offered him this care at the time of release, his survival provided a second chance. Justice-involved patients face many barriers to outpatient health care, so an ED admission for a non-fatal overdose serves as another critical touch point. This case highlights the success of targeted outreach, accompaniment, and low-barrier addiction services in engaging this high-risk and hard-to-reach patient population.

CONCLUSION: 1. Recently incarcerated patients with substance use disorder have an elevated overdose risk and face many barriers to care in the community.

2. Targeted outreach and low-barrier treatment services are effective ways to engage this population, especially at key touch points such as post-incarceration reentry and acute medical presentations.

PACEMAKER IMPLANTATION IN A PATIENT WITH CHALLENGING VASCULAR ACCESS

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LEARNING OBJECTIVE #1: To manage and treat patients with poor upper extremity vascular access who need pacemaker implantation.

CASE: A 78-year-old female patient with medical history significant for superior vena cava occlusion and heart failure with reduce ejection fraction due to nonischemic cardiomyopathy presented to our hospital with a 1-month history of multiple presyncopal episodes.

Upon arrival to the hospital, her vitals were unremarkable. Labs showed normal thyroid function. Her electrocardiogram showed normal sinus rhythm with first degree block, right bundle branch block and left anterior fascicular block. Echocardiogram showed left ventricular ejection fraction of 35% without evidence of valvular disease. Carotid duplex was negative except for moderate stenosis in the left proximal internal carotid artery. Her symptoms were attributed initially to dehydration and orthostatic hypotension, which she was treated with fluids.

While in the hospital, her telemetry showed high-grade atrioventricular block during which she was symptomatic. A decision was made to proceed with biventricular pacemaker implantation. During the procedure, multiple unsuccessful attempts were made using upper extremity vasculature to access the central circulation. Procedure was aborted to allow patient recovery from contrast load.

Subsequently, patient underwent a repeat attempt using femoral vein access with leads advanced successfully through the right iliac vein. The implanted leads were connected to the pacemaker generator that was secured to the anterior abdominal wall. The patient was discharged in good condition and continues to do well.

IMPACT/DISCUSSION: Pacemakers are medical devices that generate electrical impulses transmitted via electrodes to regulate the electrical activity of the heart. The most common indications for permanent pacemaker implantation are sinus node dysfunction and high-grade atrioventricular block.

Typically, pacemakers are placed in the left upper chest with leads advanced through the left upper extremity vasculature. However, in patients with anatomic abnormality or difficult vascular access, alternate options should be searched.

Here we are reporting a rare case of a patient with complete occlusion of the superior vena cava who underwent successful pacemaker implantation via the right iliac vein.

CONCLUSION: Iliac vein lead delivery and supra-inguinal device placement is a viable strategy for pacemaker implantation in patients who lack upper body vascular access.

PAIN IN THE LEGS: LOOK UP!

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LEARNING OBJECTIVE #1: Recognize the value of a primary care intervention on identifying and treating emergent clinical situations in uninsured patients.

LEARNING OBJECTIVE #2: Recognize the clinical features of cervical myelopathy and identify back pain as symptom of cervical myelopathy

CASE: A 59-year-old uninsured Mandarin speaking political scholar with a history of bladder cancer treated with chemotherapy and surgery in remission, cervical stenosis, HTN, HLD, T2DM presented to a student-run free clinic with two months of lower back pain radiating down his left leg and multiple falls over the last couple months secondary to his left leg "giving out". ROS positive for shoulder pain and bilateral arm numbness in ulnar distribution likely secondary to the patient's known cervical stenosis. Given his history of cancer, we obtained an MRI lumbar and thoracic spine showing moderate thoracic spinal stenosis most pronounced at T10-11, no lumbar stenosis, foraminal stenosis, or cord compression. He was treated with a course of NSAIDs and physical therapy referral. Due to lack of improvement, we obtained a cervical spine MRI that significantly changed management. The patient was urgently referred to a public hospital for surgical consultation where he had a C4-6 laminectomy and fusion with significant improvement in his leg and arm symptoms.

Initial Exam: negative straight leg test, 4+/5 left hip flexion, decreased sensation to light touch bilateral 4^{th} and 5^{th} fingers and medial forearms, toes upgoing bilaterally, normal gait

Labs: BMP: Na 135 otherwise normal, HgA1c: 7.1%, B12: normal

MRI: C5-6 herniation with significant cord compression and effacement of the spinal canal

IMPACT/DISCUSSION: Uninsured patients are far more likely than those with insurance to defer healthcare or go without it all together. The consequences can be severe, particularly when preventable conditions go unnoticed. Primary care interventions serve as a principal point of contact for patients and have been shown to reduce emergency department visits. Primary care follow up was essential to re-consider the cause of his two months of left leg symptoms not responding to conservative therapy. Additional cervical imaging led to an understanding that his leg symptoms originated Friday from expansion of his cervical spinal stenosis.

Cervical spondylotic myelopathy is an important cause of weakness in the lower extremities. Diagnosis requires correlation between history, physical exam and imaging. Some patients experience prolonged periods of stability while other patients can experience abrupt worsening often following minor neck injuries. Acute myelopathy is a neurologic emergency, requiring immediate neuroimaging and prompt neurosurgical consult. Delayed diagnosis can lead to harm.

CONCLUSION: A primary care intervention for this uninsured patient helped identify and treat a potentially fatal neurologic condition.

Cervical spondylotic myelopathy is an important cause of weakness in the lower extremity, and early identification and treatment may prevent harm.

PANHYPOPITUITARISM: ARE WE MISSING IT? A 'CENTRAL' PROBLEM IN METASTATIC MELANOMA: IMMUNOTHERAPY INDUCED HYPOPHYSITIS

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LEARNING OBJECTIVE #1: Uncommon causes for hypopituitarism include medications. One example includes Nivolumab, an immune-checkpoint-inhibitor, targeting the PD-1-protein, causing downregulation of T-cell response and increasing antitumor activity by immune-system.

LEARNING OBJECTIVE #2: Although considerable clinical benefits have been established by the use of these therapies, they are also linked with a broad spectrum of dangerous side-effects including immune-related-adverse-events due to increased activation of the immune system. These immune-related-adverse- effects can vary from mild to severe and can be seen in the form of gastrointestinal, dermatological, endocrine features, and much more.

CASE: 51-year-old Caucasian female with metastatic melanoma receiving Nivolumab (8 sessions complete) presented with abdominal pain, fever, a generalized rash, diarrhea, lethargy, hypoxia with hypotension. She was admitted initially to floor and treated as sepsis and started on IV fluid and IV antibiotic. Persistent hypotension ensued, hence, transferred to ICU in Septic shock with no improvement of her BP after 7-liter fluid boluses; at the time viral source of infection was suspected. Because of blood test finding and possible rare side effect AM cortisol was ordered and showed 1.0 prolactin, TSH/T4 were low, suggesting panhypopituitarism. The patient's BP improved with just one dose of IV steroid. It was suspected that her chemotherapy treatment is the cause for these symptoms as the patient had a recent PET scan done which was only positive for spread to abdominal lymph-nodes and brain metastasis.

IMPACT/DISCUSSION: Nivolumab was recently approved by the FDA for unresectable-melanoma. Approval of newer medications/broaden use of such therapies although has many clinical benefits, can be associated with adverse effects, in patients who are already trying to fight a life-threatening ailment. Immune- mediated-events with Nivolumab accounts for $\leq$ 12% of adverse effects. Anti-PD-1-associated-hypophysitis is a sporadic phenomenon, occurring in <1% of patients in multiple studies. The presentation in which our patient presented was atypical. It is like a mind-block for healthcare-professionals when an immunosuppressed patient presents with septic shock, to automatically look for an underlying infection. Healthcare-professionals are unfamiliar with these rare consequences of these therapies. Healthcare professionals

are unfamiliar with these rare consequences of these therapies, nivolumab induced panhypopituitarism is rare with serious endocrinological/ hemodynamic penalties. It's critical for practitioners to be cognizant of these complications throughout the already tough journey of cancer-therapy.

CONCLUSION: Advances led to the development of effective treatments using newer immune response modifying agents. Increased frequency of immune-checkpoint-inhibitor use results in IRAEs. In addition the common disturbances, clinicians should recognize life-threatening complications, like ACTH-mediated adrenal insufficiency described in this case.

PARA-KNEE-OPLASTIC: AN UNUSUAL CAUSE FOR JOINT PAIN

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LEARNING OBJECTIVE #1: Recognize the association between hypertrophic pulmonary osteoarthropathy and malignancy.

LEARNING OBJECTIVE #2: Recognize the proper treatment strategy for patients suffering from hypertrophic pulmonary osteoarthropathy.

CASE: A 52 year old male construction worker presented to the hospital with complaints of low back pain, bilateral knee and ankle pain as well as subjective lower extremity weakness and instability. His past medical history was significant for hypertension, rheumatoid arthritis and ongoing tobacco use. One week prior he had been diagnosed in the emergency room as having an acute flare of his rheumatoid arthritis and was discharged with prednisone and NSAIDs. He stated that his symptoms initially improved on this regimen, but rapidly worsened upon completion of his medication course. Examination demonstrated tenderness to palpation in the knee and ankle joint spaces bilaterally as well as midline lumbar spinal tenderness. There were no appreciable deficits in strength. Reflexes and sensation were intact. Cardiac and lung exams were normal. Initial labs revealed an elevated ESR, normocytic anemia and hyponatremia. He was admitted to the hospital and treated with oxycodone and prednisone for pain management.

During the hospitalization there was a gradual worsening of his symptoms despite treatment. Further workup revealed a normal creatine phosphokinase and negative rheumatoid factor, cyclic citrullinated peptide and ANA. X-rays revealed scattered periosteal reactivity consistent with hypertrophic osteoarthropathy. Further workup for an underlying malignancy was performed, and a chest CT exhibited a mass in the right lower lobe. Biopsy of this mass revealed squamous cell carcinoma. The patient was transitioned off of prednisone and oxycodone and treatment with NSAIDs was started. He experienced rapid improvement in his symptoms and was discharged with NSAIDs and recommendations to follow up with an oncologist regarding further treatment.

IMPACT/DISCUSSION: Hypertrophic pulmonary osteoarthropathy (HPOA) is a paraneoplastic syndrome which has a 95% association with malignancy and is seen in 0.7-17% of patients with primary lung cancer. HPOA manifests as severe disabling arthralgia, digital clubbing and periostitis. HPOA is classically misdiagnosed as an inflammatory arthritis but has an encouraging response to NSAIDs and little response to opiates. Imaging remains the mainstay of diagnosis with x-rays revealing periostitis without evidence for cortical destruction or fracture. NSAIDs are the gold-standard for symptomatic relief, but resolution has only been seen with correction of the underlying malignancy.

CONCLUSION: Hypertrophic pulmonary osteoarthropathy is frequently misdiagnosed as an inflammatory arthritis but has a high association with underlying malignancy.

NSAIDs are the gold standard for symptomatic relief in patients with HPOA but definitive treatment can only be obtained through correction of the underlying pulmonary disease.

PARANEOPLASTIC LIMBIC ENCEPHALITIS AS THE PRIMARY PRESENTATION OF OCCULT LUNG MALIGNANCY

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LEARNING OBJECTIVE #1: Recognizing paraneoplastic limbic encephalitis and its strong association with lung cancer, along with the importance of CSF and serum antibody testing early on in patients with undifferentiated encephalopathy

CASE: Paraneoplastic neurological syndromes are a sequelae of malignancy that present with symptoms of limbic or brainstem origins. The presentation of these syndromes are often vague, making it a challenging diagnosis for the clinician.

Our case describes a 72-year-old female with a history of hypothyroidism and type 2 diabetes mellitus who presented with altered mental status (AMS). The patient's family noted she had a marked cognitive decline over the last month. Prior to admission she had been working full-time and living independently. Over a one- month period the patient's mentation had worsened to the point of her requiring assistance with basic ADLs. In the ED the patient was acutely confused, however, remained hemodynamically stable. CT head was negative for acute intracranial pathology, and CXR revealed multiple lung nodules with no focal consolidation. The patient was admitted for rapidly declining mentation of unknown etiology. In the patient's initial hospital course, an MRI brain showed T2/FLAIR hyperintensity in portions of the medial aspects of both temporal lobes including both hippocampi in a symmetric distribution representative of limbic encephalitis. The patient's mentation progressively worsened and she eventually required transfer to the ICU. There she was noted to be obtunded, a VBG showed a severe acidemia and she was intubated for acute hypercapnic respiratory failure. A lumbar puncture was unremarkable. A more extensive panel of infectious/autoimmune labs were sent and she was started on steroids. Eventually, lab testing came back overtly positive for anti-ANNA (HU-Ab) and anti-NMDA receptor-Ab with follow-up lung biopsy positive for small-cell lung cancer (SCLC) leading to a diagnosis of paraneoplastic limbic encephalitis (PLE).

IMPACT/DISCUSSION: Our case describes acute encephalopathy secondary to PLE as the primary presentation of SCLC. Paraneoplastic limbic encephalitis is a rarer cause of AMS that must be considered, especially if more common etiologies have been ruled out. Such patients should have paraneoplastic CSF and serum antibodies included as part of their workup. This is crucial even in the absence of known underlying malignancy, as many patients presenting with PLE have no known history of malignancy. Fifty percent of PLE cases are secondary to SCLC, 20% due to testicular malignancy, and 8% due to breast cancer.

CONCLUSION: The diagnosis of PLE and underlying malignancy allows for a more guided treatment plan. Delay in diagnosis can result in further neuronal damage and likely the use of inappropriate treatment modalities. Thus, positive antibody titers should guide the clinician towards a targeted evaluation of malignancy. Treatment options include treating the underlying malignancy, immune therapy, high-dose steroids, and plasmapheresis.

PAROXYSMAL COLD HEMOGLOBINURIA (PCH): AN ATYPICAL DIAGNOSIS OF AUTOIMMUNE HEMOLYTIC ANEMIA (AIHA)

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LEARNING OBJECTIVE #1: Recognize PCH as a distinct autoimmune hemolytic anemia

LEARNING OBJECTIVE #2: Distinguish the defining clinical features that should prompt consideration of PCH

CASE: A 54-year-old man with a history of gastric bypass surgery was admitted to the hospital with jaundice and acute onset of dark-colored urine. A few days prior to presentation, he experienced fevers, chills and myalgias. Initial laboratory testing revealed the following: hemoglobin 9.9 g/dL, reticulocyte count 0.3%, platelets 129,000/ mm,^{3} WBC count 12,420/ mm^3, ferritin 41,291 ng/mL, total bilirubin 7.7 mg/dL, AST 153 U/L, ALT 23 U/L. Within a few hours of admission his hemoglobin decreased to 7.0 g/dL. Subsequent work-up revealed an elevated LDH and a low haptoglobin, consistent with hemolysis. A peripheral smear showed spherocytes, neutrophil rosetting, and neutrophil erythrophagocytosis; there were no schistocytes. The direct antiglobulin test (DAT) was positive for complement and negative for IgG. A cold agglutinin screen was negative. This constellation of findings was suggestive of a rare immune-mediated phenomenon known as Paroxysmal Cold Hemoglobinuria (PCH). PCH is confirmed by a diagnostic test known as the Donath- Landsteiner Test, which tests for the presence of a biphasic hemolysin, that returned positive.

An extensive infectious work-up to evaluate for bacterial, viral and fungal infections was unremarkable, including syphilis and tick-borne illness. Flow cytometry did not detect a monoclonal B-cell population or PNH clone. The patient remained on steroids. He improved with supportive care and avoidance of cold temperatures, supported objectively by a decreasing LDH and increase in reticulocytosis.

IMPACT/DISCUSSION: Autoimmune hemolytic anemia (AIHA) is generally subdivided into 4 major subtypes: warm, cold, mixed, and the exceptional PCH (<1%). While PCH is extremely rare in adults, it should be suspected when the DAT is positive for complement but negative for IgG and the cold agglutinin screen is negative. Neutrophil erythrophagocytosis on peripheral smear, while rarely seen, has a strong association with PCH; the diagnosis is confirmed using the Donath-Landsteiner antibody test. Syphilis was once the most common underlying cause, but since its decline, most cases of PCH are idiopathic, similar to this patient. Other underlying causes to consider include autoimmune disorders and hematologic malignancies, which are more likely to cause chronic or recurring PCH. PCH is typically a self-limiting diagnosis that is treated with supportive care and cold avoidance to prevent antibody binding and the activation of the complement cascade. Steroids are often started empirically, although multiple studies have shown they do not alter the course of PCH.

CONCLUSION: Diagnosis of PCH requires a high index of suspicion based on characteristic laboratory findings

DAT pattern, cold agglutinin screen, and peripheral smear are essential for differentiating between the 4 major AIHA subtypes

PATIENT WITH ALTERED MENTAL STATUS TWO WEEKS AFTER THE DIAGNOSIS OF HIV

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LEARNING OBJECTIVE #1: Recognize the clinical features of acute HIV meningoencephalitis

LEARNING OBJECTIVE #2: Treatment in the context of potential risk for immune reconstitution inflammatory syndrome

CASE: A 21-year-old African American male with recently diagnosed HIV presented with three days of altered mental status and bizarre behaviour. He was diagnosed with HIV two weeks prior but had been lost to follow up. He was febrile at 102 F, tachycardic at 135 bpm and hypotensive at 90/60 mmHg. Neck examination showed no nuchal rigidity. He was alert and oriented but was lethargic with decreased concentration and short-term memory. WBC count was 1 k/uL. HIV-1 viral RNA load was 2,100,000 copies/mL. CSF analysis revealed WBC 4 cells/uL, glucose 40 mg/dL and total protein >200 mg/dL. Serum studies detected EBV, CMV and Coxsackie virus. However, CSF analysis of common opportunistic infections did not reveal any positive findings. CT head revealed no abnormalities.

HAART was not immediately started because of the risk of immune reconstitution inflammatory syndrome (IRIS). The patient was intubated due to acute respiratory failure. MRI revealed leptomeningeal enhancement and edema involving bilateral parietal and occipital cortex and cerebellum; this finding along with clinical symptoms and laboratory results supported the diagnosis of acute HIV meningoencephalitis. CD4 count was 120 cells/mm^3, indicating that IRIS was less likely to occur. HAART was initiated and he was discharged eight days later with a full recovery.

IMPACT/DISCUSSION: Meningoencephalitis due to primary HIV-1 infection is an unusual but dangerous manifestation. Existing literature suggests that the diagnosis is often not suspected initially due to its rarity and because clinical symptoms overlap with other diseases caused by opportunistic infections of the CNS. Symptoms of memory and psychomotor impairment, laboratory results and specific MRI findings can help narrow down the diagnosis.

Starting HAART can put patients with primary HIV infection at risk of IRIS. However, existing literature also suggests that HAART is a beneficial treatment for acute HIV meningoencephalitis. Thus, it is important to determine the likelihood of developing IRIS prior to delivering treatment. Patients who develop IRIS generally have a pre-treatment CD4 count of <100 cells/mm^3.

A standard treatment of acute HIV meningoencephalitis has not been established yet, and some patients have been documented to have full recovery even without HAART. However, the severity of our patient's disease and the swiftness of his recovery after initiation of HAART draw attention to the benefits of this treatment.

This case also highlights the importance of ensuring prompt follow up after initial diagnosis of HIV, especially within minority populations who have poorer continuity of health care.

CONCLUSION: Clinical presentation, CSF and MRI findings can help pinpoint the diagnosis of acute HIV meningoencephalitis

Carefully assess risk of IRIS prior to initiation of HAART therapy

PELLAGRA BENEATH PRE-EXISTING SKIN DISORDERS

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LEARNING OBJECTIVE #1: Recognize the typical and atypical presentations of niacin deficiency

LEARNING OBJECTIVE #2: Recognize niacin deficiency at-risk populations

CASE: A 70 year old female with a past medical history of eczema presented for worsening confusion, frequent falls, diarrhea and poor oral

intake. Her symptoms started two years prior when the patient started having intermittent paranoid activity. On exam, she was noted to have extensive desquamating hypopigmented rash which was attributed to eczema. She was found to be hypernatremic with mild neutropenia and thrombocytopenia. She required intensive care unit stay due to hypoglycemia and hypotension. Extensive infectious disease, neurological, hematologic and endocrine workup were unremarkable.

Eventually, she was noted to have elevated chromogranin sl level 146 μg/L and low serotonin 13 ng/mL. Such results were a possible indication of low tryptophan secondary to niacin deficiency. Following almost five weeks of hospitalization, her workup revealed unmeasurable niacin levels. Pellagra was diagnosed.

Patient was started on a high dose niacin and exhibited rapid recovery of neurologic function as well as clearing of rash. Her pellagra was thought to be secondary to poor oral intake. One year later, despite treatment and rapid improvement, the patient suffered from amyotropic lateral sclerosis.

IMPACT/DISCUSSION: Our case report contributes to a growing body of literature that describes the occurrence of pellagra in the modern era in an effort to identify the common etiologies of niacin deficiency. It also reports a possible atypical presentation of pellagra via hypoglycemia and manifestations of adrenal insufficiency.

Niacin deficiency, also known as pellagra, remains a presence in developed countries and should be considered by clinicians. Niacin (Vitamin B3) is an essential nutrient for the synthesis and metabolism of carbohydrates, fatty acids, and proteins. Niacin deficiency, known as pellagra, is well known as the "four Ds" - dementia, dermatitis, diarrhea and death". In nutrition rich countries, primary niacin deficiency virtually disappeared since the nineteenth century. If present, it is often secondary to underlying pathologies including alcohol dependence, malabsorption disease or congenital disease such as Hartnup disease. It is important for clinicians to not miss this condition, even in nutrition rich countries, as it is not only treatable, but also could lead to fatal outcomes if left unrecognized.

CONCLUSION: Pellagra remains a presence in developed countries and should be considered by clinicians. Recognizing the typical and atypical presentations of niacin deficiency amongst at-risk popoluations is of paramount importance as it is not only treatable, but also could lead to fatal outcomes if left unrecognized.

PERICARDIAL ANGIOSARCOMA: RARE CAUSE OF PERICARDIAL EFFUSION

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LEARNING OBJECTIVE #1: Diagnose pericardial angiosarcoma as a rare cause of pericardial effusion and cardiorenal syndrome

LEARNING OBJECTIVE #2: Recognize acute cardiomyopathy as an adverse effect of doxorubicin

CASE: 44-year-old man with hypertension presented two months following a motorcycle accident with sudden onset exertional dyspnea, later at rest with central chest pain for 3 days. A large pericardial effusion seen on echocardiogram, on pericardiocentesis bloody fluid with negative cytology, bacterial, viral and AFB was found. The effusion was felt to be an inflammatory response to trauma. Four months later, he noted worsening dyspnea, CT chest showed mediastinal and hilar lymphadenopathy and mass like lesions surrounding the heart which had not previously been present. Cardiac MRI revealed intrapericardial mass within the right atrioventricular groove anterior to the right ventricular/right atrial free wall measuring up to 5.5cm. Biopsy revealed high grade angiosarcoma, unamenable to resection. Acute Kidney injury with peak creatinine 3.4 mg/dl developed with volume overload, hyponatremia (128), hyperphosphatemia (8.4) and hyperuricemia (14.7). Urine studies revealed very low Fe Na of 0.1%, Fe Urea 5.7% and hyaline casts. Right heart catheterization revealed high filling pressures and low cardiac output with restrictive/constrictive physiology. Renal function improved to baseline with diuresis, rasburicase and doxorubicin. ECHO was repeated prior to discharge which showed reduced ejection fraction (EF) of 30-35% (baseline 55%) and minimal pericardial effusion. Based on interdisciplinary discussion and review of ECHO images, thought to be doxorubicin-induced.

IMPACT/DISCUSSION: Angiosarcoma originating from the heart, although exceptionally rare, is the most common cardiac primary malignant tumor. Primary pericardial angiosarcoma is extremely rare, and associated with a poor prognosis, mean survival time of 6-11 months.

This relatively young healthy male was found to have bloody pericardial effusion in the first presentation. CT PE done, however history of trauma and its temporal relation to effusion was misleading. Malignancy is the commonest cause of bloody pericardial effusion, should always be ruled out.

Pericardial constriction is caused by both the tumor itself and the hemorrhagic pericardial fluid leading to renal venous congestion and/or decreased renal perfusion causing cardiorenal syndrome.

Acute doxorubicin induced cardiomyopathy, after a single dose within 2 weeks is uncommon but can occur unlike the more common early-onset chronic cardiomyopathy, developing within 1 year after cumulative doses. He was given low dose carvedilol and planned to start standard heart failure as outpatient as tolerated.

CONCLUSION: Always rule out malignancy in cases hemorrhagic pericardial effusion. Rare case like pericardial angiosarcoma can be the cause.

Pericardial angiosarcoma can present as cardiorenal syndrome and can induce early cardiomyopathy.

PERICARDIAL TAMPONADE (PT) REVEALS DIAGNOSIS OF METASTATIC LUNG ADENOCARCINOMA

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LEARNING OBJECTIVE #1: Understand the relationship between PT and metastatic disease of the pericardium

LEARNING OBJECTIVE #2: Understand the management of PT and work-up to define underlying etiology

CASE: A 39 yo M with PMHx significant for HTN, gout and 3-pack-year smoking history presented with dyspnea and chest pain over a 9-month period. The chest pain was localized over the right upper chest wall and was pleuritic in nature. He denied fever/chills, cough, edema or orthopnea. No recent travel or sick contacts. He had recently quit smoking 2 months prior to presentation. No significant family history. Vital signs were unremarkable aside from tachycardia, 115 bpm. On exam, patient was pale appearing, in acute distress, with accessory muscles use, bilateral rales and distant breath sounds. CBC, RFP, proBNP, troponin were unremarkable. CRP was elevated. EKG with non-specific ST changes. CXR demonstrated interstitial infiltrates concerning for atypical infection/edema. Patient was started on ceftriaxone and azithromycin. Further work-up including CT chest indicated bilateral pleural effusions, hilar adenopathy, and a large pericardial effusion which was confirmed with a transthoracic ECHO with evidence of RV diastolic collapse consistent with PT. Patient underwent emergent pericardiocentesis, with drainage of 1050 ml bloody fluid aspirated. A pericardial drain was placed which drained another 750 mL over the proceeding 2 days. Follow up echo after drain removal showed complete resolution of pericardial effusion. After diuresis of net negative 10 L, repeat chest imaging revealed a right upper

lung opacity concerning for mass. Pericardial fluid cytology resulted back as metastatic adenocarcinoma, favoring lung primary. Further staging of cancer revealed 5-6 brain metastatic lesions. Gamma knife radiation and systemic therapy was planned to be initiated as outpatient pending molecular pathology results.

IMPACT/DISCUSSION: Pericardial tamponade occurs due to a build-up of fluid around the pericardium leading to compression of the heart. This can occur from any cause of pericarditis; namely malignancy, viruses, uremia and chest trauma. Metastatic involvement of the heart and pericardium is far more common than primary cardiac tumors and is detected in 1 to 20% of autopsy studies of cancer patients.

CONCLUSION: Pericardial disease may be the first manifestation of malignancy and is an important consideration when assessing patients with pericardial effusions. Prompt recognition, management and determining the underlying cause of cardiac tamponade is of utmost importance in managing these patients.

PERILOUS PETS- A STRANGE CASE OF PERITONITIS

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LEARNING OBJECTIVE #1: Recognize *Pasteurella multocida* as a potential cause of peritonitis.

LEARNING OBJECTIVE #2: Recognize the importance of a sterile environment for peritoneal dialysis patients.

CASE: An 18-year-old female with end stage renal failure due to lupus nephritis on peritoneal dialysis presented to the ED with shortness of breath and severe abdominal pain. The patient was positioned on her side, in obvious distress, with a temperature of 102.6F. On examination, she exhibited extreme tenderness to palpitation of the abdomen with involuntary guarding. She reported a similar past instance in which she was diagnosed with pseudomonal peritonitis. Her abdominal fluid sample was cloudy with >10,000 nucleated cells. She was diagnosed with peritonitis and administered empiric cefepime, vancomycin, metronidazole, and fluconazole. The patient's cultures produced *Pasteurella multocida*, a zoonotic pathogen found in the oral cavity of animals such as domesticated cats. Upon further questioning, she revealed the presence of two felines in the residence, denying recent bites or interference with the dialysis equipment. The patient was treated with intraperitoneal ceftazidime for three weeks in an attempt to save her PD catheter and avoid restarting hemodialysis. Since the patient clinically improved on treatment and had negative repeat cultures, she was discharged home with intraperitoneal antibiotics.

IMPACT/DISCUSSION: Peritoneal dialysis is an optimal solution for patients with end stage renal disease (ESRD) who may require a more flexible alternative with their treatment, allowing the convenience of in- home therapy and eliminating required visits to a dialysis center. However, the primary disadvantage is that a sterile environment is required to avoid an increased risk of infection. This was a rare case of PD-related peritonitis caused by *P. multocida*, likely related to the presence of cats in the patient's residence. It emphasizes the importance of controlling infectious sources for those on PD, especially when there are animals residing in the home.

CONCLUSION: -*P. multocida* can be a potential contaminant of peritoneal fluid, especially in those with animals in the home.

- Physicians should emphasize the importance of maintaining a sterile environment for patients undergoing peritoneal dialysis.

PERIORBITAL HEMORRHAGE AS A PRESENTATION OF AL AMYLOIDOSIS

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LEARNING OBJECTIVE #1: Recognize periorbital hemorrhage can be a presenting symptom of amyloidosis

LEARNING OBJECTIVE #2: Recognize EKG and lab findings of amyloid cardiomyopathy

CASE: Our patient is a 61 year old male with no past medical history who presented with intermittent bruising around his eyes. The bruising started with his left eye about six months before presentation and self- resolved within four days; then three days before presentation, he noticed right eye bruising. Neither were associated with trauma or vision changes. He denied fevers, chills, chest pain, shortness of breath, and lower extremity swelling, however he had lost 20 pounds within the last year. He denied drug use and did not take any medications.

Physical exam was significant for ecchymoses and subconjunctival hemorrhage of his right eye.

Initial labs were notable for normal CBC, creatinine, ALT, AST, elevated bilirubin and INR, low total protein and albumin, elevated BNP and troponin.

EKG showed low voltage throughout. Echocardiogram showed severe left ventricular (LV) hypertrophy CT abdomen and pelvis showed multiple lytic bone lesions.

Further lab testing showed elevated beta 2 microglobulin, low kappa lambda ratio, and a monoclonal IgG lambda peak measuring 0.59 g/dl.

Finally, a fat pad biopsy was performed which confirmed the diagnosis of amyloidosis, most likely AL given the monoclonal spike.

IMPACT/DISCUSSION: Amyloidosis is the deposition of proteins into extracellular tissue leading to multiorgan dysfunction including renal, hepatic, cardiac, and bony involvement. However, presentation with periorbital hemorrhage is uncommon though it has been cited as pathognomonic for AL amyloidosis. Therefore, it is reasonable to consider amyloidosis in patients presenting with periorbital hemorrhage along with multiorgan involvement.

One cause of periorbital hemorrhage is infiltration of the capillaries leading to capillary fragility. Upon literature review, another cause could be coagulation abnormalities such as acquired factor X deficiency, present in 15 to 41% of patients with AL amyloidosis.

Recognizing signs of infiltrative cardiomyopathy secondary to amyloidosis can also be an important diagnostic clue. Infiltration of the heart leads to LV hypertrophy causing myocyte injury and leading to troponin elevation. Normally, in patients with LV hypertrophy from hypertension, elevated EKG voltages would be expected however in infiltrative disease such as amyloidosis, a restrictive physiology is seen due to protein deposition leading to low voltage EKG instead. Interestingly, low voltage EKG often precedes LV hypertrophy per literature review and serves as an early marker of heart disease.

CONCLUSION: Consider the diagnosis of amyloidosis in patients with unexplained periorbital hemorrhage along with signs of multi-organ dysfunction

Capillary fragility and acquired factor X deficiency can be reasons for periorbital hemorrhage in amyloidosis Elevated troponin, low voltage EKG, LV hypertrophy can be markers of amyloid cardiomyopathy secondary to restrictive physiology

PERMANENT PACEMAKER PLACEMENT IN PATIENTS WITH CEREBELLAR STROKE- MEDIATED AUTONOMIC DYSREGULATION

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LEARNING OBJECTIVE #1: Recognize persistent autonomic dysregulation associated with lateral medullary syndrome.

LEARNING OBJECTIVE #2: Manage dysrhythmias associated with lateral medullary syndrome with placement of a permanent pacemaker.

CASE: A 58 year-old man with no significant past medical history presented with acute onset of weakness, nausea, vomiting, and diaphoresis after urination. On examination, he was hemodynamically stable but profoundly bradycardic, somnolent and had difficulty opening his eyes due to dizziness. He was found to have an ectopic atrial bradycardic rhythm at 35 beats per minute (BPM) on electrocardiogram, which converted to a junctional bradycardic rhythm at 38 BPM. He was given atropine 0.5mg and repeat ECG showed a similar ectopic atrial rhythm at 65 BPM with moderate improvement of symptoms. A transvenous pacer was then placed. However, he continued to experience mild somnolence and dizziness. Non-contrast computed tomography of the brain showed a large infarct of the territory supplied by the left posterior inferior cerebellar artery. Given the severity of symptoms prior to transvenous pacing and ongoing sinus dysrhythmia when challenged off of transvenous pacing, the decision was made to place a permanent pacemaker (PPM). After dual-chamber PPM placement, the patient was atrial sensed-ventricular paced and had self-terminating episodes of paroxysmal atrial fibrillation for the remainder of his hospital stay. His symptoms fully resolved and he was discharged home.

IMPACT/DISCUSSION: Ischemic strokes affecting the territory supplied by the posterior inferior cerebellar artery typically cause the clinical triad of contralateral sensory deficit, ipsilateral ataxia, and ipsilateral Horner's syndrome. This is known as lateral medullary syndrome (LMS). Because the baroreceptor regulatory center is located in the lateral medulla oblongata, LMS may present with signs and symptoms of autonomic dysregulation. This has been described previously as a cause of life-threatening arrhythmia, heart block, and symptomatic bradycardia. Autonomic dysregulation resulting in arrythmias usually recovers as the edema and mass effect of the ischemic region improves over time. However, patients with ongoing symptomatic dysrhythmias may require placement of a permanent pacemaker (PPM). It is therefore essential to recognize that persistent arrythmias after medullary infarct may represent autonomic dysfunction which necessitates placement of a PPM.

CONCLUSION: Medullary infarct may manifest with signs of dysautonomia, including arrythmias. Autonomic dysfunction resulting in dysrhythmias after medullary infarct may require placement of a PPM.

PH AND ETOH: METFORMIN-ASSOCIATED LACTIC ACIDOSIS (MALA) IN ALCOHOL- ASSOCIATED CIRRHOSIS

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LEARNING OBJECTIVE #1: Learning Objective #1: Construct a differential for severe lactic acidosis in a patient with abdominal pain.

LEARNING OBJECTIVE #2: Learning Objective #2: Identify patient risk factors for MALA.

CASE: A 62-year-old man with type 2 diabetes, alcohol-associated cirrhosis (MELD of 29), and chronic pancreatitis, presented to the emergency department with abdominal pain. His week-duration of epigastric pain radiated to the back and was associated with nausea and vomiting. He denied diarrhea, fevers, or ingestions. Medications included metformin. He consumed a pint of vodka daily.

He was hemodynamically stable and normoglycemic, with non-peritonitic epigastric abdominal tenderness and no ascites. Labs showed a lactic acidosis with pH of 6.82, anion gap of 45, and lactate of 25. He had an elevated creatinine, no leukocytosis, an alcohol-pattern transaminitis, and mild lipase elevation. He also had trace urine ketones and a negative toxic alcohol panel. Metformin level was pending.

On ICU admission, the differential diagnosis included lactic acidosis from bowel ischemia versus metformin- associated lactic acidosis (MALA). He subsequently required norepinephrine to maintain his blood pressure and was too unstable to CT scan. His acidosis was managed with fourteen hours of hemodialysis resulting in pH normalization, lactate decrease to 6.1, and no rebound acidosis on dialysis cessation. Abdominal CT found diffuse proctocolitis without pneumatosis or perforation, and pancreatic tail inflammation. His metformin level eventually resulted as 0.11 mcg/mL, slightly above the detection threshold. In the absence of other causes for his severe lactic acidosis and in communication with toxicology, his course was felt to be most consistent with MALA, precipitated by acute illness of colitis, acute on chronic pancreatitis, and alcohol use on his underlying cirrhosis.

IMPACT/DISCUSSION: Lactic acidosis has two categories: Type A from tissue hypoperfusion in shock and ischemia, and Type B, originating from metabolic derangements, commonly seen in diabetes mellitus with ketones and metformin, alcohol use, malignancy, and HIV infections.

Metformin increases lactate production by intestinal capillaries and decreases hepatic metabolism of lactate by inhibiting gluconeogenesis. MALA is rare, 4.3 cases per 100,000, but can have mortality rates up to 45%. Comorbid conditions are most predictive of outcomes, rather than lactate and metformin levels. Patients at higher risk of developing MALA have impaired renal function, liver disease, alcohol use, unstable heart failure, and critical illness. Severe cases are managed with hemodialysis and careful monitoring on dialysis discontinuation for rebound acidosis, given metformin's large volume of distribution.

CONCLUSION: A patient with a severe lactic acidosis must be evaluated for Type A etiologies from tissue hypoperfusion and Type B metabolic derangements. Patients at higher risk for MALA have underlying hepatic or renal disease, alcohol use, or acute illness.

PITUITARY APOPLEXY: SEEING THE BLEED

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LEARNING OBJECTIVE #1: Recognize signs and symptoms of pituitary apoplexy.

LEARNING OBJECTIVE #2: Assess patients with pituitary apoplexy for hypopituitarism.

CASE: A 47 year old man with a PMH of HTN, Prediabetes, and OSA presented with new onset headache and blurred vision affecting his peripheral fields. Headache was dull, throbbing, worse with cough/valsalva and transiently improved with acetaminophen. He reported no head trauma, weakness, numbness, slurred speech, dizziness, or jaw claudication. Medications: Amlodipine, Ramipril, HCTZ; No anticoagulants. Exam: BP 119/78, Pulse 93, Resp 16, Temp 98.1, PERRL, intact

CN II-XII, 5/5 motor function and intact sensation bilaterally. Physical Exam and labs (CBC, CMP, FLP, and TSH) were otherwise unremarkable. MRI was recommended but he presented to the ED 3 days later with rapidly progressive peripheral vision loss.

Imaging demonstrated a sellar mass c/w pituitary macroadenoma with c/f apoplexy. He was admitted to ICU and underwent transsphenoidal pituitary tumor resection. Headache and vision symptoms improved significantly after surgery, but he experienced significant polyuria with labs c/w Diabetes Insipidus (DI). Pituitary hormonal axes were evaluated and monitored closely, ultimately requiring hydrocortisone and desmopressin.

IMPACT/DISCUSSION: Pituitary apoplexy is a rare complication of pituitary adenoma. 0.6-10% of pituitary tumors are complicated by apoplexy; mortality is ~1.6%, however, long term deficits can occur if diagnosis and treatment are delayed. Approximately 80% of pituitary apoplexy patients experience some degree of hypopituitarism. Common deficiencies include ACTH (70%), thyrotropin (50%), gonadotrophin (75%), and ADH. ADH deficiency may cause transient DI in 10-20% of patients and permanent DI in 2-7% of patients. Symptoms (headache, vision changes, nausea, hypopituitarism) of pituitary adenoma progress faster in cases complicated by apoplexy, so early recognition to ensure prompt diagnosis with neuroimaging and surgical treatment is essential. Hormone changes may be seen before and after surgical correction. Thus both acute and long-term assessment of hormonal axes (prolactin, IGF-1, ACTH, urinary cortisol, LH/FSH, TSH) is required. 4-6 weeks after discharge patients should be evaluated for residual adenoma (using MRI or serum concentration of an adenoma product), visual acuity/fields, hormonal function, and 24 hour urine if there is significant nocturia. Long-term monitoring should include similar testing every 6-12 months initially to detect growth of residual adenoma tissue and the adequacy of hormonal replacement.

CONCLUSION: Pituitary apoplexy is a rare but potentially life threatening complication of pituitary adenoma. It must be considered and evaluated with neuroimaging in patients experiencing sudden-onset symptoms suggestive of pituitary mass.

Prompt diagnosis and treatment in addition to life-long assessment of pituitary hormonal axes is essential in preventing short-term and long-term complications.

PLASMA DONATION INDUCED SPLENIC INFARCT

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LEARNING OBJECTIVE #1: Plasmapheresis donation is believed to be a relatively safe procedure that involves an extracorporeal technique involving removing whole blood, separating the plasma from other cellular components and returning a portion of blood components back into circulation. It has a low complication rate and most of the side effects are well-tolerated and reversible such as hypotension, vasovagal episodes, or hematoma. Less common are the anecdotal reports of myocardial infarction, stroke, and pulmonary emboli which are thought to be caused by an induced hypercoagulable state. We present a novel case of splenic infarction following plasmapheresis donation in an otherwise healthy woman.

CASE: A 41-year-old female with a history of bi-weekly plasma donations for the past 2 months presented to our hospital with left upper quadrant abdominal. Her pain began 1 week prior to presentation, an hour after her last plasma donation, and continued to progressively worsen. She denied a history of smoking or IV drug use and had no known history of arrhythmias, cancer, or endocarditis. On presentation, she was hemodynamically stable and afebrile. A CT abdomen with contrast showed a 3.4x2.9cm segmental hypodensity in the spleen with a mild adjacent stranding consistent with a splenic infarct.

Due to the unclear etiology of the splenic infarct, anticoagulation was not initiated. Hypercoagulable investigations were all within normal limits. An echocardiogram was performed to identify a possible cardioembolic source but showed no vegetations, thrombus or mass and there was no patent foramen ovale. During her 4 day hospital stay, she was placed on cardiac telemetry which did not identify any arrhythmias. After her work-up was completed, her pain was more controlled and she was discharged home.

IMPACT/DISCUSSION: This case is a unique example of splenic infarct presenting in a patient without predisposing risk factors, solely precipitated by apheresis. Donating plasma is thought to be somewhat of a benign, altruistic, act with minimal adverse events; yet, it has been seen to be the instigator for arterial thrombotic events. Multiple mechanisms of plasma donation can possibly explain arterial thrombosis in this circumstance. It has been shown that the platelets-derived growth concentration increases at the end of an apheresis for about an hour. Apheresis may generate platelet activation with an increase in the surface expression of glycoproteins. These pro-coagulant mechanisms that are activated after apheresis have reportedly led to a stroke, myocardial infarct and in this rare case splenic infarct. Interestingly, these donors were without phenotypic expression of hypercoagulable genes; yet, endured detrimental consequences. Our case report highlights plasma donation as a potential etiology for organ infarct for which further studies may be required.

CONCLUSION: Apheresis was the only indefinable precipitating factor leading to thrombosis in an otherwise healthy woman with a negative hypercoagulable work-up.

PLATYPNEA-ORTHODEOXIA FAILING MECHANICAL VENTILATION

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LEARNING OBJECTIVE #1: Recognizing patent foramen ovale (PFO) as a cause of worsening hypoxia post intubation

CASE: 40 year old male with chronic type II respiratory failure, OSA, and OHS presented with worsening dyspnea, urinary retention and weight gain. BMI was 60, O2 saturation was 90% on 5 L venturi mask, BP 152/91, Hr 80 /min. He had platypnea, prominent S2, no JVD and 3+ pedal edema. Serum creatinine was 2.2 mg/dL, EKG revealed left atrial enlargement, ABG showed respiratory acidosis, but CXR was normal. Due to persistent hypoxemia on Bipap, he was intubated. Despite maximum ventilator settings, nitric oxide, diuretics and dialysis, hypoxia continued. Echocardiogram with bubble study showed pulmonary HTN with patent foramen ovale (PFO) having right to left shunt.

IMPACT/DISCUSSION: PFO is prevalent in 27% of the population and is associated with anomalies like atrial septal aneurysm and can lead to serious complications like cryptogenic stroke and platypnea- orthodeoxia syndrome.

Our patient had acute on chronic type II respiratory failure secondary to volume overload. Despite being intubated, paradoxically hypoxemia worsened. Echocardiogram showed PFO with right to left shunt suggestive of Eisenmenger physiology. It is likely that PEEP exaggerated the shunting of PFO thereby creating resistance to the ventilator-provided oxygenation.

Among the paradoxes of PFO, e.g. paradoxical emboli and the paradox of platypnea-orthodeoxia, we should be vigilant about the paradoxical hypoxemia that may happen post intubation. Patients on mechanical ventilation may require high PEEP and the presence of PFO in these cases may complicate the ventilator management. There are no guidelines to address such a complex situation. A multidisciplinary approach is needed in such complex scenarios.

CONCLUSION: Intubation with PFO can lead to severe hypoxemia, especially when other causes of hypoxemia are also present. PFO causing worsening hypoxemia post intubation is a known but frequently missed phenomenon. Hence, in the setting of platypnea-orthodeoxia syndrome, as in our patient, evaluation for PFO should be done. We want to highlight the importance of PFO in causing hypoxemia post intubation, especially for hospitalists who manage their own patients in ICU. We recommend a multidisciplinary team approach including cardiology leading the potential PFO closure decision if severe hypoxemia develops on the ventilator. Further guidelines are needed to develop criteria for prophylactic closure of PFO in elective intubations.

PLUMMER-VINSON SYNDROME: A RARE PRESENTATION OF SEVERE IRON DEFICIENCY ANEMIA IN THE 21ST CENTURY

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LEARNING OBJECTIVE #1: Recognize PVS as a sequela of severe chronic iron deficiency anemia

LEARNING OBJECTIVE #2: Manage a patient with PVS using a multidisciplinary approach

CASE: A 46yoF presented with subacute leg edema and exertional dyspnea. She had no medical history aside from two remote uncomplicated vaginal deliveries. She immigrated to the United States from Mexico 20 years ago and had limited contact with healthcare. On review of systems, she had mild esophageal reflux, abdominal swelling and heavy painful menses. Vitals were within normal limits with an exam notable for conjunctival pallor, systolic ejection murmur, jugular venous distension, bibasilar pulmonary crackles, palpable non-tender lower abdominal mass, and 1+ pitting edema of the lower extremities. Labs were notable for a hemoglobin (Hg) of 3.3 with MCV 54.2, iron 15, TIBC 416 and reticulocyte count 1.82. Transthoracic echocardiogram showed elevated right and left atrial pressures, grade II diastolic dysfunction and normal ejection fraction. Transvaginal Ultrasound (TVUS) showed multiple large fibroids. Esophagogastroduodenoscopy (EGD) revealed an anterior esophageal web below the upper esophageal sphincter, redemonstrated on esophagram, confirming the diagnosis of PVS. She received 3 units of RBCs with improvement of Hg to 8.3 with a rapid approach to euvolemia following intravenous diuresis. She was discharged with weekly intravenous iron infusions and follow-up with Primary Care, Hematology, Gastroenterology and Gynecology as well as the Legal Immigration Health Clinic to assist with obtaining insurance.

IMPACT/DISCUSSION: For this patient, lack of access to healthcare and untreated menorrhagia led to a severe iron deficiency anemia (IDA) causing transient high-output heart failure and PVS. PVS is a rare condition characterized by a triad of dysphagia, IDA and post-cricoid esophageal webs.

First described in 1912, the prevalence of PVS has declined worldwide paralleling IDA. It is now more common in developing nations and affects women more than men at a ratio of 8.5 to 1. Work-up includes EGD and esophagram to identify webs with a colonoscopy and TVUS to identify sources of blood loss. Iron supplementation improves dysphagia, though in severe cases, patients may require endoscopic dilation.

While the prognosis of PVS is good, there is an association with esophageal squamous cell cancer and gastric adenocarcinoma, so annual surveillance is recommended. The primary care physician (PCP) is essential in coordinating a multidisciplinary approach in symptom management, identification and prevention of blood loss, malignancy screening, and involvement of social workers and legal services to ensure continued access to care.

CONCLUSION: While the causal relationship has not been proven, PVS is a rare sequela of severe chronic IDA and carries the potential for significant morbidity and risk of malignancy. The PCP has an important role in coordinating the multidisciplinary care of a patient with PVS including continued access to healthcare.

POOR CONTINUITY OF CARE AS A MAJOR CONTRIBUTOR TO SIX-YEAR DELAY IN DIAGNOSIS OF CREST SYNDROME

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LEARNING OBJECTIVE #1: Recognize CREST Syndrome and its cutaneous manifestations

LEARNING OBJECTIVE #2: Understand the role of continuity of care in diagnostic accuracy

CASE: A 49 y.o. Hispanic female with recurrent esophageal strictures, Raynaud's, diffuse skin thickening, and sclerodactyly presented to multiple hospitals from 2013 to 2019 for recurrent bouts of abdominal pain, ileus, anemia, and weight loss. Over six years, she received three esophageal dilations for strictures without an established diagnosis. She presented to our general medicine clinic with worsening rash, dysphagia and weight loss. Medical history significant for Raynaud's, GERD, anxiety, anemia, kidney stones, appendectomy, cholecystectomy, hysterectomy and BTL, she is a current smoker with 10 pack year history. Family history was significant for DM2, HTN, CVA, and pelvic cancer and autoimmune disease in a sister.

On exam, she had a hyperpigmented rash with circumscribed papules on lower back and left leg. Medications included Baclofen, Gabapentin, Ranitidine, Flexeril, and Oxybutynin. Labs show mild hypernatremia, normal GFR and a positive ANA, anticentromere, anti-SSA and antiphospholipid antibodies. Chest CT revealed nodular opacities in the subpleural right upper lobe, right middle lobe ground glass nodules, and dilated fluid- filled esophagus. Pulmonary function tests showed non-reversible obstructive pattern and decreased diffusing capacity consistent with interstitial lung disease. Patient diagnosed with systemic sclerosis, suggestive of CREST syndrome.

IMPACT/DISCUSSION: Systemic Sclerosis is a multisystem autoimmune disorder, associated with vascular dysfunction and progressive fibrosis. Patients with limited disease often have CREST syndrome (calcinosis cutis, Raynaud's, esophageal dysmotility, sclerodactyly, and telangiectasia) with less organ damage. Anticentromere antibodies are specific for the syndrome. Two of five cardinal features are diagnostic of CREST syndrome, but this case went unrecognized even with three features. The major contributor to her delayed diagnosis is poor continuity of care and dispersed responsibility. The National Academy of Medicine cites poor communication as a major cause of diagnostic errors (missed, and delayed diagnosis). Silos of medical records between health systems propagated her extended diagnostic journey. While it is not known why she initially sought emergency care over primary care, this case underscores the value of strong primary care teams to contextualize new symptoms. Furthermore, investment in health information exchange is paramount to timely diagnosis.

CONCLUSION: Physicians should be mindful of CREST (a closely related spectrum of sclerosing disorders) in patients with esophageal dysmotility, Raynaud's, fibrotic skin and/or limited organ dysfunction. Coordinated healthcare for complex health problems should be prioritized.

PORTAL VEIN THROMBOSIS CAUSED BY HYPERTHYROIDISM

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LEARNING OBJECTIVE #1: Assess thyroid function in encountering portal vein thrombosis

CASE: A 59-year-old Japanese man presented to our hospital with epigastric pain for five days, being not associated with fever, weight loss, nausea or vomiting. He had had Grave's disease for 20 years, being treated with thiamazole 5mg every other day. His vital signs were within normal limit. He had epigastric tenderness. Other physical examination was non-contributory. Laboratory tests were remarkable for hyperthyroid state. Abdominal contrast-enhanced CT scan showed portal vein trunk and superior mesenteric vein thrombosis. After diagnosing acute portal vein thrombosis(PVT) and hyperthyroidism, anticoagulation was initiated and the dose of thiamazole was increased. His abdominal symptoms disappeared on hospital day 3 and he was discharged on day 16. Thyroid function was normalized 2 months thereafter. To evaluate the cause of PVT, we performed further imaging tests for malignancy; esophagogastroduodenoscopy, colonoscopy and magnetic resonance cholangiopancreatography, which were all normal. In terms of thrombophilia, serum protein C/S and antithrombin III activity were normal and antiphospholipid antibody was negative. Then, we discontinued anticoagulation 12 months after. Finally, he was sent to his primary care physician on maintenance dose of thiamazole 5mg every day. After 3 years, he was re-hospitalized with the recurrence of PVT and hyperthyroidism. We started anticoagulation and increased the dose of thiamazole. The symptom disappeared on hospital day 4, and he was discharged on hospital day 15.

IMPACT/DISCUSSION: We experienced a case of recurrent PVT with hyperthyroidism. It has been reported that hyperthyroid state is associated with increased risk of pulmonary embolism, deep vein thrombosis and cerebral venous thrombosis. To the best of our knowledge, this is the first case that suggests the possible association of hyperthyroidism with PVT. Hyperthyroidism shifts the hemostatic balance towards hypercoagulable state. Hypercoagulability may be caused by an increase in the level of various coagulation and anti-fibrinolytic factors such as factor VIII, X, IX, von Willebrand factor, fibrinogen and plasminogen-activator inhibitor-1(PAI-1) in hyperthyroid state. Increased levels of factor VIII, von- Willebrand factor antigen and PAI-1 was also reported among patients with PVT and may be the underlying pathogenesis of hyperthyroidism-associated PVT. In this case, he did not have the risk of thrombosis except for hyperthyroidism. Furthermore, he had PVT twice concomitantly with the recurrence of hyperthyroidism. These findings suggest that the PVT might be caused by hyperthyroidism-induced hypercoagulable state.

CONCLUSION: Hyperthyroidism might be a possible cause of PVT

Thyroid function tests should be performed in encountering PVT

To prevent recurrence of PVT, careful monitoring of thyroid function and keeping its normal function is important

POSTPARTUM CONUNDRUM

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LEARNING OBJECTIVE #1: Distinguish postpartum thyroiditis from other common postpartum diagnoses

LEARNING OBJECTIVE #2: Diagnose and manage postpartum hypothyroidism

CASE: History and Physical 35 yo woman presented with 1 month of generalized swelling, pain, 35lb weight gain. Four months prior, she had a C-section and was not breastfeeding as she never lactated. She presented to 3 other hospitals and was diagnosed with postpartum cardiomyopathy but worsened despite empiric daily diuresis. She noted pain in her hands/feet/knees, fatigue, constipation, dyspnea, fogginess, dry skin, slurred speech.

Past medical history: HCV, opioid use disorder, G1P1. Medications: Methadone, Lasix

Exam

Vital signs normal. She was pale; had flat affect, flushed cheeks, swollen eyes, scalloped tongue, hoarse voice, diffuse non pitting edema, taut skin, generalized weakness, painful extremities. Thyroid was enlarged.

Labs

Cr 1.44. BNP normal. TSH 411. Free T4 <0.2. CK 717. Cortisol 1.4

Clinical Course

Presentation was consistent with severe hypothyroidism without electrolyte abnormality, alteration in hemodynamics or mentation. EKG was normal. Hydrocortisone IV was given after Cortisol level was drawn, then Levothyroxine IV and LT3. Because of the patient's diffuse edema and presumed bowel wall edema, she was continued on IV medications for several days. Her speech, edema, pain, fT4 and T3 improved daily. Ultimately it was determined to be a very severe presentation of postpartum hypothyroidism. Anti-TPO was high.

IMPACT/DISCUSSION: General internists may have less familiarity with conditions that commonly affect postpartum patients. The postpartum period is a time of immunologic rebound and thyroid antibody titer rise, leading to 5% prevalence of postpartum thyroiditis.[1] Usual course for postpartum thyroiditis is initial transient thyrotoxicosis (2-6 months), then transient hypothyroidism (3-12 months), and return to euthyroid state by 1 year.[1] Half of patients present as ours did, with isolated hypothyroidism.[1]

Postpartum thyroiditis can be confused with normal postpartum or other postpartum diagnoses such as depression, lymphocytic hypophysitis, and rheumatologic conditions. Our patient was initially misdiagnosed with postpartum cardiomyopathy which also presents with edema and fatigue. Her non-pitting edema and lack of lactation were clues to delve further. Barriers to diagnosis may have included bias due to OUD and lack of familiarity with postpartum thyroid dysfunction.

Risk factors for postpartum thyroiditis are T1DM, chronic viral hepatitis, SLE, gestational diabetes. The American Thyroid Association recommends patients with postpartum depression be screened for thyroid dysfunction as there is an unclear association.

Patients considering future pregnancy should continue LT4 due to high risk for hypothyroidism.

1 Nguyen CT et al. Postpartum Thyroiditis. Clin Obstet Gyn 2019;62:359-64

CONCLUSION: Recognize common diagnoses in postpartum patients and consider thyroid dysfunction

Know the risk factors for postpartum thyroiditis, screen and treat appropriately

POST-PARTUM LIVIDO RETICULARIS AND VISION LOSS AS A HARBINGER TO DIAGNOSIS OF ANTIPHOSPHOLIPID SYNDROME

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LEARNING OBJECTIVE #1: Livedo reticularis is an important diagnostic clue to antiphospholipid syndrome

CASE: A 30-year-old female G5P2113 with Noonan's syndrome presented to clinic with left foot numbness, and a bilateral lower extremity violaceous rash with swelling. The rash erupted 7 months ago after a normal vaginal delivery. Obstetrics ruled out peripartum etiologies. She reported the rash worsened with cold exposure and standing. Additionally, she had subjective fevers, intermittent blurry vision, joint pain, and blue fingertips with cold exposure. Her past medical history includes a previous miscarriage at 7 weeks gestation. She is uninsured and denies tobacco, alcohol, or drugs. At her first visit, an autoimmune panel and punch biopsy were ordered. Within days, before she completed the diagnostic tests, she developed vision loss, headaches, and a new facial rash. In the ED, her exam was significant for a malar rash. Dermatology performed a punch biopsy on her leg. Pathology was described as a leukocytoclastic vasculitis with epidermal necrosis. Labs revealed a positive ANA, positive anti-phospholipid antibody, hypocomplementemia, and proteinuria. Her team diagnosed her with SLE. Symptoms improved with prednisone. She is now maintained on Plaquenil.

IMPACT/DISCUSSION: Livedo reticularis (LR) describes a cutaneous physical sign characterized as a bluish-purple, persistent or transient net-like cyanotic pattern. The underlying pathophysiologic reason for LR is an abnormality in local blood circulation which can develop in a variety of pathological or physiological states. These states range from arteriolar vasospasm in response to cold environment to hypothyroidism or cutis marmorata telangiectatic congenita. LR is also associated with a presence of antiphospholipid antibodies with or without associated SLE. A study conducted by Kester S. et. all found 40% of patients had LR presenting as the first sign of antiphospholipid syndrome, with presence of SLE making this chance only more likely. The histopathology of LR depends on the root cause of the manifestation. If idiopathic, no changes may be noted, but secondary causes may show clues such as calciphylaxis, monoclonal cryoglobulinemia, intraluminal thrombosis, or as in our case, epidermal necrosis. The underlying cause for LR in this case was antiphospholipid syndrome with associated SLE. The presence of antiphospholipid antibody could explain her previous miscarriage. Unfortunately, her uninsured status influenced the 7-month delay in diagnosis, and time at risk for SLE and antiphospholipid syndrome complications.

CONCLUSION: Livedo reticularis should be recognized by general physicians due to its association with serious underlying pathology. Our awareness of the common diseases will improve patient outcomes through accurate differential diagnosis creation.

POST-TRAUMATIC HEADACHE (PTH)

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LEARNING OBJECTIVE #1: Recognize an illness-script for PTH

LEARNING OBJECTIVE #2: Manage patients with PTH appropriately

CASE: A 69 year-old female with history of diabetes mellitus type 2 complicated by peripheral neuropathy, chronic low back pain, and anxiety presented with two months of daily 30-minute episodes of 10/10, unilateral, pounding headaches. She reports hitting her head on a bathroom hook without loss of consciousness after which point she began to experience pain precisely at the site of her injury. She notes no change in intensity or frequency; no photo/phonophobia, nausea or vomiting; and no identifiable triggers, positional or otherwise. The patient had been self-treating with copious amounts of ibuprofen without relief though she notes that the episodes remit spontaneously. Prior to her ambulatory presentation, she frequented the local Emergency Department. On three separate occasions over two months, her emergent visits summated to several negative laboratory and imaging work up. Exam of her cranium was completely benign. The patient was already taking gabapentin for diabetic neuropathy but was advised to cease use of ibuprofen and to call the office if her headaches failed to improve for a trial of amitriptyline.

IMPACT/DISCUSSION: There are approximately 1.7 million reported cases of traumatic brain injury each year in the U.S. and the most common complication is headache, occurring in a reported 25-78% of cases. The majority of PTH (defined somewhat arbitrarily by the International Headache Society as those that onset within 7 days of injury) have been shown to subside within 3 months of presentation. There are a significant minority of cases, however (a reported range of 18-65%), of such headaches that persist beyond three months with increased documented prevalence among females, those with pre-existing headache, and those with family history of migraine. Beyond pain associated with specific head/neck injury, chronic/persistent PTH is not a monolithic entity and can resemble any type of headache, with approximately 77% of patients developing tension-type headaches and a significant minority who develop migraine headaches. A smaller minority of patients are documented to develop scalp dysesthesias at the site of injury, neuralgias, or temporomandibular joint dysfunction among other syndromes. It is important to recognize PTH as an exceedingly common phenomenon in both the emergency and ambulatory settings and to avoid treatment pitfalls that may inadvertently delay recovery from PTH or prolong or exacerbate patients' symptom burden. For example, analgesia overuse and associated rebound headache was noted in one study to negatively affect 42% of patients presenting with tension-type PTH and withdrawal of analgesics was shown to be as efficacious in resolving PTH as it was for its non-traumatic counterpart.

CONCLUSION: Post traumatic headaches can vary in presentation and persist for months after initial injury Appropriate treatment includes management of confounding factors such as analgesic overuse

POUR SOME SUGAR ON ME: A CASE OF NON-ISLET CELL TUMOR HYPOGLYCEMIA (NICTH) ASSOCIATED WITH GASTROINTESTINAL STROMAL TUMOR (GIST)

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LEARNING OBJECTIVE #1: Recognize refractory hypoglycemia as a paraneoplastic manifestation in a patient with gastrointestinal stromal tumor (GIST).

LEARNING OBJECTIVE #2: Diagnose and manage non-islet cell tumor hypoglycemia (NICTH).

CASE: A 35-year-old non-diabetic woman with imatinib-resistant GIST with extensive liver metastases on investigational avapritinib therapy presented after being found unresponsive in the setting of profound refractory hypoglycemia. Two weeks prior, the patient developed intermittent blurry vision and agitation. Initial capillary glucose was <20 mg/dL. Hypoglycemia workup revealed a negative sulfonylurea screen and low insulin, pro-insulin, C-peptide, β-hydroxybutyrate, growth hormone, insulin-like growth factor (IGF)-1, and insulin-like growth factor binding

protein (IGFBP)-3 levels. Cortisol and IGFBP-2 levels were normal and insulin autoantibodies were absent. IGF-2 and big IGF-2 testing was unavailable. These findings were consistent with NICTH. She required continuous dextrose 20% infusion to maintain euglycemia. Glucocorticoids were started and she was gradually weaned from the dextrose infusion. She was switched to regorafenib for her metastatic GIST though had difficulty tolerating the medication and was readmitted shortly after for recurrent hypoglycemia. She continued glucocorticoid therapy and was started on continuous tube feeds resulting in more sustained glucose control.

IMPACT/DISCUSSION: The etiology of the patient's refractory hypoglycemia was most consistent with GIST-associated NICTH and diminished glycogen stores from metastatic replacement of hepatic tissue. NICTH is a rare paraneoplastic process associated with a variety of tumors, most commonly of mesenchymal, vascular, or epithelial origin. Unlike the classically insulin-mediated hypoglycemia from islet cell tumors, NICTH is most commonly caused by overproduction of incompletely processed IGF-2, known as big IGF-2, which stimulates insulin receptors and suppresses growth hormone and glucagon release. An elevated big IGF-2 level or an IGF-2/IGF-1 ratio >10 in the setting of suppressed insulin, C-peptide, IGF-1, IGFBP-3, and growth hormone levels support this diagnosis. Immediate management includes aggressive correction of hypoglycemia with dextrose infusion or tube feeds. Glucagon administration can increase glucose levels, but may not significantly improve hypoglycemia if there is extensive tumor invasion of the liver. Definitive management is surgical resection of the underlying tumor. If the tumor is unresectable, treating the underlying malignancy and glucocorticoids are mainstays of therapy. Glucocorticoids impair insulin sensitivity, stimulate gluconeogenesis, and increase clearance of big IGF-2.

CONCLUSION: NICTH is a challenging diagnosis that requires timely recognition to avoid devastating complications or death. Management of NICTH associated with unresectable tumors is difficult, but can improve with treatment of the underlying malignancy and glucocorticoid therapy.

PRIMARY ELEVATED TRANSAMINASES IN GALL STONE DISEASE: AN ATYPICAL PRESENTATION

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LEARNING OBJECTIVE #1: Acknowledge counterintuitive biochemical findings in gall stone diseases.

LEARNING OBJECTIVE #2: Describe the pathophysiology behind elevated transaminases in biliary tree diseases.

CASE: A 19 year-old woman presented with right upper quadrant (RUQ) abdominal pain, nausea and vomiting for 1 week. Upon examination, she was noted to have RUQ tenderness without guarding or rebound and a negative murphy's sign. Notable laboratory findings included Aspartate transaminase (AST) 1009, Alanine transaminase (ALT) 818, Alkaline phosphatase (ALP) 234 and Total Bilirubin 2.1 with direct 1.4.

Her platelet count was 432 and INR was 1.2. Her acetaminophen level was negative. Ultrasound of the abdomen was significant for cholelithiasis and biliary sludge. Her biliary duct measured 5mm without cholecystitis and a normal liver parenchyma. Subsequent Contrast Tomography (CT) abdomen with contrast showed possible stones in the cystic duct and distal common bile duct (CBD). A follow-up Magnetic Resonance Cholangiopancreatography (MRCP) confirmed the CBD stone and biliary tree dilation. The rest of the workup including hepatitis panel, autoimmune panel and a urine drug screen were all negative. The patient underwent Endoscopic ultrasound (EUS) and Endoscopic retrograde cholangiopancreatography (ERCP) wherein she underwent sphincterotomy followed by removal of two CBD stones and stenting. Her liver tests normalized prior to discharge.

IMPACT/DISCUSSION: General Internists commonly encounter abnormal liver tests in their clinical practice. Clinical conviction is that predominant elevation of transaminases is presumed to be caused by a primary hepatic injury, while, a cholestatic predominant pattern is associated with a biliary tree abnormality. Our patient's hepatocellular pattern in the setting of a primary biliary pathology challenged this dogma. Biliary obstruction in the proximal ducts have been shown to cause an hepatocellular pattern of injury. In an observational study by Campos et al, pancreaticobiliary lithiasis accounted for 39.3% of diagnoses with marked increase in aminotransferases. There are two speculated pathogeneses behind this lab phenomenon. The first is that biliary duct obstruction causes expansion of bile canaliculi with stasis, increasing pressure and local inflammation, affecting surrounding hepatocytes, predisposing to hepatocellular necrosis and increased transaminases. The second theory is that spillage of transaminases into blood could be due to diffuse leaky cell membranes secondary to the bile duct obstruction. No matter the cause, the increase in transaminases is transient and tends to improve after calculi dis-impaction.

CONCLUSION: The common correlation between hepatocellular pattern of liver lests and a primary hepatocellular injury cannot be taken at face value. In cases of elevated transaminases, General Internists should continue to consider extra-hepatic biliary tract diseases including those associated with bile duct obstruction.

PRIMARY EXTRANODAL LYMPHOMA OF THE URINARY TRACT

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LEARNING OBJECTIVE #1: Recognize the presentation of malignancy in the urinary tract.

LEARNING OBJECTIVE #2: Differentiate primary extranodal lymphoma of the urinary tract from urothelial carcinoma.

CASE: RP is a 67-year-old female with a 5-pack-year smoking history and hepatitis C virus, treated with sustained virologic response without cirrhosis who presented to the clinic with bloating for 1 week. She described the bloating as constantly feeling full. RP endorsed constipation for 3 days, though she had been passing gas without issue and denied fever, dyspnea, melena or hematochezia. On exam, her abdomen was protuberant, soft and nontender with dullness to percussion and irregular consistency over the lateral aspect of the RUQ. Basic labs were significant for Cr 1.83mg/dL (baseline 1.2mg/dL), BUN 25mg/dL, FeNa 55%, urine protein:creatinine ratio 0.33 and urinalysis without sediment or hematuria. On abdominal ultrasound there was moderate right hydronephrosis. CT and MRI of the abdomen revealed a 6.4cm mass in the right proximal ureter/renal pelvis with surrounding lymphadenopathy, suspicious for a urothelial neoplasm. She then underwent ureteropyeloscopy and the tumor was encasing the right adrenal gland, which led to a radical open nephroureterectomy with en bloc right adrenalectomy and lymph node biopsies. Surgical pathology revealed follicular lymphoma Stage IE and Grade 3a, given that sampled lymph nodes and bladder cytology were benign. She did not require any further treatment and was followed closely with a surveillance cystoscopy every 6 months.

IMPACT/DISCUSSION: A majority of urinary tract (UT) malignancies are urothelial carcinomas, while a smaller percentage are due to metastatic tumors, including cases of advanced lymphoma. An exceedingly rare

cause of UT malignancy is primary extranodal lymphoma (PENL), accounting for <1% of cases. PENLs are non-Hodgkin's lymphomas that arise in non-lymphoid tissue. While on imaging PENLs of the UT can be indistinguishable from urothelial carcinoma, they often lack typical presenting symptoms, such as painless hematuria and flank pain. They can also lack typical B symptoms characteristic of primary nodal lymphomas, often leading to a presumed diagnosis of urothelial carcinoma until the tumor is biopsied. Urothelial carcinomas require complete imaging of the UT due to multifocality, followed by cystoscopy and chest/abdomen imaging for staging. Definitive treatment is with surgery. A diagnosis of PENL requires further workup, including local lymph node biopsies and cytogenetic analysis, to determine staging and need for additional therapy. Given the rarity of PENL in the kidney and ureter, this case provides a unique learning opportunity on the presentation, management and progression of disease.

CONCLUSION: While PENLs comprise about one-quarter of non-Hodgkin's lymphomas, involvement of the UT is rare and understudied. It is important to recognize the symptoms and laboratory studies that distinguish urothelial carcinoma from PENL of the UT, given differences in their management.

PRIMARY MEDIASTINAL B-CELL LYMPHOMA PRESENTING WITH GASTROINTESTINAL SYMPTOMS AND ACTIVATED B-CELL SUBTYBE IN AN ADOLESCENT

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LEARNING OBJECTIVE #1: Identiying primary mediastinal B-cell lymphoma presenting with only gastrointestinal symptoms

LEARNING OBJECTIVE #2: Identifying ABC subtype of diffuse B-cell lymphoma in adolescent

CASE: A 22 year-old man who presented with persistent episodic epigastric pain for five months. The patient was given proton pump inhibitors and other acid-reducing agents but without relief. He reported early satiety and weight loss of about 5% of his body weight and occasional melena. He denied night sweats or fevers. An upper endoscopy revealed fungating and ulcerated mass in the stomach measuring 5 x 5 cm in size with friable surfaces found on the greater curvature of the gastric body. Multiple biopsies were taken and the histology was most consistent with diffuse large B-cell lymphoma (DLBCL). PET/CT scan showed large hypermetabolic anterior mediastinal lymph node measuring 8x4.4 cm and irregular hypermetabolic gastric wall thickening involving the distal greater curvature and no evidence of bone marrow or CSF involvement. Patient was started on chemotherapy (DA-EPOCH-R regimen) without intrathecal chemoprophylaxis. Overall, he tolerated DA-EPOCH-R very well and was escalated to dose level 4. He underwent end of therapy FDG-PET scan which showed anterior mediastinum with SUV of approximately 2.5 (Deauville 3) and hence was considered negative.

IMPACT/DISCUSSION: Gastrointestinal involvement in PMLBCL has not been extensively studied. Given that our patient had a large anterior mediastinal mass at initial diagnosis, we considered this to be primary mediastinal B-cell lymphoma and we selected treatment accordingly which the patient tolerated very well and had an excellent response following cycle 4. Moreover, we report ABC subtype of PMLBCL in an adolescent male patient which is unusual for this age group and to our knowledge, this is the first case reporting this association. The combination of antigens expressed by the lymphoma cells was consistent with the activated B-cell (non-germinal center) subtype of DLBCL that was positive for CD45, CD20, BCL2, BCL6 and MUM1; negative for CD10 and EBER. Ki67 was 95%. MYC was positive in approximately 30% of the cells. There are few cases that reported gastrointestinal (GI) involvement in PMLBCL at first presentation. Sotirios G., et al. conducted a retrospective study that showed two out of 204 patients (1.0%) had gastric involvement at presentation manifested as upper GI hemorrhage and PET/CT-identified gastric involvement at diagnosis of PMLBCL. Lazzarino et al. found one case out of 106 (0.94%) and Massoud et al. 1/108 (0.93%).

CONCLUSION: This case reports gastrointestinal symptoms as the first manifestations of primary PMBCL. It also demonstrates an association between ABC subtype of PMBCL and adolescent.

PROGRESSIVE SHORTNESS OF BREATH DURING EARLY PREGNANCY

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LEARNING OBJECTIVE #1: Enable the diagnosis of miliary TB with appropriate diagnostic approaches

LEARNING OBJECTIVE #2: Recognize the clinical features of miliary TB in pregnancy with identifiable risk factors

CASE: A 30-year old woman at 15 weeks of gestation via IVF was admitted for progressive dyspnea for 4 weeks with associated productive cough, weight loss, tachycardia and fevers. She denied contact with birds, recent travel, IVDU, tobacco use. She was originally from Brazil and had a positive PPD years ago without treatment. Two weeks prior, CXR showed diffuse grand glass opacities. She received a course of azithromycin without clinical improvement. She presented to OSH 3 days prior to admission for worsening dyspnea. A CTPA showed bilaterally diffused grand glass opacities with hilar lymphadenopathy without PE. HIV was negative. Upon admission, a bronchoscopy was performed and BAL was negative for bacterial infection and negative for AFB stain as well. A course of high dose steroid was started which led to transient clinical improvement and, subsequently, it deteriorated, requiring HFNC. A high-resolution CT chest was performed, revealing diffused, randomly distributed tiny nodules throughout the lungs, more focal and less ground glass compared to prior CTPA, suggesting miliary TB. Subsequently, she underwent a bronchoscopy guided tissue biopsy and tissue Xpert PCR was positive for TB. She was started INH/Rif/EMB but suffered fetal loss at 20 weeks, IRIS, intracranial TB and intraocular TB.

IMPACT/DISCUSSION: Miliary TB has been shown to be associated with pregnancy, a state of decreased T-cell mediated immunity. For patients who undergo IVF, strong immunosuppressors, progesterone, and glucocorticoids, are commonly used to optimize the intrauterine environment. Therefore, performing IVF in patients with infertility secondary to genital TB would increase incidents of relapsed and disseminated TB. It is important to screen and treat latent TB prior to IVF in patients with identifiable risk factors.

It is extremely difficult to diagnose miliary TB in pregnant patients given the non-specific and overlapping symptoms. Clinicians should have high index of suspicion in pregnant women presenting dyspnea refractory to antibiotics. High-resolution CT chest is the gold standard for diagnosis of miliary TB. CT pulmonary angiogram is suboptimal to the identification of parenchymal pathology. In this case, CTPA artificially demonstrated grand glass opacities instead of nodular pattern, dallying diagnosis. Additionally, Xpert PCR should be the conventional method for diagnosis of miliary TB as AFB stain has low sensitivity. Furthermore, high dose steroid should be avoided prior to definitive diagnosis as it would exacerbate military TB via lymphohematogenous spread to extra-pulmonary organs.

CONCLUSION: It is important to screen and treat latent TB prior to IVF in patients with identifiable risk factors.

High resolution chest CT and Xpert PCR to increase sensitivity of miliary TB Avoid steroids before miliary TB is definitively excluded.

PSEUDO-ASPIRATION: A CASE OF MILIARY TUBERCULOSIS

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LEARNING OBJECTIVE #1: Recognize the varied clinical presentations of miliary tuberculosis

LEARNING OBJECTIVE #2: Identify risk factors for miliary tuberculosis

CASE: A 60 year-old male presents to primary care. He had a recent prolonged hospitalization for stroke complicated by dysphagia resulting in malnutrition and respiratory failure from presumed aspiration pneumonia. Bacterial sputa cultures grew Pseudomonas aeroginosa repeatedly. Initial chest x-ray showed patchy opacities in bilateral lower lungs. His course was complicated by persistent leukocytosis, fevers, and respiratory distress despite several courses of antibiotics with Pseudomonal coverage.

He now presents for new patient evaluation two weeks after discharge. He has had ongoing fevers with dyspnea and productive cough. Further history reveals he was born in the Philippines, has diabetes, and had prior tobacco use. His temperature is 102F, heart rate 154, and respiratory rate 60. He is cachectic with bilateral rhonchi. He is admitted to the hospital. HIV antibody is negative. Chest x-ray shows diffuse nodular opacities in bilateral lungs. Three sputa samples show 3+ AFB smear positivity and positive Gene Xpert testing, confirming the diagnosis of miliary tuberculosis (TB).

IMPACT/DISCUSSION: Miliary TB is a form of disseminated TB from hematogenous spread, either as a progressive primary infection or reactivation of latent focus. Miliary TB accounts for less than 2% of all TB cases and is fatal if untreated. Multiple medical conditions increase risk: HIV, malignancy, malnutrition, tobacco use, renal failure, diabetes, alcohol use, and use of certain immunosuppressive medications.

Its presentation can be varied and nonspecific with a wide spectrum of severity. Careful history and exam are required to determine sites of suspected involvement, which should undergo microbiologic testing. All patients require chest imaging, though notably initial x-rays may not demonstrate the classic miliary appearance. Dilated fundoscopic examination showing characteristic choroidal tubercules highly supports the diagnosis of miliary TB. Treatment of miliary TB is similar to active pulmonary TB; CNS and pericardial involvement merit corticosteroids.

His initial presentation was thought due to aspiration pneumonia given dysphagia, dependent opacities, and bacterial sputum culture of Pseudomonas. Yet, he had persistent fevers, leukocytosis, and respiratory distress despite appropriate antibiotics—raising suspicion for a separate process. Review of his case revealed TB risk factors: origin from a TB endemic area, diabetes, tobacco use, and malnutrition. Progressive chest x-ray and microbiologic findings were diagnostic of miliary TB. He received RIPE therapy but passed away from extensive disease.

CONCLUSION: This case highlights the importance of maintaining a high index of suspicion for miliary TB given its varied presentations. His TB risk factors, progressive imaging findings, and lack of improvement to antibiotics prompted further evaluation, ultimately leading to the final diagnosis.

PSEUDOMEMBRANOUS COLITIS – NOT ALWAYS FROM CLOSTRIDIUM DIFFICILE

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LEARNING OBJECTIVE #1: Recognize the need for knowing the different etiologies of pseudomembranous colitis

LEARNING OBJECTIVE #2: Understand the importance of sensitivity and specificity of different diagnostic tests.

CASE: We present the case of a 90-year-old female who presented from her nursing facility with fever. She endorsed generalized myalgia with other history limited due to dementia. On evaluation she was found to be afebrile, tachycardic, tachypneic with a high white blood cell count.

During work up, a CT scan showed asymmetric rectal wall thickening concerning for proctitis vs rectal mass.

She was started on ceftriaxone and metronidazole, however started having multiple episodes of watery diarrhea. Stool *Clostridium Difficile*(C.Dif) toxin as well as ova, parasites and culture was sent which were all negative. She underwent a sigmoidoscopy, which showed pseudomembranes. She was empirically started on treatment for C.Dif with oral vancomycin as well as metronidazole. She underwent a colonoscopy, which again showed localized, pseudomembranous in the rectum. Biopsies were taken from the colon, and a repeat stool C.Dif toxin test was sent which was negative. She was discharged on the same regimen to complete the course of treatment for suspected C.Dif. Biopsy results after discharge were suggestive of ischemic colitis.

IMPACT/DISCUSSION: Pseudomembranous colitis (PMC) is an inflammatory condition of the colon and is characterized by elevated plaquescomposed of mucus and inflammatory cells. Pseudomembranes are formed due to decreased blood flow and oxygenation to the area which leads to the endothelial damage[1]. PMC is commonly known to be caused by C.Dif, however it is not specific for it. PMC can be seen in other conditions such as infections (Cytomegalovirus, Staphylococcus aureus, Escherichia coli), medications (budesonide, glutaraldehyde, indomethacin) and autoimmune diseases[1].

The sensitivity of polymerase chain reaction (PCR) for C.Dif toxins is 90% and specificity is 96%[2]. Thus, in our patient with 2 negative PCR tests, antibiotics for C.Dif should have been discontinued. Endoscopy with biopsy is sometimes needed for a definitive diagnosis of PMC [2]and in our patient this revealed an alternate cause.

CONCLUSION: - It is essential to broaden differential diagnoses when testing for C.Dif is negative, instead of empirically treating for it.

- It is important to correctly use and interpret diagnostic tests to improve patient care and limit healthcare expenses.

Citation:

1-Tang, D. M., et al. “Pseudomembranous Colitis: Not Always Clostridium Difficile.” *Cleveland Clinic Journal of Medicine*, vol. 83, no. 5, 2016, pp. 361–366., doi:10.3949/ccjm.83a.14183.

2-Deshpande, Abhishek, et al. “Diagnostic Accuracy of Real-Time Polymerase Chain Reaction in Detection of Clostridium Difficile in the Stool Samples of Patients With Suspected Clostridium Difficile Infection: A Meta-Analysis.” *Clinical Infectious Diseases*, vol. 53, no. 7, 2011, doi:10.1093/cid/cir505.

PULMONARY EMBOLI ARE MORE THAN SKIN DEEP

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LEARNING OBJECTIVE #1: Recognize skin abscess as the source of pulmonary septic emboli and endophthalmitis.

LEARNING OBJECTIVE #2: Remind physicians of the non-cardiac sources of septic emboli.

CASE: A 58-year-old woman with a history of recurrent childhood skin infections presented with a worsening upper back swelling, fevers, chest pain, and bilateral blurry vision for 5 days. She complained of localized pain at her upper back that did not radiate. The chest pain was mild and pleuritic. The patient denied history of intravenous drug abuse. Physical exam revealed fever, tachycardia, and a fluctuant mass on the upper back. The CT scan showed "innumerable scattered lung nodules with internal air/cavitation most concerning for septic emboli." A dilated fundoscopic exam revealed vitreal haziness concerning for endophthalmitis. Cultures were collected from the blood, wound, and anterior chamber of the eye; methicillin resistant *Staphylococcus aureus* (MRSA) grew from all sources.

Incision and drainage was performed on the upper back abscess and intravenous (IV) vancomycin was started. However, blood cultures drawn 2 days after beginning therapy still grew MRSA. A transthoracic echocardiogram (TTE) and a subsequent transesophageal echo (TEE) revealed no vegetations. Despite being on therapeutic levels of vancomycin for 5 days and clinical improvement, cultures continued to grow MRSA. The source of the MRSA bacteremia with pulmonary septic emboli and endophthalmitis was originated from her skin infection.

She slowly improved on vancomycin therapy and was discharged to a skilled nursing facility to finish 6 weeks of IV antibiotic therapy. After completing this regimen, a chest X-ray showed partial resolution of her pulmonary nodules.

IMPACT/DISCUSSION: Classically, septic emboli to the lungs arise from an intravascular or intracardiac source. Despite being relatively uncommon, cases of deep-seated skin/soft tissue infection causing septic emboli have been reported. The incidence is not known. However, the majority of these cases were in pediatric patients. In addition, the primary site of infection was typically a large muscle group. Of note, our patient developed these pulmonary emboli from an extensive skin infection. Skin infections have the capacity to disseminate widely with consequent bacteremia, pulmonary emboli, and endophthalmitis. The mechanism by which septic emboli occur from a soft tissue source remains unclear; it has been hypothesized that a significant and substantial number of bacteria are able to translocate into local vasculature within the abscess. This report identifies a novel case of a skin infection in an adult patient leading to disseminated eye infection and septic pulmonary emboli.

CONCLUSION: Most septic emboli are commonly from an intracardiac or intravascular source; however, skin or soft tissue infection have been recognized to be one of the non-cardiac causes of diffuse septic emboli.

PUTTING THE RIGHT FOOT FORWARD IN DIAGNOSING PYODERMA GANGRENOSUM

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LEARNING OBJECTIVE #1: Given the lack of definitive tests or guidelines for diagnosing PG, it is important to recognize the different presentations so as to spare the patient from unnecessary interventions, especially those that worsen disease progression and increase morbidity and deformity of the PG lesion.

CASE: a 60-year-old male who presented with a 1-week history of an erythematous and edematous right foot, that was initially presumed to be a case of non-purulent cellulitis. The only identifiable inciting factor was an initial physical therapy session with manipulation of the right foot. Despite resolution of leukocytosis, the patient continued to progress symptomatically on trials of doxycycline, vancomycin, meropenem, and ceftriaxone. As the erythema and edema were not resolving, podiatry was consulted for an incision and drainage of what was suspected to be an abscess at the time. The wound rapidly ulcerated and was subsequently diagnosed as PG when skin biopsy revealed neutrophilic infiltrates of the dermis. The patient was discharged on oral prednisone with a follow up for outpatient skin grafting to aid in wound healing

IMPACT/DISCUSSION: This is one of the rare instances where we were able to track the progression of pyoderma gangrenosum with photographic evidence from its pre-ulcerative onset, where the differential is typically broad, to its classic ulcerative lesion. Given the lack of definitive tests or guidelines for diagnosing PG, it is important to recognize the different presentations so as to spare the patient from unnecessary interventions, especially those that worsen disease progression and increase morbidity and deformity of the PG lesion. This presentation was unusual for PG as there was no history of pathergy, inciting trauma, or underlying inflammatory, rheumatic, or hematologic disease despite extensive work-up following diagnosis. Additionally, the initial skin presentation was not the characteristic pustule progressing to ulcer, but rather a nondescript edematous erythema of the right foot.

CONCLUSION: Pyoderma Gangrenosum is typically a diagnosis of exclusion and is often misdiagnosed as an infectious or inflammatory process. Clinically, PG often starts as small tender pustules that rapidly progress into a painful ulcer with irregular borders.

Given the lack of definitive tests or guidelines for diagnosing PG, it is important to recognize the different presentations so as to spare the patient from unnecessary interventions, especially those that worsen disease progression and increase morbidity and deformity of the PG lesion.

Having several images(day to day presentations) would make it easier for the provider to clearly differentiate PG, from cellulitis/abscess when the presentations are atypical.

PYODERMA GANGRENOSUM, FEVER, AND LEUKOCYTOSIS PRESENTING AS A PRE- LEUKEMIA SYNDROME 6 MONTHS PRIOR TO CONVERSION TO AML

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LEARNING OBJECTIVE #1: Identify pyoderma gangrenosum as an associated finding of AML

LEARNING OBJECTIVE #2: Recognize importance of regular follow-up for patients with CCUS

CASE: A 52-year-old obese woman with diabetes and hypertension presented to the ward with persistent fevers and leukocytosis in excess of 30,000 WBCs. She underwent extensive infectious workup, including multiple blood, urine and stool cultures, c. difficile toxin, T2 candida, T-spot, and fungal antigens; all of these were negative. She received two weeks of antibiotics without improvement. Rheumatologic workup was unrevealing. Hematologic workup was suspicious for a myelodysplastic process based on flow cytometry, but a repeat as well as a bone marrow biopsy were consistent with reactive changes. FISH studies for AML gene rearrangements and FLT3 mutation analysis were negative. A T-cell receptor (TCR) gene rearrangement study showed two mutations but was non-diagnostic.

Four weeks later, she noted a lower extremity ulcer. A biopsy was consistent with pyoderma gangrenosum (PG). She was started on steroids with resolution of fever and systemic inflammatory symptoms. On her second follow-up visit with hematology after discharge, a CBC noted 48% blasts. Repeat bone marrow biopsy was obtained and demonstrated acute myelogenous leukemia.

IMPACT/DISCUSSION: PG is a rare neutrophilic dermatosis of unclear etiology associated with an underlying disease process, often AML. Neutrophil dysfunction, genetic factors, and systemic inflammation are the leading factors thought to contribute to PG. Among the subtypes, bullous PG is most often associated with hematologic disease. Due to the strong association between these entities, patients presenting with bullous PG without clear evidence of hematologic disease should be monitored closely for the development of such malignancies.

For our patient, there was evidence of hematologic disease, but no clear diagnosis. Her flow cytometry and TCR rearrangement testing were consistent with clonal cytopenia of undetermined significance (defined as having an unexplained cytopenia, clonal hematopoiesis with ≥2 percent variable allele frequency of a leukemia-associated gene, and no other evidence of hematologic malignancy). Patients with this have considerable but poorly-defined risk of progression to myelodysplastic syndromes or AML. There are no evidence-based guidelines regarding frequency of follow-up, but this is often based on severity of cytopenia.

CONCLUSION: Our patient presented with leukocytosis and fever; despite a thorough workup, diagnosis could not be made for 6 months. Her development of PG was instrumental in determining follow-up and ultimately led to the final diagnosis, as its' known disease associations helped guide further monitoring. A patient presenting with PG in the setting of cytopenia should raise concern for hematologic malignancy. Even without clear diagnosis of malignancy, patients may possess mutations that pre-dispose them to developing one, warranting regular follow-up.

PYODERMA GANGRENOSUM ASSOCIATED WITH UNDIAGNOSED HIV

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LEARNING OBJECTIVE #1: Consider HIV infection among underlying etiologies for neutrophilic dermatoses.

LEARNING OBJECTIVE #2: Avoid pathergy-associated exacerbation of PG when repeated surgical interventions fail.

CASE: A 38-year-old woman with sickle cell trait was transferred for a non-healing, lower extremity wound.

Four months prior, she believed an insect bite to her left calf caused redness, swelling and pain which worsened over two weeks. She had 2 lifetime sexual partners, no history of injection drug use and a family history of RA. She was admitted with normal vitals. Initial workup for vasculitis and infection were negative. Debridement and skin grafting with IV antibiotics was followed by 4 months of outpatient management. She was readmitted for graft failure. Despite 5 debridements and antibiotics, the wound showed decreased granulation and erosion of skin around the donor site.

She was transferred to a tertiary care center with normal vitals and an unchanged exam. Dermatology made a presumptive diagnosis of pyoderma gangrenosum (PG). HSV swabs were obtained, as herpetic infections are known to mimic PG, but were negative. While she had no history of PG-associated comorbidities, HIV was considered as a rare association. Testing was positive (CD4 count 46). Antibiotics were stopped after negative cultures. Immunosuppressants were held to limit activation of latent infections. Initiation of HAART was complicated by psychosocial barriers including the patient's belief in divine healing and reluctance to discuss her HIV diagnosis. Final pathology showed eosinophil-predominant dermal infiltrate. While this argued against the typical neutrophilic-predominant dermatosis seen in PG, the clinical context favored a variant of PG. She ultimately agreed to HAART.

IMPACT/DISCUSSION: Infections and sepsis remain at the forefront of clinical consideration given their high rates of morbidity and mortality, but clinicians must consider alternative diagnoses when typical therapies fail. This rare case of PG presented as the initial manifestation of dysfunctional immunity in a patient with HIV. PG has an estimated incidence of 3 to 10 cases per million per year. Nearly 50% of those have underlying systemic disease, most commonly IBD, arthritis, or hematologic disease. Fewer than 10 cases of PG have been reported with a new diagnosis of HIV. In one 2014 case, PG improved with HAART alone. This suggests treating HIV can heal PG.

Additionally, PG must be considered when wounds worsen with surgical intervention. Pathergy is a phenomenon where PG is induced by incidental or iatrogenic trauma, which is seen in up to 30% of cases. In this case, 6 surgical procedures were performed before identifying the underlying immunodeficiency driving the neutrophilic dermatosis.

CONCLUSION: PG is a diagnosis of exclusion but must be considered given characteristic clinical findings and HIV should be tested when more common underlying systemic diseases are not present.

Surgical intervention should be avoided in cases of PG when pathergy is suspected.

RARE CASE OF FACTOR V LEIDEN DEFICIENCY AND IDIOPATHIC PAGET-SCHROETTER SYNDROME

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LEARNING OBJECTIVE #1: Recognize rare location of thrombus associated with thrombophilia and implications on long term management

CASE: 43 year old female who presented with complaints of right upper extremity pain, edema and discoloration of a week's duration. History was notable for Factor V Leiden, she was G2P2002, and was not on any OCP's or anticoagulants. Family history was significant for multiple first-degree relatives with FVL. She was an active smoker with a 24 pack year history. She denied trauma, repetitive or strenuous physical activity of the upper extremity or medical procedures. Exam revealed bilateral palpable pulses, right sided supra/infraclavicular edema and tenderness extending to the proximal humerus without facial plethora. Labs revealed an unremarkable CBC and coagulation panel. Cervical rib was absent on X-ray. RUE US revealed an occlusive thrombus of the subclavian vein. Therapy was initiated with IV heparin. Vascular surgery was consulted to evaluate for Paget Schroetter syndrome (PSS). Patient declined further procedural intervention and elected for conservative management with anticoagulation. Her symptoms improved and she was discharged on Eliquis. She returned one week later reporting persistent heaviness and pain in her right arm. Venogram revealed persistent partial occlusion and she underwent catheter directed thrombolysis. Hyperabduction during the procedure demonstrated no flow through the subclavian, confirming underlying PSS. Post-procedural venogram revealed resolution of obstruction and restoration of flow.

IMPACT/DISCUSSION: Data is scarce regarding the number of patients with underlying hypercoagulable state and PSS. Due to the distinct history and presentation of PSS, combined with low rates of recurrence following surgicery, few patients are screened for an underlying thrombophilia. Our patient with FVL presenting with PSS in the absence of provocation, repetitive use, or inciting event is rare. PSS incidence is 2/100,000 with average age at presentation in the early 30's and more predominant in males. More than 80% of people with an acute thrombus present within 24 hours of strenuous upper extremity activity or an event where the arm was abducted. Upper extremity VTE accounts for a small percentage (1%-4%) of all thrombotic events in the general population.

Less than 5% of thrombi related to FVL form in the subclavian vein, majority are of iliofemoral origin. Of the thrombi formed in the upper extremity more than half are associated with instrumentation. Rates of recurrent thrombus formation in FVL is as high as 12% and rates of recurrence of PSS using just thrombolysis were as high as 23%. Our patient is undergoing the recommended treatment; localized thrombolysis with surgical decompression of the rib and scalenectomy. Using this treatment plan up 95% of patients have no recurrence. Data regarding recurrence in PSS in patients with FVL is unavailable.

CONCLUSION: Further evaluation needed for upper extremity thrombosis, anti-coagulation alone may not be enough

RARE CASE OF THORACIC GANGLIONEUROMA IN ADULT PATIENT

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LEARNING OBJECTIVE #1: Diagnose thoracic ganglioneuroma as a cause for posterior mediastinal mass.

LEARNING OBJECTIVE #2: Manage and work up patients presenting with incidental posterior mediastinal mass.

CASE: The patient is a 60-year-old caucasian male with no significant past medical history, non-smoker, presents with an incidental finding of mediastinal mass noted on chest x-ray. A follow up computed tomography (CT) scan and magnetic resonance imaging (MRI) of the chest showed a left posterior mediastinal mass extending from T5-6 to T9-10 vertebral level (size 6.9 x 3.3 x 8.4 cm), suspicious for teratoma. He underwent an elective thoracotomy and excision of the mass. The initial frozen section showed fibrous adipose tissue. The final pathology report was concluded as ganglioneuroma with fatty replacement and the diagnosis was supported by the immunohistochemical stain positive for S100 protein.

IMPACT/DISCUSSION: Ganglioneuromas (GN) are rare, well-differentiated neurogenic tumors composed of mature sympathetic ganglion cells that arise from neural crest cells that commonly occur in the posterior mediastinum, retroperitoneum, adrenal glands, and cervical spine. Its incidence is rare, accounting for 0.1 to 0.5% of central nervous system tumors and 1% of spinal and paraspinal tumors. GNs are most frequently diagnosed in children and young adults. In our patient, GN was diagnosed after the age of 50 years. Usually, GN is asymptomatic and found incidentally on imaging. Rarely, GNs can present with sympathomimetic symptoms because of catecholamines or neuropeptides production. Malignant transformation of these well- differentiated tumors is exceedingly rare. Mediastinal masses have variable histopathological and radiological features. The imaging modality of choice is contrast-enhanced CT scan and MRI imaging. The definitive diagnosis in our case was made by the histopathology showing ganglioneuroma, and IHC staining positive for S 100 highlighting the ganglion cells and Schwann cells. Additionally, the tumor cells were negative for p16 and CD34 markers, therefore, ruling out low-grade liposarcoma and solitary fibrous tumor respectively. Complete surgical excision is the treatment of choice.

CONCLUSION: Mediastinal lesions are rare entities and data regarding their clinical and histopathological features are limited. The absence of distinguishing imaging features implies that the diagnosis of these tumors is made histologically. Surgical resection is the most effective option.

RARE CAUSE OF THROMBOCYTOPENIA IN APPALACHIA INVOLVING A POINT MUTATION IN THE ANKRD26 GENE

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LEARNING OBJECTIVE #1: Differentials for thrombocytopenia

LEARNING OBJECTIVE #2: Importance of identifying anchoring bias

CASE: A 65 yo female with chronic fatigue syndrome was referred for workup of low platelets, presumed to be from Idiopathic Thrombocytopenic Purpura. Family history was significant for clinical bleeding diathesis with thrombocytopenia in patient's child, twin sister, nieces from sister, and two of the niece's children. Family pedigree suggested a non-X-linked Autosomal Dominant inheritance. Initial bone marrow biopsy in 2012 was normal. Work-up showed negative ANA, hepatitis panel, Helicobacter pylori and for autoimmune diseases and no paraproteinemia. Wiskott Aldrich syndrome gene analysis was negative and abdominal ultrasound showed no hepatosplenomegaly. Peripheral smear showed normal sized platelets, no clumping and no blasts. Repeat bone marrow biopsy showed normocellular bone marrow with trilineage hematopoiesis; normal female karyotype; FISH negative for myelodysplastic syndrome mutations. Patient was unresponsive to a trial of prednisone. Eventually, genetic testing revealed heterozygosity in ANKRD26c.-126T>C, consistent with Nonsyndromic Thrombocytopenia (THC2).

IMPACT/DISCUSSION: Thrombocytopenia, defined as having a platelet count of less than 150 × 103 per μL, is a commonly encountered problem in medical practice. Differential causes for thrombocytopenia include; decreased production, increased consumption, or sequestration. ANKRD26 is a gene mutation that causes Autosomal Dominant Nonsyndromic Thrombocytopenia (THC2), and is associated with mild bleeding tendencies along with mild to severe thrombocytopenia. The point mutation in ANKRD26 is thought to alter the binding of key transcription factors, resulting in abnormal signal transduction which adversely affects platelet formation, and also indirectly affects other signal transduction pathways which may increase the risk of myeloid precursor transformation. There are 21 known families affected with this syndrome worldwide.

CONCLUSION: ANKRD26/ TH2 is identified by mild to severe thrombocytopenia with normal platelet size and no phenotypic complications.

The predominating theory regarding thrombocytopenia in ANKRD26 mutations is dysregulation of pathways which affect platelet formation.

The ability to recognize this disorder is important for proper management and surveillance of the affected population. Incorrect diagnosis and anchoring bias during evaluation can lead to unnecessary and potentially harmful treatments such as chronic steroids and/or splenectomy.

Patients with this syndrome may need surveillance by annual blood counts for early detection of myeloid neoplasms as they are at increased risk for developing acute leukemias.

REACT TO REACTIVE: AN ATYPICAL PRESENTATION OF REACTIVE ARTHRITIS

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LEARNING OBJECTIVE #1: Diagnose reactive arthritis in the absence of the usual triad of gastrointestinal, genitourinary symptoms, and eye involvement.

LEARNING OBJECTIVE #2: Distinguish reactive arthritis among other causes of dactylitis.

CASE: Our patient is a 37-year-old male with no significant past medical history who presented with left foot pain which has been gradually worsening for 3 weeks. He did not notice any inciting event, denied trauma, vigorous exercise, unsafe sex practices, genital symptoms or fever. Physical examination was unrevealing except for mild swelling near the left 4th metatarsal joint concerning for dactylitis. X-ray of his left foot that did not reveal bone or joint abnormalities. He underwent conservative management with NSAIDs. Two months later, along with his 4th toe metatarsalgia, patient presented with complaints of right 3rd toe dactylitis and left knee pain. Left knee x-ray revealed mild soft tissue swelling with no evidence of acute fracture or dislocation. Notable labs included erythrocyte sedimentation rate 26mm/hr and C-reactive protein 1.15 mg/dl. Given asymmetric oligo-arthritis, rheumatologic workup was sent and was negative for rheumatoid factor, anti-citrullinated protein antibodies, anti-nuclear antibodies, anti-dsDNA, and HLA-B27. Infectious workup was negative for Lyme disease, HIV and gonorrhea. There was no juxta-articular bone formation on any of the x-rays. Our patient was tested positive for chlamydia and was subsequently treated with doxycycline with close follow up.

IMPACT/DISCUSSION: Reactive arthritis is a form of spondyloarthritis (SpA) that can occur after gastrointestinal or genitourinary infections. It is relatively rare with a highly heterogeneous incidence in the range of 0.62-27 per 100,000. Chlamydia is the most common pathogen involved. Clinical presentation includes asymmetric oligoarthritis of usually 1-4-week duration. Ocular, cutaneous, and oral lesions can also occur. Laboratory findings may include evidence of infection and elevated inflammatory markers. HLA-B27 is positive in 30%-80% of patients. Other etiologies of dactylitis include psoriatic arthritis, sickle-cell disease, or rarely sarcoidosis. Treatment of reactive arthritis includes NSAIDs, intra-articular or systemic steroids, and in the case of resistant reactive arthritis, nonbiologic DMARDs such as sulfasalazine and methotrexate. Patients with a history of chlamydia-induced arthritis should receive standard anti-microbial treatment for the infection, in order to prevent relapses

CONCLUSION: This case highlights the importance of considering infectious workup in patients with chronic asymmetric oligo-arthritis, even in the absence of classic triad of symptoms and high-risk behavior.

A high index of suspicion highlighting infectious and rheumatologic causes should be kept for dactylitis which can also be a presenting feature of reactive arthritis.

RECOGNITION OF HEALTH-HARMING LEGAL NEEDS AND THE VALUE OF THE MEDICAL- LEGAL PARTNERSHIP

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LEARNING OBJECTIVE #1: Recognize the impact of health-harming legal needs on patient outcomes

LEARNING OBJECTIVE #2: Value lawyers as part of an interprofessional healthcare team

CASE: Ms. A.S. is a 16-year old female with a past medical history of end stage renal disease and hypertension whose care was complicated by unmet social and legal needs. The patient was born in Jamaica, where she was diagnosed with hypertension but not started on antihypertensives. During a trip to the United States (US), she was admitted to an outside hospital for hypertensive emergency and acute renal failure. Renal biopsy revealed extensive glomerulosclerosis. She was initiated on peritoneal dialysis and two weeks later required readmission for hemodialysis (HD) initiation. The patient was then transferred to our hospital for further care. Given her immigration status, the patient was initially not eligible for the kidney transplant list. At discharge, the patient was linked to our Nephrology clinic, where she was referred to our medical- legal partnership (MLP). With the assistance of the MLP, she was able to receive medical insurance and a medical visa. Also due to the MLP, she was placed on the transplant list three months after presentation and received an extension of her medical visa for continued care. Currently, the patient remains in the US, continues on HD, and awaits transplant.

IMPACT/DISCUSSION: It has been well established that social determinants of health (SDH) have a major impact on health outcomes. Health-harming legal needs (HHLN) are a subset of SDH that can be addressed legally. In turn, MLPs were established to link patients to legal services. Unfortunately, MLPs are often absent in health systems due to lack of establishment or lack of understanding about the value of lawyers in healthcare. Even if MLPs are present, there are cases when clinicians lose touch with HHLN or lawyers lose sight of medical issues, leading to communication barriers and lapses in care.

Our health system has established a robust MLP that has positively impacted many patients. In this case, without an MLP, our patient could have suffered delays in care, complications, or even death. Also, having lawyers co-located in our medical practice strengthens communication, allowing for continued care expediency. Without this collaboration, the legal team would not have known the patient's condition and would not have filed a medical visa extension. The patient would have returned to Jamaica, causing disjointed care and likely worsened health. Our patient is a clear example of the benefits of an MLP: she was able to stay in the US to continue care, avoid family separation, and remain eligible for a transplant. MLPs are a vital component in providing comprehensive care to marginalized patient populations and advancing health equity.

CONCLUSION: Primary care providers should recognize HHLN and understand the value of lawyers as an integral part of a medical team.

Medical providers should feel empowered to establish programs that link patients with HHLN to legal services

RECOGNIZING AND TREATING AGITATION IN NON-VERBAL ADULTS WITH DEVELOPMENTAL DISABILITIES

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LEARNING OBJECTIVE #1: Develop an appropriate differential diagnosis for acute behavioral change in non-verbal adults with developmental disabilities

LEARNING OBJECTIVE #2: Discuss the broad treatment options for agitation in non-verbal adults with developmental disabilities

CASE: LF is a 32-year-old non-verbal female with Rett's Syndrome (RTT) and seizure disorder who presented to the clinic with acute behavioral changes. According to her mother, who serves as her primary caregiver, LF had significant behavioral changes over the past few weeks, manifesting itself as more frequent episodes of full-body muscle contractions, audible tachypnea, difficulty sleeping, and blank stares. She was also noted to repeatedly bring her hands to her mouth. There was no report

of constipation, vomiting, diarrhea, fever or changes in urination. On exam, she was a thin-appearing woman in a wheelchair with contracted lower extremities. Vital signs were within normal limits. In order to ascertain a possible organic cause, a comprehensive medical work-up was pursued. Given her mother's concern for a dental problem, an oral exam was performed, which revealed normal dentition without signs of infection. Next, the patient was hospitalized to try to address concerns of increased seizure frequency. However, EEG revealed stable seizure activity and therapeutic antiepileptic levels. During the workup, her mother implemented simple but effective therapeutic interventions that helped keep LF calm, including bathing and playing music.

IMPACT/DISCUSSION: There is a growing population of non-verbal adults with developmental disabilities (DD). As medical advances have increased the life expectancy of these patients, they are now under the care of general internists. Rett Syndrome is one such example: RTT is an X-linked dominant neurodevelopmental disorder caused by a mutation on the MECP2 gene on the X chromosome and one of the most common causes of severe impairment in females. While initial studies on Rett Syndrome painted a dismal prognosis, newer studies indicate survival into adulthood is actually typical. These patients pose particular challenges for general internists, as changes in baseline behavior require comprehensive workups to determine if there is an underlying medical problem. In addition to a thorough physical exam, the workup for acute agitation relies heavily on caregiver insight. However, it is equally important that physicians be able to manage acute agitation. Current evidence suggests a multifactorial therapeutic approach to the patient with DDs, including newer non-medical interventions such as music or water therapy. These interventions have shown improvements in both social and physical domains and have been found to reduce caregiver stress.

CONCLUSION: Addressing acute behavioral change in non-verbal adults with developmental disabilities requires a thorough history and physical exam, as well as coordination among interdisciplinary care providers who can create personalized therapeutic approaches.

RECURRENT MUCOID PSEUDOMONAS INFECTION AND BRONCHIECTASIS: A LATE DIAGNOSIS OF CYSTIC FIBROSIS (CF) IN A 65-YEAR-OLD MAN

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LEARNING OBJECTIVE #1: Distinguish the clinical presentation of adult-diagnosed cystic fibrosis as compared to pediatric-diagnosed cystic fibrosis.

LEARNING OBJECTIVE #2: Evaluate underlying etiologies for patients presenting with recurrent bronchiectasis.

CASE: A 65-year-old Caucasian man with history of CAD, HFrEF, and OSA presents with 3 weeks of productive cough, exertional dyspnea, sinus pressure, and frontal headache. 18 months ago, he was treated for mucoid Pseudomonas and MSSA pneumonia with 6 weeks of ciprofloxacin and 3 weeks of piperacillin/tazobactam transitioned to 3 weeks of dicloxacillin. 8 months prior, he was again treated for mucoid Pseudomonas, MSSA, and Aspergillus pneumonia with 7 weeks of piperacillin/tazobactam, ciprofloxacin, and voriconazole. Currently, his CT shows bronchiectasis with extensive bronchial plugging and tree-in-bud nodules and sinusitis. Bronchoscopy with BAL showed pan-sensitive mucoid Pseudomonas and MSSA, which was treated with piperacillin/tazobactam and ciprofloxacin. Extensive workup uncovered Phe508del and Arg117His CF alleles; he was unable to produce enough sweat for a chloride test. Work-up was negative for primary and secondary immunodeficiencies, systemic inflamatory diseases, alpha-1 antitrypsin deficiency (A1AD), allergic bronchopulmonary aspergillosis (ABPA), and other conditions. Additional history revealed recurrent and prolonged sinus infections in his late 20s; his nephew was diagnosed with CF in childhood. He has no history of pancreatitis and has never fathered. He was referred to the University of Wisconsin CF center for lumacaftor/ivacaftor therapy.

IMPACT/DISCUSSION: Although CF is most commonly diagnosed in childhood, 10% of CF patients are diagnosed after age 18. With the advent of new targeted CF therapies, delays in diagnosis could lead to worse outcomes for patients. This case of late-diagnosed CF highlights unique diagnostic features in adults for a disease otherwise typically diagnosed in childhood. For examples, one of the diagnostic criteria for CF includes labortaory evidence such as sweat chloride testing or genetic testing; though adult-diagnosed patients typically have lower sweat chloride values, so the value of genetic testing is greater. Other distinguishing features noted in this case include retained pancreatic function and lack of gastrointestinal manifestations. Similarities to child-diagnosed CF are described as well, which include bronchiectasis, predominance of Pseduomonas infections, and sinusitis. Furthermore, bronchiectasis entails a broad differential, which includes CF, immunodeficiencies, systemtic inflammatory diseases, A1AD, APBA, primary ciliary dyskinesia, leukocytic dyfunction, and etc. Given the patient's presentation of recurrent bronchiectasis, this case demonstrates how to evaluate the possible causes underlying this condition.

CONCLUSION: Internists can recognize CF manifestations in older adults presenting with bronchiectasis, tree-in-bud nodule CT findings, and mucoid Pseudomonas pneumonia, particularly with recurrent episodes.

RECURRENT PSE: NOT ALWAYS A COMPLIANCE ISSUE

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LEARNING OBJECTIVE #1: Develop an illness script for portosystemic shunt in patients with cirrhosis.

LEARNING OBJECTIVE #2: Recognize the importance of time course when determining the etiology of portosystemic encephalopathy (PSE).

CASE: 50-year-old woman with primary biliary cholangitis/autoimmune hepatitis, cirrhosis, and recurrent PSE presented with altered mental status for several days, making this her third episode in the span of three weeks. Prior episodes were presumed to be secondary to medication noncompliance, and on a separate occasion UTI. On admission she was unable to name her home medications but reported having three bowel movements daily. She reported no symptoms of infection. Physical exam revealed mild abdominal distention, and point-of-care ultrasound showed an insufficient fluid pocket for diagnostic paracentesis. Glucose was 61, and electrolytes were normal with the exception of Na 135. Ammonia was 54, decreased from 77 last admission. Zinc level was sent. She was monitored closely for hypoglycemia, which did not recur, and treated with rifaximin and lactulose at increased frequency compared to her home regimen. Mental status improved, though she continued to have inattention consistent with low-grade hepatic encephalopathy.

Triphasic MRI was negative for hepatocellular carcinoma but revealed evidence of advanced portal hypertension, including a large spontaneous splenorenal shunt. Plans were made for outpatient follow up with possible shunt closure by IR. After discharge, zinc level returned low at 25.

IMPACT/DISCUSSION: It is important to distinguish among episodic, recurrent, and persistent time courses in patients with PSE. Here the time course was at least recurrent, possibly persistent. Persistence requires that symptoms are always present, interspersed with episodes of more overt encephalopathy. She had two potentially reversible etiologies of recurrent PSE: zinc deficiency and portosystemic shunt. Large studies

demonstrating the efficacy of zinc supplementation are lacking; however, one study of patients with refractory disease did show that supplementation was associated with decreased encephalopathy grade (Takuma et al., 2010). Perhaps more important, she had large spontaneous splenorenal shunt, which diverts ammonia from the liver and can cause more sustained encephalopathy resistant to medical therapy. Splenorenal shunt prevalence has been estimated at 10.5% (Xingshun et al., 2017) and 18.5% (Tarantino et al., 2009), making it relatively rare. However, its identification allows for targeted treatment. MRI can be used for both hepatocellular carcinoma screening, as in this case, and shunt detection. PSE that is resistant to proper therapy, with elevated ammonia, would be mainstays of the illness script for portosystemic shunt.

CONCLUSION: 1. Portosystemic shunt should be considered in recurrent and/or persistent PSE.

2. It is important to avoid search satisficing, even in patients with history of medication noncompliance.

RECURRENT SEPTIC ARTHRITIS CAUSED BY COCCIDIOMYCOSIS

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LEARNING OBJECTIVE #1: Consider Coccidiomycosis as a cause of culture negtive septic joint

CASE: A 40 year old male with a past medical history notable for ERSD on dialysis, diabetes mellitus, and pulmonary coccidiomycosis diagnosed in 2014 presented in the Spring of 2019 with two months left knee pain concerning for septic arthritis. He had no signs of systemic or pulmonary infection. He had been evaluated at an outside clinic two months prior with a joint aspiration showing 49,000 WBCs with a 92% neutrophil predominance. MRI was consistent with infection, but bacterial and fungal cultures were negative. He was prescribed Bactrim, however, his symptoms continued to worsen and started to affect his gait. On admission, he was prescribed fluconazole 400mg PO, levofloxacin and vancomycin for 4 weeks. He underwent left knee arthrotomy and debridement with once again negative bacteria growth and negative fungal and AFB stains. However, Cocci Ab Complement fixation titer was positive.

The patient presented again a few months later with worsening knee pain despite reported adherence and completion of antibiotic regimen. He underwent left knee irrigation and debridement. Surgical pathology showed granulomatous and acute and chronic inflammation with organisms consistent with coccidiomycosis. Synovial fluid culture showed coccidioides immitis.

IMPACT/DISCUSSION: Coccidiomycosis infections are frequently acquired in endemic regions of the country and for the most part result in an asymptomatic presentation or primary lung infection. Between 0.2 to 4.7% of exposures may result in extra-pulmonary manifestations including dissemination to the skin, subcutaneous tissue, meninges/spinal cord, vertebrae and joints. This case report highlights a case of potential fluconazole- resistant disseminated coccidiomycosis in San Antonio, Texas, a likely endemic area according to the CDC. This patient showed signs of disseminated disease localized to the left knee approximately 5 years after a diagnosis of pulmonary disease was made in 2014. In an immunocompromised patient presenting with septic arthritis and a remote history of coccidiomycosis it is advisable to include this pathogen in your differential, sometimes even despite negative cultures.

CONCLUSION: Coccidiomycosis infections are frequently acquired in endemic regions of the country, and a monoarticular infection of the knee joint is the most frequent type of joint affected in dissemination. In this case we discussed a patient who, after multiple rounds of antibiotics and negative fungal cultures, had no improvement in his knee pain and was later found to have surgical pathology and synovial culture consistent with coccidiomycosis.

RECURRENT VENOUS AND ARTERIAL THROMBOEMBOLIC EVENTS AS FIRST MANIFESTATIONS OF PANCREATIC MALIGNANCY

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LEARNING OBJECTIVE #1: Identify thromboembolic events as potential presenting manifestations of malignancy

LEARNING OBJECTIVE #2: Recognize the possibility of underlying pancreatic malignancy in patients with arterial and venous thrombosis in the absence of an identifiable hypercoagulable disorder

CASE: A 64-year-old man presented with acute onset right hemiparesis and facial droop. His past medical history was notable for hypertension, diabetes mellitus type 2, coronary artery disease, and recently diagnosed bilateral popliteal deep venous thrombosis for which he was taking Apixaban. At presentation, his vital signs were stable and initial labs were unremarkable, except for hemoglobin 9.4 and troponin 0.46. On physical exam, he had aphasia, right facial palsy, and decreased right upper and lower extremity muscle strength with intact sensation. Head CT angiogram revealed distal left A2/A3 anterior cerebral artery segment occlusion. Patient underwent thrombectomy and was started on Enoxaparin. One week after starting anticoagulation, patient developed new right hemiparesis and was found to have multiple new strokes with one dominant stroke in the left middle cerebral artery distribution on brain MRI. His course was further complicated by acute bilateral lower extremity ischemia discovered to be due to bilateral popliteal artery thrombosis. CT of the abdomen and pelvis showed multiple wedge-shaped infarcts in the spleen and left kidney, a hypoenhancing 2.6 x 1.9 cm mass in the head of the pancreas, and multiple enlarged mesenteric, periportal, and retroperitoneal lymph nodes. Hypercoagulability workup including testing for lupus anticoagulants and hereditary thrombophilia were negative. Endoscopic ultrasound-guided fine needle aspiration biopsy of the mass revealed pancreatic head adenocarcinoma.

IMPACT/DISCUSSION: Reported incidence of thromboembolic events in pancreatic malignancy is estimated to be 17-57%. Among thromboembolic disorders, venous events, such as deep venous thrombosis, pulmonary embolism, splenic and mesenteric vein thrombosis are more prevalent than arterial events, which are estimated to have a lower incidence of 2-5%. Thromboembolic events, in particular, those preceding the diagnosis of pancreatic cancer, or events happening early in the course of malignancy have been associated with an overall poorer prognosis and a higher risk of death. Cerebrovascular events and myocardial infarction are the most commonly reported arterial thromboembolic events associated with pancreatic neoplasms. Simultaneous development of arterial and venous thrombosis often raises suspicion for an underlying hypercoagulable disorder; However, in adult patients, it should also prompt consideration for evaluation of underlying malignancy.

CONCLUSION: The above case is a reminder that in the absence of an identifiable hypercoagulable disorder, simultaneous development of arterial and venous thrombosis should raise concerns for underlying pancreatic malignancy.

REPEAT TESTING REVEALS THE DIAGNOSIS: A CASE OF ACUTE HEPATITIS A

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LEARNING OBJECTIVE #1: Identify acute Hepatitis A as a cause for acute liver failure

LEARNING OBJECTIVE #2: Recognize that repeat testing for Hepatitis A IgM should be performed if clinical suspicion for acute Hepatitis A is high

CASE: A 65-year old male with a history of type 1 diabetes and hypothyroidism presented with malaise, lethargy and gait instability in the setting of daily alcohol consumption. He was found to have a transaminitis of AST 170 and ALT 161, Total bilirubin 1.2 and INR of 1.3. Initial workup including acute hepatitis panel was negative. The patient's labs progressively worsened to AST of 11,460, ALT of 8,743, bilirubin of 8.0, and INR 1.6 and the patient was transferred to a tertiary medical center for possible liver transplant evaluation. Despite medical treatment, the patient's mental status deteriorated and he was transferred to the ICU for concern of fulminant liver failure and the patient began evaluation for possible liver transplant. At that time, further testing including a repeat viral hepatitis panel demonstrated a positive Hepatitis A IgM. Over the next several days the patient's labs and clinical status improved and he was transferred out of the ICU. A transjugular liver biopsy was obtained showing mixed panlobular hepatitis with mixed inflammation including predominantly lymphoplasmocytes, eosinophils, and neutrophils consistent with acute hepatitis A infection. The patient was discharged home with outpatient follow up.

IMPACT/DISCUSSION: Hepatitis A Virus (HAV) is a common cause of acute hepatitis globally, with approximately 1.5 million cases annually. Acute Hepatitis A infection often presents with nausea, vomiting, fever, malaise, and abdominal pain. Lab work suggestive of acute HAV includes markedly elevated transaminases > 1000 IU/dL. The diagnosis of acute hepatitis A virus (HAV) infection is confirmed by presence of anti-HAV IgM antibodies. However, early in the disease course testing for Hepatits A IgM antibodies can be negative. The majority of acute HAV infections resolve with conservative therapy. However, a small proportion of infected patients (<1%) can progress to acute liver failure. Acute liver failure is defined as evidence of coagulopathy (INR > 1.5), presence of encephalopathy without pre-existing liver disease and duration of symptoms less than 26 weeks. Early recognition is crucial since liver failure is associated with high rate of morbidity and mortality. Patients with acute liver failure should be considered for transfer to a liver transplant center as worsening liver failure from Hepatitis A may result in necessity of a liver transplant.

CONCLUSION: Hepatitis A virus infection is an important diagnosis to consider in patients with severe transaminitis. Heapatitis A IgM antibody testing may be negative early in the disease course and testing should be repeated if clinical suspicion for acute hepatitis remains high as this may reveal the diagnosis. Patient with acute liver failure should be considered for transfer to a liver transplant center.

RETURN PRECAUTIONS: A CASE OF INTERMITTENT ANGIOEDEMA

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LEARNING OBJECTIVE #1: Evaluate conditions with episodic clinical manifestations

LEARNING OBJECTIVE #2: Recognize angioedema as a cause of intermittent soft tissue swelling **CASE:**

A 55-year-old man with a history of allergic rhinitis presented for evaluation of recurrent soft tissue swelling.

8 days prior, he had swelling of the distal phalanx of his right fourth finger followed by painful swelling over his bilateral wrists. This was associated with a raised, erythematous, and pruritic papular rash on his palms that extended up his forearms bilaterally, which subsequently resolved.

Two days later, the patient experienced similar swelling to his bilateral ankles without any associated rash. Additionally, he described a sensation of transient fullness to the right half of his tongue that self-resolved over the course of a day.

He presented 4 days later to his primary care clinic for further evaluation. He was, again, symptom-free at this time. His exam was notable only for the presence of inducible dematographism. The patient was prescribed an epinephrine pen, referred for laboratory testing, and told to present to the emergency room if he developed any further swelling, especially of his face or oral cavity.

Four hours after leaving his primary care appointment, the patient's upper lip doubled in size. He did not have any tongue swelling, wheezing, rash, or shortness of breath. Given this concerning new finding and the return precautions from his primary care provider, he presented to the emergency department.

On arrival to the ED, his VS were within normal limits. Exam was notable for asymmetric perioral edema without uvular edema. A laboratory evaluation was notable for normal C4 level of 28.9 (11-30), tryptase 4 (<11), and negative testing for C1 esterase inhibitor.

He was started on antihistamine therapy and observed overnight in the hospital. His symptoms improved, and he denied further episodes of tissue swelling at his follow up in the allergy/immunology clinic.

IMPACT/DISCUSSION: This patient's presentation of recurrent subcutaneous swelling was most consistent with allergic (histaminergic) angioedema, given his apparent allergic diathesis and prominent associated urticaria.

Angioedema refers to localized, nondependent tissue swelling due to increased vascular permeability. The underlying mechanisms leading to angioedema can be classified as (1) histaminergic or mast-cell mediated, (2) bradykinin-mediated, or (3) due to unknown mechanisms.

Management depends on the type of angioedema, as non-histaminergic causes will not respond to antihistamines, epinephrine, or corticosteroids. In cases with potential airway involvement, close observation in the hospital setting may be warranted to monitor for involvement of the uvula or glottic region.

CONCLUSION: The present case highlights the difficulty associated with diagnosing conditions with episodic symptoms. In such instances, effective communication with our patients (often in the form of "return precautions") can help us ultimately reach a final diagnosis.

RHABDOMYOLYSIS AND ACUTE KIDNEY INJURY ASSOCIATED WITH LEGIONELLA PNEUMONIA

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LEARNING OBJECTIVE #1: To recognize rhabdomyolysis as a complication of *Legionella* pneumonia

CASE: A 46-year-old man with a history of hypertension presented with 1-day of dyspnea and productive cough. He also noted 3-day of worsening malaise, chills, and non-bloody diarrhea. There was a *Legionella* outbreak at his apartment building.

Vital signs included temperature 97.9 F, HR 88 bpm, BP 128/83 mm Hg, RR 20 bpm, and SpO2 95% on 5L NC. Lung exam revealed decreased breath sounds over the left upper lung field without crackles. Lab showed WBC 13.5 x10^9 /L with 37% bands, BUN 37 mg/dL, creatinine 3.36 mg/dL, and CPK 11,372 U/L. A chest X-ray revealed a large focal opacity in the left middle lung field. CT of the chest showed a large mass-like consolidation in the left upper lobe.

He was admitted to the ICU for severe community-acquired pneumonia complicated by rhabdomyolysis and acute kidney injury (AKI). Azithromycin, levofloxacin, and ceftriaxone were initiated. He was intubated for acute hypoxic respiratory failure and started on vasopressors for septic shock. Urine *Legionella* antigen test was positive. CPK continued to rise to 21,414 U/L and creatinine to 7.52 on day 4. Renal replacement therapy was started. His AKI failed to improve, and septic shock persisted even though his antibiotic regimen was broadened multiple times for potential superinfection. His condition continued to decline, and multi- organ failure ensued, and he died on day 17.

IMPACT/DISCUSSION: The first report on the association between *Legionella* pneumonia and rhabdomyolysis was published in 1980. Since then several cases have been reported, however, the incidence of *Legionella*-associated rhabdomyolysis remains unknown. Although the exact mechanism of *Legionella*- associated rhabdomyolysis is not well-understood, it is hypothesized that either release of endotoxin into the systemic circulation with subsequent muscle injury or direct invasion of *Legionella* into the muscles plays a role. Rhabdomyolysis and subsequent AKI in *Legionella* pneumonia are associated with poor clinical outcomes. Among 16 reported patients with *Legionella* pneumonia who developed rhabdomyolysis and AKI, 11 patients required hemodialysis (HD), and 2 patients died. Prompt treatment with appropriate antibiotics and aggressive fluid resuscitation could lead to full recovery without HD in some patients.

CONCLUSION: Rhabdomyolysis and subsequent AKI are uncommon, but potentially fatal complications of *Legionella* pneumonia. My case illustrates the importance of recognizing rhabdomyolysis and AKI as complications of *Legionella* pneumonia.

RIGHT ATRIAL THROMBUS FORMATION: CONSIDERATIONS AND MANAGEMENT

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LEARNING OBJECTIVE #1: Identify the causes of right atrial thrombus formation

LEARNING OBJECTIVE #2: Recognize the presentation, treatment, and follow-up of right atrial thrombus

CASE: A 58-year-old woman with end-stage renal disease presented to the emergency department with shortness of breath. She reported that it had been worsening for weeks, particularly with exertion, but without associated chest pain. She also reported occasional palpitations. Physical examination was only remarkable for irregularly irregular heart sounds. EKG revealed atrial fibrillation (AF) with a rapid ventricular rate. Labs were unremarkable except for an elevated creatinine and low hemoglobin. A transthoracic echo (TTE) revealed a 3.4 x 1.6 cm right atrial thrombus proximal to the tricuspid annulus with a normal ejection fraction. Anticoagulation with heparin was initiated, and the patient underwent an IR-guided thrombectomy. TTE after the procedure revealed persistence of the thrombus. Cardiac MRI was obtained to differentiate thrombus from mass, and confirmed the likelihood of chronic thrombus. The dialysis catheter that was in place was changed, and patient was discharged on warfarin. Repeat TTE 4 months later had no evidence of intracardiac thrombus.

IMPACT/DISCUSSION: Right atrial (RA) thrombus formation is a serious occurrence that must be recognized by physicians. While thrombi seen in the RA can be in transit from venous circulation, the presence of in-dwelling catheters, pacemaker leads, septal closure devices, or tricuspid prosthesis can predispose to the formation of RA thrombi. The exact incidence is unknown; studies have described about 7% of patients with central venous catheters having RA thrombi. In addition, RA thrombi can occur in approximately 3 to 6% of patients with atrial fibrillation (AF), compared to a 13% incidence of left atrial thrombi in AF. Patients may present with shortness of breath, which occurs as a result of pulmonary thromboembolism (PTE) that occurs in roughly 36% of patients with RA thrombi, with some studies reporting up to a 98% incidence. TTE is usually sufficient for diagnosis, although other modalities such as transesophageal echocardiography or cardiac MRI are sometimes necessary for better visualization and characterization of the thrombus. Urgent treatment of RA thrombi is necessary due to high potential for complications such as PTE, right ventricular hypokinesis, hemodynamic compromise, and mortality. Treatment options include medical management with anticoagulation and/or thrombolysis, percutaneous intervention, or surgical thrombectomy. Nevertheless, there is no consensus or studies providing evidence for the optimal treatment strategy. Therefore, the choice of treatment depends on the thrombus characteristics, presence of PTE, hemodynamic status, and contraindications.

CONCLUSION: RA thrombus is a serious and possibly fatal complication of implantable hardware, AF, or PTE in transit. Clinicians should maintain high suspicion in susceptible patients to promptly identify and treat it in a timely manner.

RIGHT TO LEFT SHUNT RESULTING IN RIGHT TO LEFT CONFUSION: MALIGNANCY ASSOCIATED GERSTMANN SYNDROME

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LEARNING OBJECTIVE #1: Recognize the signs and symptoms of Gerstmann syndrome.

LEARNING OBJECTIVE #2: Recall the importance of a bubble study or Doppler flow when searching for an embolic etiology of stroke.

CASE: A 68-year-old man with recently diagnosed prostate adenocarcinoma presented after one day of altered mental status. He reported confusion, trouble communicating his thoughts, and difficulty speaking. He was experiencing sensory neglect in his right lower extremity, difficulty with short-term recall, writing his name, and performing simple arithmetic. He identified every finger on his left hand as thumbs, and he had left-right disorientation. CT head non contrast was unrevealing. CT angiography of the head and neck revealed supraclavicular lymphadenopathy and a 6 mm pulmonary nodule in the superior right lower lobe. MRI brain revealed scattered areas of ischemia in the left parietal and posterior temporal lobe in the distribution of the left middle cerebral artery, concerning for emboli. Transthoracic echocardiogram showed patent foramen ovale (PFO), and doppler ultrasound of the legs showed several thrombi bilaterally.

A diagnosis of Gerstmann syndrome was made. CT chest, abdomen, and pelvis revealed a right lower lobe pulmonary embolism, multiple bilateral pulmonary nodules, mediastinal lymphadenopathy, and a T8 mass with a pathological fracture. Anticoagulation was initiated. A lymph node biopsy was completed, and he was diagnosed with stage IV adenocarcinoma of the lung.

IMPACT/DISCUSSION: Internal Medicine physicians are often the team leaders for patients with stroke complicated by paradoxical embolism, as the patients require coordination with multiple specialties. Our patient experienced the classic tetrad of Gerstmann syndrome, which consists of agraphia, acalculia, right-left disorientation, and finger agnosia. It is a rare disorder associated with lesions of the dominant hemisphere at the temporal and parietal lobe junction and can be seen in a number of conditions such as Alzheimer's, multiple sclerosis, mucormycosis, and cerebrovascular accidents. Few case reports exist on the diagnosis of Gerstmann syndrome, especially when associated with a malignancy and thrombo-embolic disease.

In addition, our patient was found to have a PFO when we were investigating the etiology of his stroke. Initial workup when investigating possible cardiac etiology involves a transthoracic echocardiogram with bubble study or doppler. The American Society of Echocardiogram guidelines recommend using bubble study over doppler for detection of intracardiac communication as it is better at detecting these shunts. **CONCLUSION:** This case highlights the importance of recognizing the presentation of Gerstmann syndrome as it can assist with localizing parietal lobe pathology. Additionally, we discussed the utility of using echocardiogram with agitated saline (bubble study) over doppler for identifying a patent foramen ovale.

RITUXIMAB INDUCED STRESS CARDIOMYOPATHY : AN UNUSUAL CASE OF CARDIOTOXICITY

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LEARNING OBJECTIVE #1: Diagnose cardiovascular complications related to rituximab

LEARNING OBJECTIVE #2: Assess cardiac risk for patients prior to administering immunotherapy

CASE: 56 year old man with history of fevers of unknown origin for five years presented with sudden right eye ptosis with CT head showing acute intraparenchymal hemorrhage in the right midbrain. Vitals were significant for temperature of 100.4F, BP 110/60, heart rate 90 bpm, and physical exam was unremarkable except for ptosis. No acute neurosurgical intervention was performed and the patient was kept under observation. During the course of hospitalization, patient continued to have fever ranging from 100.4 to 103.1F. Labs were significant for positive antineutrophil antibody (ANA) 1: 80 with speckled pattern and positive EBV DNA PCR. Patient had an extensive work up for the fever including blood cultures, urine culture, CT chest, abdomen, pelvis, bone marrow biopsy, bronchoscopy, HIV, PET-CT, rheumatological work up which were negative. Chest X-ray (CXR) showed clear lungs with transesophageal echocardiogram showing ejection fraction of 60% with no wall motion abnormalities and no vegetations. Diagnosis of chronic EBV infection was made and patient was started on Rituximab. Immediately after finishing rituximab infusion, patient developed tachypnea, tachycardia and acute respiratory distress requiring emergent intubation. CXR showed worsening pulmonary edema and bilateral pleural effusions. Labs showed troponin of 7.2 ng/ml with BNP of 2500 pg/ml. Echocardiogram showed akinesis of antero-septum, apex and distal anterior wall with severely reduced ejection fraction of 20%, suggestive of stress induced cardiomyopathy secondary to rituximab infusion. Patient underwent aggressive diuresis with repeat echocardiogram one week later showing mild akinesis of the apical septum with ejection fraction of 45%. Patient was subsequently extubated with clinical improvement in respiratory status.

IMPACT/DISCUSSION: Rituximab is a monoclonal antibody against CD20 receptors of B-cells and has shown efficacy in rheumatoid arthritis, autoimmune diseases and against multiple malignancies. It has been known to cause cardiac adverse effects such as angina and arrhythmias, especially in patients with known cardiovascular disease. However, its cardiotoxic profile is not well documented in patients with normal cardiac function. In fact, there is only one case report in the literature of stress induced cardiomyopathy in a patient with normal cardiac function. LVEF recovery could not be documented in that patient as he died of non-cardiac cause. Here we have presented a unique case of a patient with normal cardiac function who developed acute stress cardiomyopathy from treatment with rituximab, with improvement in the cardiac function with aggressive medical therapy.

CONCLUSION: Stress cardiomyopathy is a rare but life threatening complication of rituximab. Complete cardiac evaluation should be performed in all patients prior to administering this medication.

RPR IN THE DANGER ZONE: A CASE OF THE PROZONE EFFECT IN SECONDARY SYPHILIS

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LEARNING OBJECTIVE #1: Understand the prozone effect in diagnosing syphilis

LEARNING OBJECTIVE #2: Recognize the presentation of secondary syphilis

CASE: A 34-year old male with a history of AIDS (CD4 count 268 cells/μL, viral load 31 copies/mL) and Kaposi's sarcoma presented with two days of diarrhea, abdominal pain, and a new rash on his hands. He had unprotected sexual intercourse with a new partner a few days prior to admission.

On presentation, he was febrile and tachycardic. Physical exam revealed a hyperpigmented rash on his palms and soles bilaterally and condyloma lata on rectal exam. Initial laboratory workup revealed an alanine aminotransferase of 467 unit/L, aspartate aminotransferase of 259 unit/L, alkaline phosphatase of 1255 unit/L, and a total bilirubin of 0.3 mg/dL. An RPR was non-reactive. Gonorrhea and chlamydia screening from the rectum was positive.

Secondary syphilis was suspected due to his pathognomonic presentation despite the unreactive RPR. The patient's RPR sample was re-run after dilution which was reactive with a titer of 1:32. The patient was treated for secondary syphilis with one dose of 2.4 million units of benzathine penicillin IM. His diarrhea was thought to be secondary to proctitis from GC/Chlamydia, however, due to the severity of symptoms, he was treated empirically with a course of doxycycline for lymphogranuloma venereum. His symptoms improved and liver enzymes began to downtrend. Outpatient follow up showed near normalization of liver enzymes.

IMPACT/DISCUSSION: Secondary syphilis occurs in approximately twenty-five percent of individuals with untreated primary syphilis. Manifestations of secondary syphilis are varied, and can include the classic palmar and solar rash, a diffuse body rash, condyloma lata, glomerulonephritis, hepatitis, CNS involvement in addition to constitutional symptoms such as fever, malaise, lymphadenopathy, arthralgias, and weight loss.

Syphilitic hepatitis, as seen in this case, typically presents with a disproportionally elevated alkaline phosphatase level, with normal to mildly elevated transaminase and bilirubin levels. Liver enzymes normalize after treatment for syphilis.

False negative results can occur due to an antibody-antigen mismatch called the prozone phenomenon. Agglutination reactions rely on an antibody to antigen ratio within the zone of equivalence, or optimal ratio. The prozone refers to an excessively high antibody to antigen ratio, while the

post zone refers to a low antibody to antigen ratio. Both can lead to false negative results, as a visible precipitant will not form properly.

CONCLUSION: This case demonstrates that when the clinical suspicion for syphilis is high, it is prudent to have the laboratory dilute the sample in an attempt to bring the antibody to antigen ratio into the zone of equivalence if the initial RPR is non-reactive.

SATURDAY NIGHT FEVER OF UNKNOWN ORIGIN

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LEARNING OBJECTIVE #1: Recognize hemophagocytic lymphohistiocytosis (HLH) as a rare cause of fever of unknown origin (FUO).

LEARNING OBJECTIVE #2: Distinguish between primary/secondary HLH, their respective associations, unique treatments, and highlight diagnostic criteria.

CASE: A previously healthy 56-year-old male with T-cell rich B-cell lymphoma presented for further evaluation of a three-week history of unexplained fevers and fatigue on a Saturday evening.

On initial evaluation, he was febrile to 38.9°C but denied any localizing signs or symptoms of infection. History was negative for autoimmune disease, infection, or new medications. Despite chemotherapy completion, he continued to have persistent pancytopenia, requiring weekly transfusions. Examination revealed conjunctival pallor, scleral icterus, and hepatosplenomegaly.

Laboratory evaluation revealed anemia (6.5 g/dL), thrombocytopenia (18 x /L), leukopenia (2.3 x /L), normal absolute neutrophil count (ANC), transaminitis (ALT 202 U/L, AST 172 U/L and alkaline phosphatase 202 U/L), triglycerides 375 mg/dL, INR 1.4, aPTT 26s, fibrinogen 142 mg/dL. Peripheral blood smear, bilirubin and creatinine were normal and a broad workup was negative for a source of infection but ferritin was 17550 mcg/L. Bone marrow aspirate/ biopsy revealed a normocellular bone marrow without morphologic features of lymphoma involvement but showed macrophages with hemophagocytosis.

IMPACT/DISCUSSION: Hemophagocytosis is a process by which hematopoietic cells are engulfed by aberrantly activated macrophages leading to cytopenias due to immune dysregulation. HLH is a rare group of disorders where this process occurs, the etiology of which can be primary (familial) due to underlying genetic mutations (perforin, munc, and syntaxin) or secondary (acquired) in adults triggered by infection, rheumatologic conditions or malignancy. In this case, HLH was due to underlying lymphoma.

It is important for the internist to consider HLH as a cause of FUO in patients with known malignancy presenting with fever, hepatosplenomegaly and pancytopenia. Initial testing includes the above studies to fulfill 5 diagnostic criteria: fever >38.5°C, splenomegaly, peripheral blood cytopenia, hyperglyceridemia, hypofibrinogemia, evidence of hemphagocytosis, low/absent natural killer cell activity, ferritin > 500 ng/mL, and elevated soluble CD25. Similar to a comprehensive FUO workup, differential diagnoses include infection, autoimmune conditions, and malignancy. Treatment is targeted towards the identified trigger for secondary HLH while the HLH-04 protocol and hematopoietic cell transplantation are required for primary HLH. Prognosis is poor with an adult survival rate of 50% following treatment. In this patient, targeted treatment for lymphoma was resumed.

CONCLUSION: While HLH clinically mimics more common presentations of FUO, it requires prompt targeted treatment given survival rate

Diagnosis of HLH requires fulfilling 5 of 8 diagnostic criteria

Primary and secondary HLH present similarly but require vastly different treatments

SCARLET FEVER: A PEDIATRIC PRESENTATION IN THE ADULT NEUTROPENIC PATIENT

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LEARNING OBJECTIVE #1: Identify key history, physical exam, and laboratory findings that lead to a diagnosis of scarlet fever in an adult neutropenic patient.

CASE: A 68-year-old male with a history of hypertension, type 2 diabetes, cirrhosis and metastatic prostate cancer presented with a sore throat, neck and groin rash, and marked weakness. The patient was in his usual state of heath until three days before presentation when he developed a sore throat and a small, pruritic rash on his neck. The rash spread to his upper chest and became erythematous. The patient developed generalized weakness and was brought to the emergency department. On presentation, the patient reported sore throat, cough, fevers, chills, rash and weakness but denied myalgia, joint pain or rhinorrhea.

The patient had a family history of hypertension and diabetes. He denied alcohol, tobacco, or recreational drug use. He had completed two radiation treatments and multiple rounds of chemotherapy for prostate cancer. One week prior to admission, he started a new chemotherapy agent, docetaxel. The patient's physical exam was notable for an erythematous oropharynx, muffled speech, and diffuse erythema covering the neck and upper chest with very small papular elevations and a similar rash on his groin. The patient had an unremarkable basic metabolic panel and a complete blood count notable for leukopenia of 0.3 with absolute neutrophil count (ANC) of 10. A rapid streptococcal antigen test was positive and a CT scan of the neck showed right palatine tonsil prominence, indicating tonsillitis. Two blood cultures drawn on hospital day one grew penicillin-resistant E. coli. The patient was started on Zosyn to cotreat the patient's streptococcal pharyngitis and E. coli bacteremia. His leukopenia was treated with filgrastim. By day 3, his ANC had improved, and his rash began to desquamate. He was discharged on Augmentin and Bactrim.

IMPACT/DISCUSSION: Scarlet fever is a syndrome describing an amalgam of symptoms caused by exotoxins released in Group A Streptococcal (GAS) infection. These symptoms typically include fever, pharyngitis, tonsillitis, an erythematous, sandpaper-textured rash, circumoral pallor and a "strawberry tongue". Typically, scarlet fever is diagnosed in the pediatric population and most commonly occurs in ages 5 through 15. It is diagnosed by clinical features in conjunction with laboratory evidence of a GAS infection. The rapid streptococcal antigen test (RSAT) is used commonly because of its high specificity. Because the RSAT is less sensitive, it should be followed by a throat culture in patients with a negative result. Streptococcal infections in the elderly are not uncommon. GAS is the most common bacterial cause of acute pharyngitis. However in this population, GAS infection rarely presents as scarlet fever. This case is unique as it demonstrates a pediatric presentation of a GAS infection in a neutropenic adult.

CONCLUSION: In the neutropenic adult patient, streptococcal infection can present as scarlet fever.

SCREENING FOR CHAGAS DISEASE - IS THERE A ROLE IN THE OUTPATIENT SETTING?

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LEARNING OBJECTIVE #1: Assess which patients may be at risk of Chagas disease and should be screened

LEARNING OBJECTIVE #2: Recognize some of the severe complications of untreated Chagas disease

CASE: A 43 year old Spanish speaking woman with a past medical history significant for depression, anxiety, Chagas disease diagnosed in 2017, and an unclear history of colitis presented to the emergency department with 7 hours of right arm weakness and difficulty speaking. The patient was originally from rural El Salvador and had moved to the United States in 2017. She had a family history that was only significant for extensive heart disease and she was not taking any medications. In the emergency department, the patient had a CT scan of her head which showed prominent subtentorial CSF space on the left but no acute abnormalities. MRI of the head showed an acute infarct of the left temporal parietal lobes. Echocardiogram demonstrated an ejection fraction of 55% and akinesis of the basal to mid inferolateral and anterolateral walls. Findings were attributed to untreated Chagas disease. The patient was started on aspirin 81 mg daily, a high intensity statin, and lifelong anticoagulation with Warfarin. With extensive physical and occupational therapy, she recovered most of her function. She followed up with infectious disease as an outpatient and treatment was begun with benznidazole. However, it had to be stopped secondary to side effects of the medication.

IMPACT/DISCUSSION: This patient was a relatively young and healthy woman who presented with a debilitating stroke. According to the World Health Organization, an estimated 8 million people worldwide are infected with Chagas disease, most of whom are originally from Latin America. This disease can have a wide range of health complications, including stroke, cardiomyopathy, gastrointestinal complications, and polyneuropathy. Most Chagas disease is vertically transmitted. As a consequence, it is recommended that at- risk patients of child bearing age are screened and treated if they test positive. In the United States, first line treatment is with benznidazole. This medication has numerous side effects and cannot be given in pregnancy. Once a diagnosis is made, echocardiogram to assess for abnormalities is recommended. One of the classic signs of Chagas cardiomyopathy is a left ventricle apical aneurysm, which signifciantly increases the risk of developing a stroke. There are currently no recommendations about preemptive anticoagulation for these patients. With climate change, it is likely that there will be more cases of Chagas disease from outside endemic areas, which may prompt more screening and treatment recommendations.

CONCLUSION: - Consider screening pregnant women and women of child bearing age from endemic areas, given the risk of vertical transmission

- Among patients who test positive, the consensus is that they should be treated if they can tolerate the medication, in order to avoid complications of Chagas disease, such as this case of stroke

SCROFULA: AN UNCOMMON CAUSE OF NECK SWELLING WITHIN THE UNITED STATES

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LEARNING OBJECTIVE #1: Diagnose tuberculosis lymphadenitis.

LEARNING OBJECTIVE #2: Recognize lymphadenitis as a common presentation of extrapulmonary TB.

CASE: Mr. G is a 26-year-old man with no prior medical history who presented with left greater than right sided neck swelling associated with mild pain of one week. He was given a 7-day course of amoxicillin-clavulanate, but his swelling worsened, so he sought further care.

The patient is Indonesian and was raised in a rural town 4 hours outside of Jakarta. He shared a home with his parents, both of whom are alive and without any significant medical history. He was employed by a cruise line. He denied substance use and had never been sexually active. His only animal contact was a pet pigeon. He took no medications routinely.

On admission, he was afebrile and normotensive, with a heart rate of 80 and respiratory rate of 15. Examination was notable for a 2x3cm mass in the posterior cervical chain, with minimal overlying erythema and mild tenderness to palpation. He had nontender lymphadenopathy in the deeper portion of the right posterior cervical chain. The remainder of the exam was normal.

Initial work-up was notable for a normal BMP, CBC, and LFTs. HIV was non-reactive. An ultrasound showed a neck collection with internal flow, consistent with a lymph node. A CT neck and chest demonstrated multistation, bilateral cervical lymphadenopathy with necrotic change and peribronchial nodular opacities in the bilateral upper lobes.

He was subsequently admitted for a pulmonary TB rule-out with 3 induced sputums, which were negative.

An IGRA was negative, as were a number of fungal studies. High suspicion for TB prompted an excisional biopsy, from which AFB stains were negative. Two days later, RIPE therapy was initiated by infectious diseases given high suspicion and notorious difficulties identifying TB. Five days after the biopsy, a Fite stain was positive for tuberculosis, confirming cervical TB lymphadenitis.

IMPACT/DISCUSSION: TB is typically perceived by clinicians as a pulmonary disease, but it can present with many different symptoms and findings. The CDC reported 9,029 TB cases in the US in 2018 and it is estimated that as many as 20% of these patients presented with extrapulmonary manifestations. Despite this, extrapulmonary findings are rarely discussed or taught to trainees, which may cause diagnostic error that can result in significant risk to the public given the disease's morbidity and mortality. This case demonstrates that patients with active TB can present looking clinically well and without significant pulmonary findings. Clinicians with high suspicion should pursue diagnostics, particularly in patients with high-risk demographics.

CONCLUSION: - Extrapulmonary TB can be hard to confirm and requires persistence to diagnose.

- The diagnosis of TB lymphadenitis may require FNA or excisional biopsy with culture if initial sputum samples are negative.

- The use of the Fite stain, which has higher affinity for the mycolic acids in mycobacterial cell walls, may also be helpful.

SEARCHING FOR THE ANTIGEN: A CASE OF RECURRING HYPOXIA

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LEARNING OBJECTIVE #1: Identify challenges of correctly diagnosing hypersensitivity pneumonitis.

LEARNING OBJECTIVE #2: Describe the importance of obtaining a thorough and thoughtful exposure history in patients with symptoms that suggest hypersensitivity pneumonitis.

CASE: An 80-year-old man presented with several weeks of progressive dyspnea and productive cough. Four weeks prior to presentation he was hospitalized with presumed viral pneumonia which improved with a steroid taper, but recurred upon returning home. Upon presentation the patient had profound hypoxia and required heated high flow oxygen to maintain saturations above 90%. Physical examination revealed a temperature of 37.5° C, pulse of 91, respirations of 18, and bibasilar crackles. Chest x-ray revealed bilateral alveolar opacities and computed tomography demonstrated diffuse ground glass opacities and evidence of fibrosing interstitial lung disease (ILD). The patient was admitted to the Intensive Care Unit for management of acute hypoxic respiratory failure and was started on broad spectrum antibiotics for presumptive hospital- acquired pneumonia. After 24 hours without improvement, high dose intravenous steroids were initiated with improvement in oxygenation. Upon further discussion, the patient revealed having "black mold" in his home humidifier. A hypersensitivity pneumonitis antigen panel was positive for *Aureobasidium pullulans* antibodies. The patient was discharged on prednisone and was instructed to remove the home humidifiers.

IMPACT/DISCUSSION: Hypersensitivity pneumonitis (HP) is an immune reaction to inhaled antigens that leads to inflammation of the lung parenchyma and airways. It is a rare diagnosis; a 2018 epidemiologic study of HP in insured patients in the US revealed a prevalence of 11.2 per 100,000 patients over the age of 65 (PMID 29236517). The most common presentation includes dyspnea, cough, and diffuse crackles which may be intermittent, recurring with repeated antigen challenges. HP may be misdiagnosed as pneumonia, asthma, or another ILD, and can progress to irreversible pulmonary fibrosis if the offending agent is not removed. Discovery of an antigen is independently associated with improved survival in HP (PMID 27719974). Respiratory illnesses are common in hospital and outpatient practices, so it is impractical to suggest that an exhaustive HP exposure history be performed for all patients with respiratory symptoms. However, a thorough exposure history should be performed for those with recurrent symptoms, and for those who do not respond to treatment as expected for other conditions or who have a known long-term exposure to an antigen.

CONCLUSION: Without diagnosis, management, and antigen removal, HP can lead to irreversible pulmonary fibrosis. HP should be considered, and a thorough exposure history taken, when the disease course does not match the presumed diagnosis, or is refractory to management of the presumed diagnosis.

SEEING CLEARLY ABOUT DOUBLE VISION: A CASE OF INTERNUCLEAR OPHTHALMOPARESIS AND A SYSTEMATIC APPROACH FOR DIPLOPIA

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LEARNING OBJECTIVE #1: Develop a systematic approach towards the diagnosis of diplopia

LEARNING OBJECTIVE #2: Recognize the signs of internuclear ophthalmoparesis and common causes

CASE: A 72-year-old male with history of hypertension on carvedilol, chronic kidney disease, controlled diabetes type 2, and hyperlipidemia on atorvastatin presented with sudden and persistent horizontal double vision. He denied any trauma, fever, pain, vision loss, or loss of sensory or motor ability. On exam the patient's blood pressure was 160/73 but he was afebrile. There were no obvious deformities of his eye or vision loss. His diplopia resolved as each eye was covered but returned with both eyes open. The patient had dysconjugate movement of eyes with horizontal gaze and upon gaze to the left, his right eye was unable to adduct and his left eye displayed abducting nystagmus. Neurological exam was otherwise normal.

Lab tests showed a mildly elevated blood glucose but were otherwise unremarkable. CT scan of the brain was without hemorrhage or new lesion. Ophthalmology was consulted and upon examination of the patient, the consultants were concerned for internuclear ophthalmoparesis and recommended MRI assessment.

Ultimately the MRI revealed an acute infarct of the right superior paramedian pons and he was treated for his stroke.

IMPACT/DISCUSSION: This case is a valuable illustration of the importance of the clinical exam and knowledge of anatomy in the systematic evaluation of diplopia. Whereas monocular diplopia would suggest local eye disease, the patient's binocular diplopia that only occured when both eyes were open suggested an issue with ocular misalignment. The horizontal nature of his diplopia narrowed the differential to etiologies affecting the medial or lateral rectus muscles or their innervation. The outward deviation of his eyes (exotropia) further eliminated causes of inward deviation of his eyes (esotropia). Ultimately the impaired adduction of one eye on lateral gaze with abducting nystagmus on the opposite eye correlated with the diagnosis of internuclear ophthalmoparesis (INO).

Furthermore this case shows the importance of recognizing stroke as a common cause of INO. In a case series of 410 patients with INO, infarct was responsible for 38% of case of which 87% were unlilateral, as was the case with this patient with affected right eye. Demyelination was responsible for 34% of cases and 73% were bilateral. The remaining 28% were due to unusual causes including trauma, infection, and tumor*.

*Virgo JD, Plant GT. Internuclear ophthalmoplegia. *Practical Neurology* 2017;17:149-153

CONCLUSION: A systematic approach towards diplopia with focus on the exam to elicit monocular vs. binocular, vertical vs. horizontal, exotropia vs. esotropia narrows the differential for diplopia.

The typical signs of internuclear ophthalmoparesis (INO) are impaired adduction of the affected eye and abduction nystagmus of the contralateral eye.

Infarct is one of the most common causes of INO, particularly if it is unilateral, and should trigger urgent evaluation.

SEPTIC EMBOLI FROM A PSEUDOMONAS AERUGINOSA-INFECTED AORTIC GRAFT

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LEARNING OBJECTIVE #1: Recognize *Pseudomonas aeruginosa* vascular graft infection as a source of septic emboli

LEARNING OBJECTIVE #2: Consider PET/CT as an additional imaging option when no source of infection is identified on other modalities

CASE: A 57-year-old woman with a history of cystic fibrosis with subsequent bilateral lung transplant complicated by an aortic rupture with repair presented with a progressively tender right lower extremity rash. She reported awakening with a red nodule that, within four hours, spread to include multiple purpuric, non- blanching papules on the plantar and lateral edges of the right tarsus and posterior calf. She was treated with ceftolozane/tazobactam and tobramycin since blood cultures from an outside hospital were positive for multi- drug resistant *Pseudomonas aeruginosa* mucoid. An ultrasound of the bilateral lower extremities showed no thrombosis and further imaging with a transthoracic echocardiogram (TTE) and computed tomography angiography (CTA) of the chest, abdomen, and pelvis found no infectious process. Pathology from a dermatologic biopsy was consistent with leukocytoclastic vasculitis, a non-specific finding in inflammatory and infectious processes. A positron

emission tomography-computed tomography (PET/CT) later revealed focal uptake on the surgical graft of the ascending thoracic aorta. Together, the findings were consistent with septic emboli resulting in Osler's nodes from a *Pseudomonas*-infected aortic graft.

IMPACT/DISCUSSION: The diagnosis of septic emboli can be challenging since it can encompass a wide range of presentations. In this case, the Osler's nodes initially suggested an endocarditis source. However, the TTE revealed no vegetations and CTA imaging showed no other infectious sources, though, endocarditis could not be completely excluded since no transesophageal echocardiogram was done during this admission. Given high clinical suspicion, a PET/CT was ordered, and identified the vascular graft infection (VGI) of the aorta. VGIs are highly infrequent and typically feature gram-positive bacteria as causative agents. This case is unique in that *P. aeruginosa* is a relatively uncommon cause of both VGI and septic emboli. Mucoid *P. aeruginosa* also produces biofilm that confers greater resistance to antibiotics. While there is no universally accepted definition or diagnosis for aortic VGI, the current gold standard for diagnosing VGI is the use of CT to identify perigraft fluid or gas and pseudoaneurysm, which were both absent in this case. Septic emboli often require a long duration of antibiotic treatment with source control given its high association with adverse complications. Although, in this case, only a prolonged course of antibiotics was provided because no surgical options were available for source control given the graft location.

CONCLUSION: Maintaining a high index of clinical suspicion for septic emboli is critical in quickly and accurately recognizing the infectious source to initiate treatment early on in the disease course.

SEVERE ANAPLASMOSIS, NOT CVA: CASE REPORT AND REVIEW OF LARGE MEDICAL SYSTEM CASES

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LEARNING OBJECTIVE #1: Anaplasmosis is a tick-borne illness caused by *Anaplasma phagocytophilum*. A review of CDC reports showed an increase in Anaplasmosis, with 1,193 cases reported in 2009 compared to 5,672 cases reported in 2017, with the majority of cases between May and October. Neurologic manifestations are uncommon.

CASE: A 72-year-old male presented in August with acute left-sided weakness. Patient was found to have an acute kidney injury (creatinine 5.3 mg/dL), thrombocytopenia (platelet count 25,000/mL), and rhabdomyolysis (CPK 25,000 units/L). Workup for an acute stroke was negative. Peripheral blood smears showed *Anaplasma* neutrophil inclusions in >30% of the buffy coat prep. PCR testing was positive for Anaplasmosis. He was treated with doxycycline for 10 days, with improvement within 48 hours. He was discharged home after a 13-day hospital course with no residual neurological deficits.

IMPACT/DISCUSSION: A review of our medical system between January 1st, 2016 and December 31st, 2018 revealed 20 cases of Anaplasmosis. All cases presented between May and December and had fever of unclear etiology, but only our case presented with stroke-like symptoms. All cases involved people living in heavily wooded areas, with a mean age of 70 years.

CONCLUSION: The typical presentation of Anaplasmosis is a nonspecific febrile illness with leukopenia and thrombocytopenia. Although headache is common, stroke-like symptoms are a rare but known complication. Elderly and immunocompromised patients living in heavily wooded areas are at higher risk for Anaplasmosis. Delayed diagnosis was common (55% of case review) and associated with worse prognosis.

SEVERE ESOPHAGEAL INJURY AS A COMPLICATION OF RADIOFREQUENCY ABLATION FOR ATRIAL FIBRILLATION

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LEARNING OBJECTIVE #1: New onset retrosternal burning shortly following radiofrequency ablation should prompt further assessment with CT chest/abdomen to ruleout lifethreatening esophageal injury.

LEARNING OBJECTIVE #2: RFA for Atrial Fibrillation can cause varying degrees of thermal esophageal injury; treatment includes airway management, fluid resuscitation, broad-spectrum antibiotics and surgical repair with esophageal stenting.

CASE: Radiofrequency ablation (RFA) for the treatment of atrial fibrillation consists in ablating the arrhythmogenic foci within the pulmonary vein and the left atrium. It is effective but carries a risk of esophageal injury.

We present the case of a 50-year-old male who presented to the hospital with 2 days of subjective fevers, dyspepsia and general malaise for 1 month. Past medical history was signifcant for paroxysmal atrial fibrillation for which he had RFA performed about 1 month ago. Upon arrival to the hospital, the patient was in mild acute distress (diaphoretic and tachycardic). Labs were significant for elevated procalcitonin (Procal: 28) and leucocytosis (WBC: 24,000). As there was no clear source of infection, he was started on broad spectrum antibiotics. The following morning, he developed right upper extremity paralysis. MRI showed multi-territory infarcts suggestive of a cardioembolic etiology. TTE showed new mitral valve vegetation and blood cultures grew streptococcal species. CT chest revealed the presence of a pneumomediastinum with pneumopericardium. EGD was planned in order to assess for esophageal-pericardial fistula; unfortunately, overnight he developed severe pleuritic chest pain with diffuse ST segment elevation suggestive of pericarditis. He quickly became hypotensive and had to be started on vasopressors and intubated. He expired shortly after. Our patient had developed an atrial esophageal fistula following his RFA. This allowed seeding of the mitral valve by gastrointestinal bacteria. The clinical picture was further complicated by multiple septic emboli to the brain.

IMPACT/DISCUSSION: Surveillance endoscopy studies following RFA for AF have reported varying degrees of thermal esophageal injury in approximately 15% of patients following the procedure due to the suceptibility of intestinal tissue to thermal injury from the ablation probe. The small ulcerations can evolve into transmural lesions which can damage adjacent structures like the esophagus, esophageal arteries and vagus nerve plexus. Atrial esophageal fistula formation causes complications such as sepsis, endocarditis from bacterial translocation and cerebrovascular infarcts like in our patient.

CONCLUSION: Esophageal perforation following RFA is rare but often fatal. Clinicians should therefore keep a high degree of suspicion in patients presenting with fevers, new epigastric pain or other esophageal symptoms 7-21 days following RFA as early diagnosis can drastically improve survival. Larger studies are needed to risk-stratify patients who would benefit from post-procedure surveillance.

SEX, STILL A CHALLENGING DISCUSSION

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LEARNING OBJECTIVE #1: Recognize many HIV positive adults are unaware of their diagnosis and even fewer have ever been tested

LEARNING OBJECTIVE #2: Understand the relevance and potential impact of sexual history

CASE: A 51 year old male with no past medical history presented to an outpatient clinic with cough and shortness of breath. Six months prior to admission, the patient was diagnosed with acute bronchitis, for which he was prescribed azithromycin with some improvement in symptoms. However, one month prior to admission, he subsequently experienced a gradual decline in exercise tolerance with worsening shortness of breath and non productive cough. Documented social history was notable for recent travel to Singapore, and his career as a CEO. No sexual or substance abuse history was noted. One week prior to admission the patient was seen in an urgent care and prescribed amoxicillin/clavulanic acid and prednisone, with no improvement in symptoms. The patient returned to clinic, as he was now unable to perform ADL's due to extreme shortness of breath. He also endorsed chills, myalgias, diarrhea, and a ten pound weight loss. His exam was notable for tachypnea, bibasilar crackles, and SpO2 of 75%. The patient was sent to the ED for further workup. Admission labs were notable for leukocytosis, with neutrophil predominance. Arterial blood gas revealed PaO2 of 50. CTA Chest showed diffuse groundglass opacities, inter and intralobular septal thickening, airway ectasia, small basilar airspace opacities, reactive lymph nodes and no evidence of pulmonary emboli, concerning for atypical infections such as PCP. However, given his lack of HIV risk factors, his outpatient provider was concerned for new onset interstitial lung disease. During our interview, he endorsed sexual activity with men, with intermittent barrier use. Given newly identified HIV risk factors, empiric PCP treatment was initiated. Subsequently, confirmatory HIV testing returned positive with a viral load of 1.97 million and a CD4 count of 78. Bronchoscopy with BAL was performed, confirming a diagnosis of PCP. He was treated appropriately with bactrim and steroids, with subsequent improvement.

IMPACT/DISCUSSION: Recent studies show that nearly 15% of HIV-infected persons living in the US remain unaware of their diagnosis. In fact, fewer than 40% of the US adult population report having ever been tested for HIV and only 38% of US males report having discussed sexuality with a physician. Our patient was a high functioning professional, who had completed multiple marathons, and followed regularly with a concierge provider for his annual physical exams. His annual exams included cardiac nuclear stress testing, CT coronary imaging, and echocardiograms. However, a complete social history was never documented. He subsequently presented with AIDS.

CONCLUSION: HIV continues to remain under tested and underdiagnosed in the US

Despite acknowledging that the sexual history is an essential part of the H&P, few adults report having discussed sex with a physician

SHELLFISH: A CULINARY DELICACY OR THE ULTIMATE DEMISE?

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LEARNING OBJECTIVE #1: Recognize Plesiomonas shigelloides as a cause of diarrhea in travelers and seafood consumers

LEARNING OBJECTIVE #2: Recognize the value of stool culture when P. shigelloides enteritis is suspected

CASE: 70-year-old male veteran with history of GERD, PUD and treated HCV presented with 2 months of progressive watery diarrhea. He reported 3-4 daily bouts of liquid stool associated with diffuse abdominal pain. Recent pertinent history included travel to Cape Cod where he swam and ate raw oysters prior to symptom onset. He developed pre-syncope in the setting of dehydration leading to inpatient admission. He denied fevers, chills, hematochezia, melena, nocturnal diarrhea or mucoid stool. He denied personal or family history of IBD, Celiac disease or GI cancers. He reports taking loperamide TID daily with minimal symptom relief but no other relevant or causative medications. Vital signs on admission were normal. Physical exam was remarkable for diffuse abdominal tenderness and a mildly distended abdomen. Laboratory studies were significant for WBC 12.8 (84% neutrophils), Cl 107, HCO3 20, BUN 30 and Cr 1.3 (baseline 1). LFTs were unremarkable. CT A/P was unrevealing. Stool studies were positive for fecal leukocytes and stool culture grew heavy Plesiomonas shigelloides. Patient significantly improved after three-day course of ciprofloxacin.

IMPACT/DISCUSSION: Plesiomonas enteritis is typically self-limited and associated with raw or undercooked shellfish ingestion. Illness with this gram negative bacteria can present in several forms including secretory gastroenteritis, dysenteric colitis and chronic diarrhea. It does not typically require specific antimicrobial treatment. It is most commonly isolated in immunocompromised patients and those with hepatobiliary disease. This case is unusual given the severity requiring treatment in an otherwise healthy patient with no known ongoing liver disease. This case highlights the importance of stool cultures in diagnosing the causative agent in traveler's and chronic diarrhea, and those unresponsive to supportive therapy. Recent evidence suggests stool cultures have low diagnostic yield and high cost, and use has been declining. Positive stool cultures rates may be as low as 1.4%. In contrast, the biochemical profile of P. shigelloides has remarkably little strain-to-strain variation and is therefore easy to identify using conventional tests including stool cultures. This highlights the value of stool cultures in the correct clinical situation including not only immunocompromised patients, but those with recent travel and/or ingestion of raw or undercooked shellfish.

CONCLUSION: - P. shigelloides infections present with a typically self-limited diarrheal illness most commonly seen in immunocompromised patients, those with hepatobiliary disease, and in consumers of raw or undercooked fish.

- Stool culture can be especially valuable when P. shigelloides infection is suspected due to high yield and widely available treatment for those with more severe illness requiring treatment.

SHOW YOUR HAND, REVEAL YOUR HEART

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LEARNING OBJECTIVE #1: Recognize the clinical features of Holt-Oram Syndrome (HOS), also known as Hand-Heart Syndrome

LEARNING OBJECTIVE #2: Recognize that genetic disorders can be diagnosed in adults

CASE: A 68 year old man presented with dyspnea, pedal edema and palpitations. He had known history of atrial septum defect (ASD) but no remarkable family history. Exam revealed a pulse of 135 bpm, 3/6 holosystolic murmur, left triphalangeal thumb and right thumb that could not be extended. Electrocardiogram showed atrial flutter with rapid ventricular rate. Echocardiogram revealed normal left ventricle ejection fraction. Transesophageal echocardiogram confirmed secundum ASD and enlarged right atrium and right ventricle. ASD closure and Maze procedure were both successful.

IMPACT/DISCUSSION: We present a case of HOS, a 1 in 100,000, pleiomorphic, autosomal dominant disorder with variable penetrance. HOS features congenital heart disease and upper limb deformities such as triphalangeal thumbs and carpal-bone dysmorphism, often more prominent on the left.

Mutations in the TBX5 gene cause HOS. 85% of cases are new mutations. Congenital cardiac defects— most commonly secundum ASD—occur in 75% of patients. HOS cases without structural heart abnormalities are still at risk for conduction defects.

A diagnosis of HOS requires attention by a multidisciplinary team of geneticists, psychologists, congenital heart specialists and orthopedic surgeons.

Formal guidelines for follow up and treatment are yet undeveloped but echocardiogram and/or Holter monitor once yearly should be considered.

CONCLUSION: 1. When two or more congenital abnormalities are seen, a genetic condition must be considered

2. Internists must recognize genetic disorders such as HOS as these are not always diagnosed in childhood.

3. As with other genetic disorders, when HOS is diagnosed, patients require follow up by a multidisciplinary team.

4. Additional study of HOS is warranted in order to form effective treatment guidelines.

SIADH – GIVE MORE SALT TABS, RIGHT?

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LEARNING OBJECTIVE #1: Recognize the utility of a lumbar puncture (LP) in cases of hyponatremia

LEARNING OBJECTIVE #2: Recognize the need to evaluate consultant recommendations and not accept at face value

CASE: 75YO male was admitted for dofetilide initiation and was found to have asymptomatic hypotonic hyponatremia. TSH and cortisol were unremarkable. Occult malignancy imaging was negative. Sodium corrected with salt tabs, diuretics and fluid restriction. The patient was diagnosed with idiopathic SIADH and discharged. The patient re-presented a week later to the ED after a series of falls due to "sharp rushes of right leg pain". Etiology was presumed mechanical and the patient was sent home. The patient re-presented two weeks later. Exam was notable for impaired cognition and "muscle spasms". Sodium of 124, urine osmolality of 543 and serum osmolality of 253. Neurology was consulted given spasticity, which they said was due to the hyponatremia and signed off. The hyponatremia and mentation improved with salt tabs, diuretics and a fluid restriction. However, the spasticity persisted. At persistence of the primary team, neurology was re-consulted and asked to consider need for further workup. MRI brain, EEG, and LP were recommended. Brain MRI was unremarkable. EEG was nonspecific. A LP was obtained and initial studies were unremarkable. Upon further consideration of the patient's muscle spasms as myoclonic jerks, nonspecific EEG findings, behavioral changes and hyponatremia, the presentation was concerning for possible +LGI1 autoimmune (limbic) encephalitis. The patient was started IV steroids with minimal improvement, after which he underwent plasmapheresis resulting in improvement of his symptoms. CSF studies were notable for a positive mutation in VGKC (voltage gated potassium channel), with subsequent positive LGI1 confirmation.

IMPACT/DISCUSSION: Hyponatremia has a wide differential with existing diagnostic schema – centered around tonicity, volume, and electrolytes. This case highlights the utility of a lumbar puncture in certain cases of hyponatremia. When the patient initially presented, it would be reasonable to assume the "muscle spasms" and weakness were due to the hyponatremia. What was unique in this case, is that one - the muscle spasms were focal and two - as the hyponatremia improved, the muscle spasms did not. These served as diagnostic clues that the hyponatremia was not the primary etiology, but a symptom of a different process. Obtaining a prompt lumbar puncture helped in the diagnosis and treatment of this patient.

CONCLUSION: In cases of hyponatremia associated with spasms or weakness, focus should be paid to the focality and association with sodium fluctuations. If minimal improvement with sodium correction, consider obtaining CSF studies to evaluate for processes including autoimmune encephalitis, as in this case. Additionally, primary teams should always remember that they are the experts of their patients and not hesitate to re-engage consultants if there are concerns about recommendations.

SICK WITH SALMONELLA: INVASIVE SALMONELLOSIS IN AN SLE PATIENT

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LEARNING OBJECTIVE #1: Recognize systemic lupus erythematosus as a risk factor for developing invasive non-typhoidal Salmonella disease

LEARNING OBJECTIVE #2: Understand relative bradycardia as an important tool in the diagnosis of infectious diseases

CASE: A 38yo African American homeless male with no past medical history presented to the Emergency Department with a 3-day history of high volume watery diarrhea, fevers. He denied sick contacts, animal exposures, or travel history. He endorsed worsening weight loss, fatigue, rash, and joint pains for years. Family history was notable for SLE (mother). On exam, patient's temperature was 39.4, heart rate 84, blood pressure 199/94. He had a desquamating, erythematous facial rash sparing the nasolabial folds. He had no lymphadenopathy, oral ulcers, or additional skin findings. His abdomen was diffusely tender to palpation. He had diffuse joint tenderness without erythema, warmth, or effusion. His labs were notable for WBC 2.8 (70.2% neutrophils), platelets of 66, ESR of 38, and a CRP of 4.4. Stool cultures, UA, Quant gold, hepatitis panels, and HIV were unremarkable. ANA returned positive at 1:1280 with a speckled pattern. His blood cultures speciated to Salmonella group D (enteriditis). He was transitioned to a 2-week course of ciprofloxacin for invasive Salmonellosis with clinical improvement.

IMPACT/DISCUSSION: Invasive non-typhoidal Salmonellosis is a relatively rare phenomenon. Invasion through the gastrointestinal tract into the bloodstream occurs in only 5% of patients with non-typhoidal Salmonella gastroenteritis, but the morbidity and mortality among these patients are high. A common risk factor for developing invasive disease is an immunosuppressed state, with systemic lupus erythematosus (SLE). Patients with SLE have defects in the innate and adaptive immune systems, as evidenced by high rates of opportunistic infections. In this patient, there was a high suspicion for disseminated Salmonella prior to blood cultures speciating.

Relative bradycardia, also known as Faget's sign, is defined as a lower-than-anticipated heart rate for a given temperature above 38.9°C and is found in a variety of non-infectious and infectious conditions. For each degree Celsius above 38.3, heart rates should increase by 8-10bpm in patients with normal atrial automaticity and AV conduction. Faget's sign is a poorly characterized, but important clinical finding in many infectious diseases. The literature demonstrates that the differential for infectious causes of Faget's sign remains broad, with disseminated infection from intracellular gram-negative organisms being the most commonly reported. Faget's sign indicated that this patient's infection was likely invasive and gave insight into the severity of his disease.

CONCLUSION: -Individuals with SLE are immunocompromised and have a greater risk of developing invasive disease following non-typhoidal Salmonella gastroenteritis

- Faget's sign can be a useful tool to narrow the clinical diagnosis prior to the return of diagnostic studies

SJOGREN'S RELATED UIP OUT OF BREATH BUT NOT OUT OF OPTIONS

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LEARNING OBJECTIVE #1: Recognize Sjogren syndrome from the history and refer patients when appropriate

LEARNING OBJECTIVE #2: Diagnose Sjogren syndrome depending on patient history, lab work

CASE: A middle-aged male with a past medical history significant for UIP-ILD presented to our health system after being referred from an outside Pulmonologist for antifibrotic vs lung transplant evaluation after worsening of his shortness of breath, chest tightness and cough. Patient initially has been having worsening exertional dyspnea over 4 years. CT chest showed signs suggestive of pulmonary fibrosis, with progression of his symptoms he was referred for a lung biopsy and the results were suggestive of UIP (Usual Interstitial Pneumonia) pattern. Patient has been using 4 L of oxygen along with CPAP therapy at night. Autoimmune workup was sent for further evaluation. Patient's Autoimmune workup revealed a positive ANA (1:320), Positive SSA/Ro Ab (90 unit), negative SSA/Lb (3 units), negative RF (12), anti-CCP IgG, C-ANCA (<1:20), P-ANCA (<1:20), negative Scl-70 Ab (8). At this point he was referred to rheumatology for further evaluation.

During his visit, patient said that he has history of dry eyes and he is following with ophthalmology for it. He was using OTC hydrating eye drops. He denied any dry mouth, dysphagia, odynophagia or dental problems.

He also denied any skin rashes, joints pain, Raynaud's disease, hair loss, photosensitivity. Patient was started initially on Azathioprine with the plan to switch him to Rituximab infusion.

After Rituximab infusion, his shortness of breath and cough improved, his O2 requirements decreased dramatically and patient reported improvement of his overall symptoms and lifestyle.

IMPACT/DISCUSSION: Interstitial lung disease is a common and often life-threatening manifestation of different connective tissue disorders, often affecting the overall prognosis. By far ILD is the most common pulmonary manifestation of Sjogren syndrome. Patient can present with progressive exertional dyspnea, weight loss, fever, chest pain or tightness and cough. It is important to know and recognize this condition because it is potentially treatable. We emphasize in presenting this case on the importance of ruling out autoimmune diseases in patients with ILD diagnosis in the setting of multiple symptoms that would suggest other autoimmune causes. Keep in mind that ILD in Sjogren syndrome may require a biopsy of the lung for better histopathologic diagnosis.

CONCLUSION: Sjogren Syndrome is an autoimmune inflammatory disorder that affects mainly lacrimal and salivary glands resulting in decreased function and dryness of the eyes and mouth. It can have both exocrine and extra glandular features including the skin, lung, heart, kidney, CNS and Hematopoietic system. We emphasize the imprtance of ruling out autoimmune causes in ILD cases.

SKELETAL CRYPTOCOCCOSIS IN IMMUNOCOMPROMISED PATIENT

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LEARNING OBJECTIVE #1: To diagnose skeletal cryptococcosis and recognize its radiological findings.

CASE: A 47-year-old male patient with a medical history significant for multiple sclerosis for which he has been on fingolimod. He presented to outside hospital with 2-week history of generalized weakness and inability to walk.

At outside hospital, magnetic resonance imaging of brain and spine showed old demyelination without any new enhancing lesions but there was an incidental lytic lesion on T6 vertebral body. He was treated for possible multiple sclerosis flare with pulse steroids with subsequent improvement in his symptoms. He was discharged home with plan to follow up as an outpatient regarding his T6 lytic lesion. However, a few days later his weakness returned, and he presented to our hospital.

Upon arrival to the hospital, vitals were unremarkable except for temperature of 38.9 Celsius. Laboratory investigations were significant for white blood count of 10.2 K/microL (normal 4 -10.8). Human immunodeficieny virus (HIV) test was negative. Chest X ray and urinalysis didn't show any suspicion of infection. Blood cultures and cerebrospinal fluid cultures were positive for cryptococcus neoformans. Patient was started on intravenous amphotericin and flucytosine.

While in the hospital, a computerized tomography (CT) of chest/abdomen/pelvis with contrast was performed and showed 16 mm lucent lesion in T6 vertebral body and irregular 41 X 17 mm lucent lesion in the right iliac bone. Patient underwent CT-guided bone biopsy of right posterior iliac bone. A total of 60 ml of frank pus was obtained and sent for gram stain and cultures, tuberculosis and fungal cultures. Cultures came back positive for cryptococcus neoformans.

The patient had significant improvement with antifungal treatment and was discharged to rehabilitation facility with plan to repeat imaging of the spine.

IMPACT/DISCUSSION: Cryptococcus neoformans is an encapsulated yeast that primarily affects the central nervous system and manifests as meningitis. However, any organ might be involved.

Skeletal cryptococcal infection is rare and only a few cases have reported in the literature. It can be part of disseminated infection or isolated infection to the bone. Vertebrae are the most common sites. Radiologic findings are non-specific and usually shows osteolytic lesions that sometimes can mimic tuberculosis of the bone.

Diagnosis requires bone biopsy. No standardized treatment protocol exists for skeletal cryptococcosis.

However, treatment usually involves a combination of surgical debridement and antifungal agents.

CONCLUSION: Skeletal cryptococcosis is rare and usually manifest as osteolytic lesions on bone imaging. Physicians must be alert to this disease and have a high index of suspicion especially in immunocompromised individuals.

SKIN EXAMINATION GUIDES DIAGNOSIS OF DISSEMINATED GONOCOCCAL INFECTION

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LEARNING OBJECTIVE #1: Recognize the spectrum of presentation of disseminated gonococcal infection

LEARNING OBJECTIVE #2: Identify patients at high-risk for gonorrhea and disseminated infection

CASE: The patient is a 26-year-old female who presented with polyarthralgia, fever and rash. She had no other pertinent past medical or family history. Sexual history revealed that she was in a relationship with a non-monogamous partner. She had recently given birth, and at her

postpartum visit six weeks prior to presentation she was noted to have increased drainage and was tested for chlamydia. The patient received the positive result a day prior to presentation and was never treated. Vitals were significant for a temperature of 102.2F and HR of 103. Physical examination revealed pustular lesions in an acral distribution with tenderness of the ankles and wrists. Labs were significant for leukocytosis (14.0 thou/mm^3) and elevated CRP (254 mg/L). Based on exam findings, directed testing was performed. HIV and syphilis testing was negative. Nucleotide acid amplification for *Chlamydia trachomatis* and *Neisseria gonorrhoeae* in urine was positive. Blood cultures also grew *N. gonorrhoeae*, confirming dissemination. She was successfully treated with ceftriaxone and azithromycin.

IMPACT/DISCUSSION: Disseminated gonococcal infection (DGI) is the hematogenous spread of the sexually transmitted organism *N. gonorrhoeae.* DGI typically presents as septic arthritis or the triad of polyarthralgia, dermatitis and tenosynovitis. Our patient presented with the latter. The pustules on her hands and wrists are characteristic of the skin manifestations seen in DGI. She had no evidence of septic arthritis which is important to identify as it potentially extends the duration of ceftriaxone from 7 to 14 days. This case illustrates that a good history and exam can help direct diagnostic testing.

It is also important to identify risk factors for disseminated infection. The patient had multiple risk factors, including age and risk of exposure via her partner. Additionally, patients with chlamydial infections are at higher risk of coinfection with gonorrhea. She had remained untreated after diagnosis which made her more susceptible to contracting the infection. Interestingly, most people who are diagnosed with DGI have no history of recent gonorrheal infection. At her post-partum visit, she was only diagnosed with chlamydia. She had also been relatively asymptomatic and unaware of her diagnosis which delayed therapy. If she had received timely treatment, which includes empiric gonorrheal coverage, she could have potentially avoided disseminated infection. The literature also states that women in the post-partum period are at higher risk of DGI due to alterations in cell mediated immunity. Recognition of such risk factors may prevent patient morbidity.

CONCLUSION: DGI presents as either septic arthritis or tenosynovitis, polyarthralgia, and characteristic skin findings

Recognition of risk factors, including recent pregnancy, may lead to early diagnosis and treatment

SKIN IN THE GAME: IDENTIFYING CUTANEOUS SIGNS CAN BE KEY TO TIMELY DIAGNOSIS OF VASCULITIS

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LEARNING OBJECTIVE #1: Name two common skin findings associated with microscopic polyangiitis

LEARNING OBJECTIVE #2: Identify livedo reticularis and racemosa and describe the clinical significance of each

CASE: A 68 year old man with a history of prostate cancer in remission, alcoholic cirrhosis, and stable interstitial lung disease presented with three weeks of fever, cough, myalgia, and unintentional forty pound weight loss over four months. Four days prior to presentation, he was discharged from an outside hospital after seven days of cephalexin for presumed pneumonia. He had no recent travel, sick contacts, new medications, nor active substance use. Family history was notable for two daughters with lupus, and a son with juvenile arthritis and granulomatosis with polyangiitis. At presentation, he was tachycardic and cachectic with temporal wasting. He had no lymphadenopathy, muscle tenderness, neurologic deficits, or rash. Initial laboratory data and imaging were unrevealing. He continued to be intermittently febrile and tachycardic on and off of antibiotics. Workup for infection and malignancy were negative. Rheumatologic studies showed elevated ESR, CRP and RF, with normal ANA and CK. He developed a violaceous, non- blanching, broken netlike rash over his forearms, upper back and knees, consistent with livedo racemosa. Labs showed p-ANCA positivity and skin biopsy was consistent with medium vessel vasculitis. He was diagnosed with microscopic polyangiitis (MPA) and treated with high-dose steroids and rituximab with rapid improvement.

IMPACT/DISCUSSION: MPA, a pauci immune small and medium vessel necrotizing vasculitis without granuloma, has non-specific symptoms, and can be difficult to differentiate from more common processes, such as infection or malignancy. Skin lesions are the third most common finding in MPA, after kidney inflammation and weight loss. Recognizing them can facilitate prompt diagnosis and treatment, reducing morbidity and mortality. Biopsy of involved organs can be useful in establishing the diagnosis, with the skin and kidney being the most common targets. Palpable purpura and petechiae are the most common skin lesions, followed by livedo reticularis and livedo racemosa.

Livedo appears as a violaceous or cyanotic, non-blanching, netlike rash and is associated with a variety of systemic illnesses. Livedo racemosa has a more broken netlike appearance and is less likely to resolve with warming than livedo reticularis. Livedo reticularis can be physiologic, but racemosa is always pathologic, and therefore, critical to recognize. Livedo racemosa requires an urgent, broad workup for hypercoagulability, connective tissue disease, cryoglobulinemia, vasculitis, and embolic disease.

CONCLUSION: Skin findings are common in MPA and can aid in its diagnosis and timely management.

Palpable purpura, petechiae and livedo are the most common skin findings in MPA. Livedo racemosa is an important skin finding for the internist to recognize, as it is always pathologic and requires urgent evaluation.

SMALL BOWEL OBSTRUCTION IN THE SETTING OF FISH BONE INGESTION AND JEJUNAL PERFORATION

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LEARNING OBJECTIVE #1: Recognize the radiographic features of bone ingestion and perforation/abscess formation.

CASE: A 58-year-old woman with type 2 diabetes presenting with abdominal pain.

The patient reported eating day-old unrefrigerated fried rice, followed by sharp intermittent periumbilical pain, dark green emesis and watery, non-bloody diarrhea, prompting presentation to the emergency room.

Her heart rate was 114, blood pressure 104/47, and abdominal exam was remarkable for periumbilical tenderness to palpation and abdominal distension. Labs revealed acute kidney injury (creatinine 2.7) and hyperglycemia (glucose 377). CT abdomen/pelvis with oral contrast showed "irregular mass-like thickening of the jejunal wall…and mass-like infiltration of the greater omentum 5.3 by 2.8cm adjacent to the thickened bowel with a linear hyperdensity in the center of the infiltration of the omentum." While enteritis was possible, there was concern for a small bowel neoplasm.

In further consultation with radiology, (after the patient reported a diet heavy in whole fish), the possibility of an ingested fish bone that perforated the jejunum was entertained. Piperacillin/tazobactam was initiated while awaiting expert counsel.

Over the next day the patient developed bilious emesis and her abdominal distension worsened. Repeat CT showed a new small bowel obstruction with a transition point in the left lower quadrant due to a new omental abscess near the "linear density". A jejunal micro-perforation due to a swallowed fish bone was diagnosed so a nasogastric tube was placed for

decompression. She had a successful exploratory laparotomy with washout of the abscess, and was discharged a week later.

IMPACT/DISCUSSION: This case was consistent with textbook Bacillus Cereus enteritis: rapid onset within hours of ingestion of infected food (due to preformed toxin) commonly associated with leftover fried rice. Per the initial read, her imaging could have been explained by a bad case of enteritis. Alternatively, a small bowel neoplasm was considered (such as adenocarcinoma, lymphoma, or carcinoid). Only a careful history regarding dietary habits, along with interdisciplinary rounds led the team to the alternative diagnosis of a small bowel micro-perforation.

This demonstrates the importance of being able to recognize the radiographic features of bone ingestion and perforation/abscess formation. Any collection or inflammation in the omental region and not within the bowel lumen should raise suspicion for a foreign body perforation in the right clinical context. There does not need to be obvious free air or extravasation of oral contrast for a perforation to be present.

CONCLUSION: Regional differences matter: unlike in the American diet, whole bone-in fish is common in Asia, China in particular, where fish bones are the most commonly encountered objects in EGDs performed for foreign body ingestions.

Interdisciplinary communication is key. Neither the medical nor the radiology team suspected a retained fishbone until the in-person review.

SOLITARY FIBROUS TUMOR: A RARE CASE OF DOEGE-POTTER SYNDROME AND PIERRE- MARIE-BAMBERG SYNDROME

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LEARNING OBJECTIVE #1: Recognize clinical features of Doege-Potter Syndrome and Pierre-Marie- Bamberg Syndrome

LEARNING OBJECTIVE #2: Manage hypoglycemia associated with Doege-Potter Syndrome

CASE: A 68-year-old Hispanic man presented to the ED after an unwitnessed syncopal episode. History revealed a chronic non-productive cough, but no other symptoms. Examination revealed a cachectic appearing gentleman, with digital clubbing in bilateral digits. Pulmonary exam was significant for severely diminished breath sounds and dullness to percussion in the right lung field. Chest X-ray showed right lower lung opacity. A CT chest further demonstrated a 14x16x18 cm heterogeneous right lung mass arising from the right hilum and middle mediastinum. Biopsy of the mass was subsequently performed. On the third day of admission, his glucose level was low at 42 mg/dL, a pattern consistently seen on subsequent mornings during his stay. Further workup revealed a morning cortisol of 11.66 mcg/dL, C-peptide of 4.0 ng/mL, fasting insulin of 21 mIU/L and Insulin-like growth factor (IGF)-1 of 73 ng/mL. Final tissue diagnosis was consistent with a solitary fibrous tumor with high risk for aggressive behavior, as stains were positive for vimentin, desmin, CD34, BCL2 and CD99. Previous literature reviews have indicated this tumor has a well- known clinical correlation of hypoglycemia secondary to IGF-2 release, recognized as Doege Potter Syndrome (DPS). This prompted medical team to check an IGF-2 level, which came back at 63 ng/mL. Furthermore, the association of these tumors with digital clubbing has been characterized as Pierre-Marie- Bamberg syndrome, which was then diagnosed. He was started on treatment with prednisone with improved glucose levels. The patient was discharged home in a stable condition with instructions to follow up with oncology in an outpatient setting.

IMPACT/DISCUSSION: DPS is a paraneoplastic syndrome characterized by refractory hypoglycemia associated with solitary fibrous tumors, specifically pleural and peritoneal tumors. It is associated with abnormal secretion of IGF-2 by these tumors. Prompt biopsy of these tumors in conjunction with checking IGF levels can aid in diagnosing Doege-Potter Syndrome. Current literature supports the immediate initiation of glucocorticoids to medically manage the hypoglycemia associated with this condition; however, referral to the appropriate surgical specialty for tumor resection has shown the best outcomes for overall prognosis. The role of chemoradiation, unfortunately, has not been well studied in these patients. Awareness of DPS in patients diagnosed with solitary fibrous tumor is critical, as life threatening hypoglycemia can occur in 2-4% of patients.

CONCLUSION: Normal IGF levels do not rule out a diagnosis of DPS in patients with biopsy proven solitary fibrous tumor.

Early commencement of glucocorticoid therapy and referral to surgery provides the best outcomes for patients with this paraneoplastic syndrome.

SOMETHING IN THE WATER

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LEARNING OBJECTIVE #1: Importance of early identification and treatment of infectious gastroenteritis for prevention of associated complications.

LEARNING OBJECTIVE #2: Acknowledgment of persistent symptoms after acute infectious gastroenteritis and long-term treatment for high-risk patients for post-infectious irritable bowel syndrome.

CASE: 22-year-old man with no past history presents to clinic with diffuse acute abdominal pain starting 3 days ago, peaked 2 days ago, and is associated with 1 episode of emesis. Constipation relieved following OTC suppository leading to yellow-green stool. He denies water exposure, travel, hematochezia, and melena. For 4 years, the patient had chronic abdominal pain, alternating constipation/diarrhea, associated with diaphoresis and flushing. Symptoms persisted despite self-diet modifications. Vitals were normal with an abdominal exam showing diffuse tenderness, hyperactive bowel sounds, negative psoas sign and negative rebound. Initial labs showed leukocytosis, lactic acidosis, and hyponatremia for which the patient was sent to the ED where a CT showed complicated acute appendicitis with perforation. Laparoscopic appendectomy was performed. A stool PCR was positive for giardia leading to treatment with cipro/flagyl. At a follow up visit, patient was placed on mebendazole for persistent symptoms.

Three months post-op, symptoms partially resolved with continued progressive, non-bloody, watery stools with mushy to solid consistency, and shooting abdominal pain relieved with defecation. Patient lost 35 lbs since initial presentation. He denied family history of inflammatory bowel disease. Repeated stool PCR and CT were normal. Patient was given loperamide and a GI consult.

In GI clinic, patient reported 1 episode of melena/hematochezia prompting EGD/CSP, showing normal bowels with duodenitis on biopsy. Negative serology ruled out celiac disease. Leading to a final diagnosis of post-infectious irritable bowel syndrome (PI-IBS).

IMPACT/DISCUSSION: Based on the literature, about 40% of giardia patients will experience PI-IBS with prevalence that extends to about 6 to 10 years thought to be due to partial villous atrophy of the small intestine leading to malabsorption. Like regular IBS there is little specific treatment for the disease other than symptom management. Although most gastroenteritis is often an untreated disease, there still requires active intervention to reduce the complications associated with these diseases that may lead to a future of multiple scopes and clinic visits. Early intervention is currently the best course for reducing PI-IBS, which not only requires

attentive physicians but also health-care availability to the general population, especially those of resource limited settings whom are at high risk.

CONCLUSION: 1. Gastroenteritis requires timely diagnosis and treatment to reduce likelihood of long-term complications.

2. PI-IBS is a common complication that will require patient education and frequent symptom monitoring.

SPEED UP A SLOW DOWN: RECOGNIZING GLP-1 GASTROPARESIS AND SGLT-2 EUGLYCEMIC DKA

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LEARNING OBJECTIVE #1: Recognize gastroparesis as the predominant side effect of GLP-1 agonist overdose and identify when to suspect euglycemic DKA in patients on SGLT-2 inhibitors.

LEARNING OBJECTIVE #2: Develop management plan for GLP-1 receptor agonist-induced gastroparesis and SGLT-2 inhibitor-induced euglycemic DKA.

CASE: A 62-year-old man with type II diabetes mellitus (DMII), chronic pain, and resolved gastroparesis was admitted to hospital for severe abdominal pain. The day before admission he accidentally took 3 times his intended dose of exenatide, a glucagon-like peptide 1 (GLP-1) receptor agonist. The following morning he developed sudden onset severe lower abdominal pain, nausea and vomiting, and inability to keep food or drink down. Home medications included exenatide, oxycodone, and dapagliflozin (a sodium-glucose co- transporter 2 [SGLT2] inhibitor).

Exam was notable for normal vitals with epigastric and periumbilical tenderness. Otherwise exam was normal.

Labs were notable for serum Cr 0.9 mg/dL; bicarbonate 15 mEq/L, with anion gap (AG) 22mmol/L; urinalysis had ketones; beta-hydroxybutyrate was 4.3 mmol/L (nl<0.28); and VBG pH 7.55/pCO2 19. Serum glucose was 283 mg/dL. Abdominal x-ray showed neither obstruction nor bowel distension.

Patient was started on scheduled metoclopramide for delayed gastric emptying side effect of exenatide. The high AG acidosis, elevated serum and urine ketones, and mildly elevated serum glucose in an individual on SGLT-2 inhibitor, was concerning for euglycemic diabetic ketoacidosis (DKA). He was started on treatment for DKA with D5W1/2NS and insulin drip. After AG closed we switched to basal insulin. His gastrointestinal (GI) symptoms all rapidly improved with treatment of DKA and gastroparesis. He was discharged on basal insulin, prandial sliding scale insulin, and scheduled metoclopramide. Exenatide and dapagliflozin were discontinued at discharge.

IMPACT/DISCUSSION: GLP-1 receptor agonists and SGLT-2 inhibitors are increasingly recommended and commonly used for second-line management of patients with DMII for glucose management and secondary effects such as weight loss and cardiovascular benefit [PMID 30497881]; Internists are wise to recognize their potential side-effects and to know how best to manage overdose states.

Delayed gastric emptying is a known side effect of GLP-1 agonist. To the best of our knowledge, there are less than 5 published cases of GLP-1 agonists overdose and none discuss management of GI symptoms. Patient was treated as gastroparesis flare because of the delayed gastric emptying side effects of GLP-1 agonist. This management led to quick symptom control. Recognition of DKA in the setting of euglycemia or near-normal glucose is also critical as SGLT-2 inhibitors are known to cause this state [PMID 28099783].

CONCLUSION: Manage patients with severe nausea and vomiting secondary to GLP-1 agonists as we would patients with severe gastroparesis. In any patient on SGLT-2 inhibitors with abdominal pain, nausea and vomiting, always consider DKA even if euglycemic.

SPIRALING INTO THE SOCIAL HISTORY: A CASE OF LEPTOSPIROSIS

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LEARNING OBJECTIVE #1: To recognize the importance of the social history in establishing a rare diagnosis

LEARNING OBJECTIVE #2: To understand the transmission and presentation of leptospirosis

CASE: 34 year-old African American man with no PMH presented with abdominal pain, headache, dark urine, pruritus, and epistaxis. The patient took no medications. He reported 4-6 alcoholic beverages each weekend. No drug or supplement use. Sexual activity with 1 monogamous female partner. No recent travel, hiking, fresh water exposure, sick contacts, or bites/tick exposure. Exam was notable for scleral icterus, sublingual jaundice, palpable liver 3cm below the costal margin, and scattered petechiae. CT A/P was normal. Labs showed total bilirubin 22 mg/dL, direct bilirubin 18, LDH 1600, platelets 12, AST 105/ALT 48, Alk phos 133, Cr 2.82. Negative hepatitis panel, HIV, EBV, CMV, blood cultures, Lyme, Ehrlichia, peripheral smear.

The next day, we explored more of the social history and discovered that the patient worked in sanitation and was routinely exposed to rodents and animal urine. He was started on empiric treatment for leptospirosis with doxycycline given a PCN allergy, and we saw marked improvement in his symptoms. On discharge, total bilirubin had trended down to 5.2 mg/dL, direct 4.6.

Several weeks later, Leptospirosis IgM returned positive.

IMPACT/DISCUSSION: Given the broad differential of direct hyperbilirubinemia, a comprehensive history was paramount in elucidating possible exposures. The social history in particular revealed contact with rodent urine, a classic exposure in leptospirosis that led us to narrow our differential and ultimately diagnose this rare disease in New York City.

Leptospirosis is an infectious disease typically transmitted to humans from rodents and other small mammals. Risk factors include direct occupational exposure to animal urine or contaminated soil, recreational fresh water activities, or exposures to infected pets. The majority of leptospirosis is diagnosed in resource-poor tropical settings and in the US, the incidence is only ~150 cases annually. As primary care physicians, it is important to have an understanding of local epidemiology. Around the time of this case, there were 3 leptospirosis cases clustered in a specific area of the Bronx, NY.

Leptospirosis presents with fever, rigors, myalgias, and headache in 75-100% of patients. Subconjunctival suffusion or hemorrhage may differentiate leptospirosis from other non-specific febrile illness. Weil's disease occurs when leptospirosis is complicated by jaundice and renal failure, as in our patient. In severe cases, total bilirubin can reach levels of 60-80 mg/dL. First-line treatment is penicillin or doxycycline.

CONCLUSION: Obtaining a good social history can have an enormous clinical benefit in highlighting toxic/metabolic, sexual, occupational, and infectious causes of elevated bilirubin. In this case, social history led us to diagnose leptospirosis clinically and begin empiric treatment well before the diagnosis was confirmed.

SPONTANEOUS BILATERAL ILIOPSOAS HEMATOMA FORMATION: A RARE COMPLICATION OF SYSTEMIC ANTICOAGULATION

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LEARNING OBJECTIVE #1: Recognize iliopsoas hematoma as a rare complication of systemic anticoagulation

LEARNING OBJECTIVE #2: Describe treatments for iliopsoas hematoma: surgery, arterial embolization, and medical management

CASE: An 83-year-old male with a past medical history of coronary artery disease (with coronary artery bypass grafting), heart failure with preserved ejection fraction, and stage IV chronic kidney disease presented with volume overload attributed to decompensated heart failure. The patient was treated with intravenous diuretics with minimal improvement in volume status, and subsequent telemetry monitoring demonstrated new-onset atrial fibrillation. Given his high risk for stroke (CHA2DS2-VASc = 6), systemic anticoagulation was initiated with warfarin (with a low-intensity heparin drip as a therapeutic bridge). On hospital day #5, his hemoglobin acutely dropped from 7.4 g/dl to 5.9 g/dl without evidence of overt bleeding. INR was subtherapeutic at 1.79. Notably, the patient reported persistent left hip and groin pain during his hospitalization that limited ambulation. Hip x-rays were negative for evidence of fracture, and there was otherwise no trauma history. To evaluate for occult bleeding, computerized tomography (CT) of the abdomen and pelvis demonstrated 4.9 x 3.9 x 12.4 cm hematoma in the left psoas and 6.8 x 3.6 x 7.3 cm hematoma in the right iliacus muscles. Systemic anticoagulation was discontinued, and the patient was evaluated by general surgery, who opted against aggressive intervention. The patient was subsequently resuscitated with a total of 8 units of packed red blood cells. Following complications of renal failure requiring renal replacement therapy for volume control, the patient was ultimately discharged to hospice care on hospital day #27.

IMPACT/DISCUSSION: Anticoagulation is an effective, widely-used therapy for prevention of systemic embolization among patients with atrial fibrillation. Bleeding complications of systemic anticoagulation must be weighed against potential benefits of therapy. We present an exceedingly rare complication of systemic anticoagulation: spontaneous bilateral iliopsoas hematomas in a patient anticoagulated for paroxysmal atrial fibrillation. Spontaneous iliopsoas hematomas are generally unilateral and accompanied by varying symptoms, ranging from back or groin pain to femoral nerve palsy to frank shock. Iliopsoas hematoma can be diagnosed radiographically by ultrasound, CT, or MRI. Bleeding from the third or fourth lumbar artery makes the femoral nerve vulnerable to compression within the body of the psoas muscle at the iliopsoas groove. Management options include surgical evacuation, transcatheter arterial embolization, and conservative management with blood products and reversal of systemic anticoagulation.

CONCLUSION: Given the widespread use of systemic anticoagulation, providers must recognize atypical complications to effectively identify adverse drug events and counsel patients regarding potential risks of therapy.

SPONTANEOUS CELIAC ARTERY DISSECTION PRESENTING AS SEVERE DIFFUSE ABDOMINAL PAIN

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LEARNING OBJECTIVE #1: Build a differential for acute abdominal pain that includes spontaneous artery dissections

LEARNING OBJECTIVE #2: Discuss possible management options for spontaneous mesenteric artery dissections

CASE: We present the case of a 57-year-old male with no past medical history who presented with acute onset, diffuse abdominal pain, found to have a celiac artery dissection. He was performing exercise when he felt a "pop" in his abdomen, followed by progressive burning pain. Initial physical exam was notable for mildly elevated blood pressure, a regular heart rate, and palpable distal pulses. The patient's abdomen was diffusely tender to palpation, particularly in bilateral upper quadrants, with mild guarding but no rebound. Labs, including a CBC, BMP, lactate, and lipase were unremarkable, with exception of an AKI. A CT abdomen/pelvis revealed a celiac artery dissection with thrombus emanating into the splenic artery and proximal common hepatic artery. He was started on an ACE inhibitor for BP control as well as an antiplatelet and anticoagulant, with plan to repeat imaging after 3 months to evaluate status of dissection and need for further therapy. At follow-up in 3 weeks, the patient's symtoms had resolved.

IMPACT/DISCUSSION: Celiac artery dissection is a type of mesenteric artery dissection that is often secondary to progression of an aortic dissection. Spontaneous mesenteric artery dissection (SMAD) is a phenomenon that typically affects the superior mesenteric artery, with variable natural history. Celiac artery dissection occurring as a primary phenomenon is rare, with few case reports/series in the literature. The presentation and clinical course of these patients have varied widely, and interventions span from no treatment to endovascular therapy. Given the rarity of this disease, typical risk factors are unclear. In the presented case, the patient's risk factors included exercise given the temporal relationship, and possibly undiagnosed hypertension. His initial workup, including labs and physical exam, was largely unremarkable, with no indication regarding the etiology of the abdominal pain. This illustrates that SMAD should be in the differential for abdominal pain and can present in a relatively benign matter in terms of initial workup. The management of an SMAD is unclear. This case adds to the literature regarding possible treatments, and may suggest that data regarding treatment of arterial dissections from other patient groups (such as vertebral artery dissections) may be used as a guide for treating SMAD (i.e. anticoagulation or antiplatelet therapy followed with repeat imaging).

CONCLUSION: - SMAD should be considered on the differential for acute abdominal pain. Physical exam may not be overtly significant or localizable, and laboratory workup may be unremarkable.

- Although standard treatment of spontaneous celiac artery dissection is not clear, anticoagulation or antiplatelet therapy could be used for a period of time followed by repeat imaging to evaluate further need for therapy.

SPONTANEOUS RETROPERITONEAL HEMORRHAGE SECONDARY TO CHRONIC CELIAC AXIS COMPRESSION SECONDARY TO MEDIAN ARCUATE LIGAMENT SYNDROME TREATED WITH EMBOLIZATION UTILIZING CONE BEAM CT

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LEARNING OBJECTIVE #1: Describe the pathophysiology and relevant anatomy of Pancreaticoduodenal artery aneurysms due to Median Arcuate Ligament Syndrome.

LEARNING OBJECTIVE #2: Outline the basic diagnostic workup and treatment options for retroperitoneal hemoorhage due to PDA anuerysmal hemorrhage in the setting of Median Arcuate Ligament Syndrome.

CASE: A 51-year-old female presents with severe, sharp, non-radiating epigastric abdominal pain associated with nausea, vomiting, chills, and a near syncopal episode. Vitals on admission were significant for hypotension. Physical exam revealed diffuse tenderness to palpation in her abdomen. Labs were significant for anemia and leukocytosis. CT scan revealed a large amount of active contrast extravasation within the retroperitoneum interposed between the proximal pancreas and duodenum. Mesenteric angiography revealed a high-grade proximal celiac artery stenosis

consistent with median arcuate ligament compression. SMA angiography demonstrated an abnormal aneurysmal pancreatoduodenal artery (PDA). Embolization of the anterior inferior pancreatoduodenal artery was performed. A follow up CT scan showed a residual saccular pseudoaneurysm centered within an enlarging retroperitoneal hematoma. Mesenteric angiogram was agian performed with angiography of the celiac artery and gastroduodenal artery via the high grade celiac artery stenosis. Using digital subtraction angiography, a prominent superior PDA branch supplying the pseudoaneurysm was identified and treated with coil embolization. Cone beam CT angiography with subsequent 3D reconstruction was performed. 2D Maximal Intensity Projection images not only clearly demonstrated the pseudoaneurysm but also showed a second culprit posterior inferior PDA supplying the pseudoaneurysm which was successfully treated with coil embolization.

IMPACT/DISCUSSION: In Median Arcuate Ligament Syndrome (MALS), the celiac origin is severely compressed by the median arcuate ligament reducing blood supply in the celiac territory. The intraluminal pressure difference between the SMA and celiac arteries results in increasing compensatory blood flow across the pancreaticoduodenal arcade. This pathophysiology is thought to induce an increase in arterial blood pressure and secondarily weaken the arterial walls resulting in aneurysmal dilation. In this case, a multidisciplinary approach was effectively used to diagnose and treat this rare etiology of retroperitoneal hemorrhage due to PDA aneurysmal dilatation utilizing conventional mesenteric angiography, cone beam CT with 3D reconstruction, and selective mesenteric transarterial embolization. The anatomical information gleaned from the procedure will also be utilized for future surgical considerations.

CONCLUSION: Ruptured PDA aneurysm secondary to MALS is extremely rare, and classic treatments included surgical aneurysmectomy with or without reconstruction. However, rapid advances in interventional radiology have enabled the safe and effective treatment of visceral aneurysms via transcatheter arterial embolization.

SPONTANEOUS TUMOR LYSIS SYNDROME IN A PATIENT WITH LAWRENCE-MOON-BIEDL SYNDROME

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LEARNING OBJECTIVE #1: Recognize that tumor lysis syndrome can occur in patients, not on any treatment for the malignancy.

CASE: A 59-year-old male with Lawrence-Moon-Biedl syndrome (LMBS) with a past medical history of congenital bicuspid aortic valve status-post valve replacement presented to the hospital with a chief complaint of fatigue and leg edema. He complained of 30-pound weight gain and was hyponatremic to 125 mmol/L. He was admitted for new-onset heart failure. He was noted to have elevation in his liver function tests (LFTs) with alanine transaminase of 53 U/L, aspartate transaminase of 77 U/L, alkaline phosphatase of 693 U/L, and total bilirubin of 5.6 mg/dL. His other labs were significant for leukocytosis of 11,300 cells/μL, potassium(K) 5.7 mmol/L, and phosphorus (P) 5.2 mg/dL. He underwent an ultrasound of his abdomen, which showed innumerable lesions in the liver, concerning for metastatic disease. CT scan of the chest, abdomen and pelvis showed multiple liver lesions, but no primary malignancy was identified. Further investigation with PET scan and biopsy of the liver lesion was recommended. Unfortunately, the patient rapidly deteriorated thereafter, hence this further workup could not be done. He developed worsening of renal function with his serum creatinine rising from 0.8 mg/dL to 1.4 mg/dL. His serum uric acid level was elevated at 15.4 mg/dL. He met the criteria for tumor lysis syndrome (TLS) and was treated with fluids, allopurinol, and rasburicase. The patient, however, continued to deteriorate, and his level of care was then transitioned to comfort measures only shortly before passing away.

IMPACT/DISCUSSION: TLS is a catastrophic adverse effect of malignancy caused by massive tumor lysis, which results in varied metabolic abnormalities due to the release of the intracellular contents into the bloodstream. It is mostly observed in patients undergoing treatment for hematological malignancies. TLS is now also being reported with increasing frequency in solid tumors in patients with high tumor burden. Some case reports suggest that most patients with tumor burden in the liver are likely to have spontaneous TLS which may be the case with this patient.

In order to diagnose TLS; the patient should meet at least two of the four Cairo Bishop criteria (uric acid>8mg/dl, potassium >6mEq/L, phosphorus >4.5mg/dL, Calcium <7 mg/dL). Immediate identification of TLS is critical as the treatment would involve early aggressive hydration to increase renal perfusion and thus decrease the risk of crystal precipitation. Medical therapies to treat TLS are allopurinol and rasburicase.

CONCLUSION: It is important for clinicians to know that TLS can occur in patients not on treatment for malignancy as well. Hyperphosphatemia, hyperuricemia and hyperkalemia, especially in the presence of liver metastasis, should alert physicians to check uric acid level and start intravenous hydration.

SQUANDERING SODIUM: CASE REPORT OF SYNDROME OF INAPPROPRIATE ANTIDIURETIC HORMONE CAUSED BY PROLACTINOMA

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LEARNING OBJECTIVE #1: Explain the pathophysiology of syndrome of inappropriate antidiuretic hormone and why it causes particular lab derangements

LEARNING OBJECTIVE #2: Recognize different etiologies that may result in syndrome of inappropriate antidiuretic hormone

CASE: Patient is a 58 year old female with past medical history significant for migraines who presented to the emergency department for evaluation of vomiting and diarrhea. Initial lab evaluation found the patient to be profoundly hyponatremic, prompting hospital admission. Her sodium level initially responded to intravenous fluid administration – however, her sodium levels began to again downtrend. Neurologic exam was normal except for blurred vision (new-onset) and some headaches unlike her prior migraines. While work-up continued, the patient continued to be hyponatremic with slow clinical response to fluid restriction and salt tablets. Her lab values revealed low serum osmolatrity with inappropriately high urine osmolarity and sodium. After other etiologies were excluded, syndrome of inappropriate antidiuretic hormone (SIADH) was determined to be the underlying etiology causing her hyponatremia. MRI brain revealed pituitary macroadenoma with displacement of the stalk to the right side. Subsequent pituitary studies revealed a slightly elevated prolactin, normal cortisol response to cosyntropin stimulation, normal TSH and low free T4, and a normal LH and FSH. Outpatient follow-up, with repeated lab measurements, demonstrated a more elevated prolactin level above the threshold for diagnosis of prolactinoma - and she was started on cabergoline therapy.

IMPACT/DISCUSSION: Hyponatremia has an expansive differential diagnosis, and initial diagnostic and management considerations are guided by lab evaluation and assessment of volume status. SIADH leads to hyponatremia in the setting of inappropriately concentrated urine, despite apparent intravascular irregularities. This typically results in low serum osmloarity, with inappropriately elevated urine osmolarity and urine sodium. Formal diagnosis requires the exclusion of other endocrine causes

(hypothyroidism, adrenal etiologies). Once SIADH is determined to be the likely cause of hyponatremia, further investigation into the etiology of SIADH must be initiated. Common causes of SIADH include: CNS disturbances, malignancy, and medication-induced.

CONCLUSION: It is important to be comfortable in the evaluation of hyponatremia, by both recognizing the pathophysiology behind different etiologies and how those etiologies cause lab value derangements. Hyponatremia, in both the acute and chronic setting, can be very dangerous resulting in headache, altered mentation, seizures, and coma. In the right clinical context, and with other common causes excluded, syndrome of inappropriate anti-diuretic hormone (SIADH) should be included in the differential diagnosis. SIADH can be the result of very different etiologies, however, the end result is inappropriately concentrated urine and deviation from the typical regulatory feedback system.

STATIN-INDUCED NECROTIZING AUTOIMMUNE MYOPATHY PRESENTING AS ACUTE SYSTOLIC HEART FAILURE

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LEARNING OBJECTIVE #1: Recognize the spectrum of side effects of statins

LEARNING OBJECTIVE #2: Identify and diagnose statin induced autoimmune myopathy

CASE: A 69-year-old woman presented with one month of severe proximal muscle weakness. She was unable to walk, get out of bed or rise from a chair without assistance. She had no myalgias, Raynaud's, rashes, dysphagia, chest pain, shortness of breath, orthopnea, PND, or lower extremity edema. She had a history of hypertension and hyperlipidemia treated with lisinopril and 40 mg of atorvastatin, a dose she had taken for two years without side effects. On admission, she was profoundly weak but had no rash, skin tightening or joint swelling. Pertinent labs showed a CK of 11062 U/L, TSH of 6.3 mIU/L, AST of 525 U/L, ALT of 661 U/L, aldolase of 128.8 U/L, and creatinine of 0.86 mg/dL. Despite discontinuation of atorvastatin and intravenous fluid resuscitation, her CK remained significantly elevated, and she began to develop worsening dyspnea and lower extremity edema. An echocardiogram showed an EF of 15%. Rheumatologic workup revealed a strongly positive ANA of 1:640 in a homogenous pattern. Antibodies to all other extractable nuclear antigens were negative. EMG revealed frequent waning myotonic-like discharges and fibrillation potentials. A muscle biopsy showed several necrotic fibers with minimal mononuclear cells consistent with necrotizing autoimmune myopathy (NAM). Subsequent testing revealed a strongly positive anti-HMGCR antibody level of >200. A diagnosis of statin-induced NAM was made, and she was treated with pulse dose steroids and IVIG. She improved dramatically with increase in her EF to 47%. With prolonged physical therapy she regained nearly all her strength and continues to do well on low dose prednisone and methotrexate.

IMPACT/DISCUSSION: NAM is an immune-mediated myopathy characterized by subacute proximal muscle weakness, elevated CK levels and muscle fiber necrosis without significant inflammation. NAM is a rare side effect of statin use, occurring in 2–3 out of every 100,000 statin users and is associated with anti HMG-CoA reductase antibodies. Patients often have been exposed to statins for years prior to development of NAM, and their symptoms and CK elevation persist despite discontinuation of statins. NAM is treated with immunosuppression, often with IVIG and pulse dose steroids, with methotrexate or mycophenolate being used as maintenance therapy. It is important to recognzie NAM, as it requires prompt specialty referral and treatment. Additionally, this case is the first description of NAM affecting cardiac muscle and presenting as acute systolic heart failure.

CONCLUSION: -Statins cause a range of side effects ranging from benign myalgias to necrotizing autoimmune myopathy.

- Persistent CK elevations despite discontinuation of statins should raise concern for statin-induced necrotizing autoimmune myopathy, a condition that requires specialty consultation and immunosuppression.

ST ELEVATION IN AVR: TO CATH OR NOT TO CATH

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LEARNING OBJECTIVE #1: Describe the potential causes of ST elevation in aVR

LEARNING OBJECTIVE #2: Discuss the prognostic significance of ST elevation in aVR

CASE: A 57-year-old man with ischemic heart disease presented to the emergency department with stable exertional chest pain. On arrival, the patient was pain free and vital signs were within normal limits. Electrocardiogram revealed ST elevation in aVR with ST depressions in leads II, III, and V5 - V6. The patient received aspirin and ticagrelor however, in the setting of a negative troponin and a lack of chest pain, left heart catheterization was deferred. The following day he developed chest pain at rest and was taken for cardiac catheterization which revealed severe triple-vessel disease without acute occlusion. An intra-aortic balloon pump was placed due to refractory pain. Subsequent troponin I was 124 ng/ml and transthoracic echocardiogram revealed a left ventricular ejection fraction of 30%. The patient underwent uncomplicated staged percutaneous coronary intervention and was discharged on hospital day seven.

IMPACT/DISCUSSION: Patients presenting with isolated ST elevation in aVR and multi-lead ST segment depressions are traditionally considered to be at high risk for acute occlusion of the left main or left anterior descending artery. These conditions typically lead to transmural infarction of the interventricular basal septum causing ST elevation in aVR. In tandem with diffuse ST depressions, ST elevations in aVR may be concerning for proximal occlusion in the proper clinical setting. However, recent evidence suggests that acute coronary occlusion is relatively uncommon in patients with these electrocardiogram findings, occurring in only 10% of patients compared to 60-80% in patients with ST elevations in other electrocardiographic distributions. These same electrocardiogram findings are more commonly seen in severe multivessel coronary disease, as a result of diffuse subendocardial ischemia and reciprocal elevation in avR as seen in this case. Although less commonly associated with acute plaque rupture, patients with these findings are at high risk for future cardiac events. Rates of myocardial infarction, heart failure, and mortality have been found to be higher in patients with ST elevation in aVR, with greater elevation associated with excess risk. ST elevation in aVR is not commonly associated with acute plaque rupture but does indicate high risk for cardiac morbidity.

CONCLUSION: Current cardiology practice guidelines state that isolated ST elevation in aVR with multi- lead ST segment depressions may represent acute occlusion of the left main or proximal left anterior descending artery. However, recent evidence suggests that the incidence of acute coronary occlusion in these cases is relatively low. Despite low rates of acute occlusion, these patients are at high risk for future coronary events. Although these patients may not need to be taken for angiography emergently, invasive coronary evaluation in a timely fashion is often warranted.

STEMI MANIFESTING AS CARDIAC CEPHALGIA

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LEARNING OBJECTIVE #1: Recognize cardiac cephalgia as an uncommon presentation of ischemic heart disease

CASE: A 66-year-old male with history significant for hypertension and hyperlipidemia presented to the ER for intractable headaches. He noted worsening headaches with exercise for the past couple of weeks prior to presentation. He frequented the gym 3 days per week for an hour at a time and reported that he would have headaches after 15 minutes on the elliptical. The sensation was described as a tightness or heaviness in his head that radiated to his neck and chest. He was able to continue his exercise but would have the headache until he rested for 10 to 15 minutes. These headaches became more frequent and worsened in intensity. The day of presentation, he was working in the yard when he experienced an unrelenting headache. This time, it did not improve with rest, so he presented to the ER for further evaluation.

Upon arrival to the ER, his blood pressure was 188/112 and heart rate was 97. ECG noted an anterior lateral STEMI. Troponin was 7.3 ng/dL and peaked at 139 ng/dL. He was given aspirin, Plavix, and heparin, and the cath lab was activated. Left heart catheterization demonstrated diffuse coronary artery disease, with a 60% stenosis of the distal left main, 100% occlusion of the proximal to mid left anterior descending, 90% occlusion of the ostial left circumflex followed by 60% proximal stenosis, and 90% stenosis of the right coronary artery. Complex percutaneous coronary intervention was performed with good flow after revascularization and his symptoms resolved. He recovered uneventfully and was discharged to complete cardiac rehabilitation.

IMPACT/DISCUSSION: Cardiac cephalgia as the main presenting symptom of ischemic heart disease is a rare occurrence, with 36 cases reported to date. Patients typically experience a headache that is related to exertion and relieved with sublingual nitroglycerin. There are few commonalities with respect to headache laterality or characteristic of pain, which can feel migrainous, thunderclap or pressure-like. Patients often have traditional risk factors for coronary atherosclerosis. Current guidelines for management of exertional headache recommend ischemic evaluation, including ECG and cardiac biomarker testing, for patients with risk factors for ischemic heart disease who present with exertional headache. The pathophysiology of cardiac cephalgia remains unknown but may be caused by central misinterpretation of converging autonomic and somatic nerve signals from the upper chest, neck, and head in the spinal cord. Another theory posits that myocardial ischemia causes release of neurochemical mediators, including bradykinin and substance P, which result in cerebral vasodilation and vasospasm. Definitive management with revascularization is the mainstay of treatment for cardiac cephalgia causing significant coronary artery stenosis.

CONCLUSION: Cardiac cephalgia is a rare but potentially underrecognized manifestation of ischemic heart disease.

STEMI OPENS EYES TO RIGHT ATRIAL METASTATIC RENAL CELL CARCINOMA

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LEARNING OBJECTIVE #1: The majority of cardiac masses are metastatic tumors.

LEARNING OBJECTIVE #2: Workup of cardiac masses in the non-emergent settings may be warranted as it may alter decision-making.

CASE: A 62-year-old female presented to an outlying facility with acute onset of typical chest pain, paresthesia of the left arm, lightheadedness, and nausea. She was found to have ST elevations in the inferior leads with sinus bradycardia and elevated troponin of 0.184 ng/mL. She was administered thrombolytic therapy (TPA), placed on heparin and nitroglycerin drips and transferred to our facility via air ambulance.

She arrived vitally stable and asymptomatic. Transthoracic echocardiogram showed normal left ventricular function and a right atrial inferior wall mass. She underwent coronary angiography, which showed significant 3-vessel disease with significant left main disease. The patient was referred for coronary artery bypass graft surgery, during which the mass was excised. Pathology determined the mass to be metastatic clear cell renal carcinoma. CT imaging revealed a 5cm right kidney lower pole lesion with no enhancement, filling defects within the intrahepatic IVC and right inferior renal vein extending into the IVC, and no pulmonary or intracranial metastasis.

IMPACT/DISCUSSION: The typical symptoms of renal cell carcinoma (RCC) include flank pain, a palpable mass and hematuria, however with increased utilization of imaging this has become more the exception rather than the rule.

RCC is a highly vascular tumor with a tendency to metastasize early. At the time of diagnosis, up to 10% of patients with RCC have tumor thrombus involving the renal vein and inferior vena cava (IVC) and up to 1% of patients have tumor thrombus extending into the right atrium.

Cardiac metastasis will rarely become symptomatic until embolization, circulation obstruction, valvular interference, or direct myocardial invasion. Metastatic cancer has been diagnosed in the setting of ST elevations, however historically these have been related to pericardial metastasis with cardiac tamponade being the first manifestation of the malignancy. Up to our knowledge, there is no documented case of a patient diagnosed with RCC incidentally during MI.

Cardiac metastases are 20 times more common than primary cardiac tumors. The median survival period of patients with metastatic RCC is 6 to 12 months. Only 9% of patients survive at 5 years. Since this patient's surgery was not emergent, workup of the atrial mass may have altered the Surgeon's decision to proceed with CABG.

CONCLUSION: In the non-emergent setting, it may be warranted to work up any cardiac mass prior to undergoing any invasive operations.

STICK TO YOUR GUNS: THE PATH TO DIAGNOSIS OF WARM AUTOIMMUNE HEMOLYTIC ANEMIA

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LEARNING OBJECTIVE #1: Diagnosis of Warm Autoimmune Hemolytic Anemia (WAIHA) requires full consideration of infectious and malignant causes

LEARNING OBJECTIVE #2: Negative Direct Coomb's Test does not rule out WAIHA in the setting of high suspicion

CASE: A 35 year old Caucasian female with a past medical history of viral cardiomyopathy status post heart transplant and ulcerative colitis status post total colectomy presented with subacute dizziness and shortness of breath. The patient had no significant recent travel history and denied taking new medications nor recent infections. An echocardiogram showed normal cardiac functions and normal valves. Initial hemoglobin 5.3 g/dL, Lactate dehydrogenase (LDH) 602 IU/L haptoglobin <30 mg/dL. Reticulocyte percent of 2.2%. Total bilirubin 11 mg/dL with a direct bilirubin of 1.6 mg/dL. Direct Coomb's test (DAT) was negative on multiple occasions. DIC panel was negative. Peripheral smear showed micro spherocytes and was negative for schistocytes. Ultrasound showed mild splenomegaly. Viral studies were negative including hepatitis A/B/C, EBV and CMV IgM antibodies. Flow cytometry for CD 55 and CD 59 was negative. Electrophoresis was normal. Rheumatoid factor, C3, C4,

pyruvate kinase were within normal limits. Vitamin b12, folate, lead, copper, and zinc were normal. Monoclonal protein evaluation was negative for monoclonal protein. Bone marrow biopsy revealed no evidence of lymphoid or myeloid neoplasia. Given history of ulcerative colitis suggesting an autoimmune process, we decided to use a Super Comb's test which was positive. The patient was initially treated with pulse steroids, with modest response but following Super Comb test, steroids were maintained for longer period of time and hemolysis labs gradually improved with normalization of hemoglobin and resolution of hemolysis over 2 months

IMPACT/DISCUSSION: WAIHA is diagnosed in the presence of autoantibody antibodies that react with protein antigens on the red blood cell surface at body temperature. They are usually of the IgG subtype. This leads to red cell destruction and a hemolytic anemia with workup revealing elevated Lactated Dehydrogenase (LDH) and low haptoglobin (as in our patient) along with a positive direct Coomb's test (DAT). However, if culprit antibodies are of IgA or IgM type or are of low affinity, they can result in a negative test. Given negative DAT in our patient, next steps in workup necessitated the Supercomb's test

CONCLUSION: This case sheds light on the work up and differential diagnosis for hemolytic anemia. Infectious workup, cardiac imaging, and ruling out a bone marrow process should be considered. Secondly, it presents an uncommon presentation of a relatively common problem. Given high suspicion for WAIHA despite no clear cause for hemolysis, it is reasonable to consider the Supercomb's test to further diagnose and verify the diagnosis.

STONES, GROANS, PSYCHIATRIC OVERTONES, AND ?

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LEARNING OBJECTIVE #1: Outline the incidence and common clinical features associated with Multiple Myeloma (MM).

LEARNING OBJECTIVE #2: Illuminate the importance of stratifying a patient's clinical presentation to determine common or multifactorial etiology.

CASE: A 90-year-old Hispanic female with a history of hypertension, diabetes mellitus, and dyslipidemia presented to the emergency department complaining of dull generalized abdominal pain, generalized weakness, poor appetite, fatigue, weight loss, and constipation. The patient's family stated that the patient had become more reclusive within the last few weeks and no longer seemed like herself.

Upon admission, vital signs included temperature 98.1 F, heart rate 85, blood pressure 148/58, respiratory rate 18, and BMI 24. Laboratory revealed a corrected Calcium of 18.1, Parathyroid Hormone (PTH) of 5.8, Hemoglobin of 8.1, Creatinine of 1.59 and gamma gap of 6.6. Given the constellation of findings and fulfilling multiple CRAB criteria, there was high suspicion for MM and expedited workup for this was started. CT head revealed a soft tissue mass seen with bony erosion involving the left parietal bone measuring 3.1 x 2.2 cm suggestive of a mass related to MM[HK3]. Subsequently, bone marrow biopsy revealed an aberrant kappa light chain restricted plasma cell population with expression of CD38, CD45, CD56, CD117 and CD138, consistent with plasma cell myeloma. The patient was given aggressive IV fluid resuscitation, Calcitonin and Pamidronate for her hypercalcemia and was referred to oncology service for further long-term treatment.

IMPACT/DISCUSSION: MM is a malignancy formed by monoclonal plasma cells. It accounts for 1.8% of new cancer cases in the United States with approximately 32, 000 new cases per year. The most common presenting symptoms of MM are fatigue, bone pain, osteolytic lesions, and anemia. Using the common mnemonic to note organ/tissue impairment, CRAB (Calcium, renal insufficiency, anemia, bone lesions), the patient actually fulfilled all criteria on presentation. Hypercalcemia that occurs in approximately 10% of patients with MM has been linked to tumor-induced bone destruction and increased renal tubular calcium reabsorption. Most concurrently report with prominent bony pain; however, this patient presented with non-specific symptoms that could have been attributed to functional constipation, dementia, and age-related osteoporosis. This case illuminates the importance of stratifying patient symptoms in order to determine related or unrelated etiology in order to guide diagnostic testing.

CONCLUSION: The aim of this case is to describe a patient demonstrating multiple non-specific symptoms that had one main etiology to unify all its underlying characteristics.

This study curtails the idea that although the patient's age and related demographics are not the most common, that should not deter a health care provider from evaluating for this uncommon disease.

STOP THE PRESSES, A PREPOSTEROUS PRESENTATION OF PRES!

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LEARNING OBJECTIVE #1: Recognize atypical presentations of posterior reversible encephalopathy (PRES)

LEARNING OBJECTIVE #2: Identify tacrolimus as a causative agent of PRES

CASE: A 55-year-old female with past medical history significant for primary biliary cholangitis status post orthotopic liver transplant 3 months prior presented as a transfer from an outside hospital due to encephalopathy and multifocal lesions in the right basal ganglia concerning for acute stroke. Outside records indicated that 1 month prior the patient had a right fronto-parietal intracranial hemorrhage (ICH) treated with craniotomy and placed on seizure prophylaxis. The patient had been discharged to acute rehab and then readmitted 3 weeks later with headache and fatigue, and was found to have new right basal ganglia lesions. On review of her outside hospital MRI imaging it was determined that the patient had right temporal lobe, right posterior insula, and right occipital lobe lesions with restricted diffusion and largely unenhancing consistent with hemorrhagic PRES. Further review of her outpatient records found that the patient had no history of hypertension, making the most likely causative agent of PRES the tacrolimus initiated after solid organ transplant (SOT). While not definitive, it is also likely that PRES was the cause of her initial ICH as well. Her tacrolimus was discontinued and the patient on subsequent imaging was found to have improving lesions.

IMPACT/DISCUSSION: PRES is largely thought to be caused by hypertension, eclampsia, sepsis, immunosuppressive agents, chemotherapy, collagen vascular disease and renal failure. PRES occurs in <5% of SOT and is most commonly associated with tacrolimus in those cases. Classic presentation of PRES with bilateral parietal and occipital subcortical vasogenic edema is now recognized as typical, but atypical presentations should not dissuade the diagnosis of PRES. Atypical presentations with both edema and hemorrhage in the frontal lobe, cerebellum, basal ganglia and brain stem have all been described, and PRES should remain high on the differential in the correct clinical context despite non-classical distributions.

CONCLUSION: PRES occurs in <5% of SOT and is most often due to tacrolimus after transplant. Hemorrhage and atypical distributions of lesions should not dissuade a diagnosis of PRES

STREPTOCOCCUS EQUI ZOOEPIDEMICUS – NOT HORSING AROUND, A SERIOUS INFECTION IN HUMANS

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LEARNING OBJECTIVE #1: Recognize and diagnose rare zoonotic pathogen in patients who present acutely ill with significant history of consuming unpasteurized dairy products or with exposure to horses.

CASE: A 52-year-old male with a past history of end stage renal disease on dialysis, hypertension, hyperlipidemia, chronic tobacco use and aortic dissection type B post repair presented to the Emergency Department (ED) with a chief complaint of chest pain, fever and cough. While in the ED, the patient developed Atrial Fibrillation with Rapid Ventricular Rate and then converted to Atrial Flutter. He became hypotensive and was successfully cardioverted. Following cardioversion, vitals were stable with exception of fever, 103°F. Physical examination showed right upper quadrant abdominal tenderness, chest wall tenderness and auscultation of lungs with minimal rales on the left. Lab work revealed leukocytosis of 10.1 and procalcitonin of 94. A Chest X-Ray demonstrated persistent cardiomegaly and atelectasis of left lung base. A Computed Tomography Angiography (CTA) demonstrated no significant change in the chronic type B aortic dissection as well as, curvilinear opacities in both lower lobes and inferior left upper lobe compatible with subsegmental atelectasis versus scarring. Blood cultures were drawn, and patient was started empirically on Vancomycin and Zosyn. Two days later blood cultures grew *Streptococcus equi* subspecies zooepidemicus. Susceptibilities resulted and patient was switched to Ceftriaxone. Subsequent blood cultures were negative two days after the original. He continued to improve and was discharged home four days later with intravenous Cefazolin. Follow up appointment with his primary care physician one month after discharge revealed that patient was in his normal state of health.

IMPACT/DISCUSSION: *S. equi zooepidemicus* is a gram positive, non-sporulating, non-motile, catalase and oxidase negative organism. It is a zoonotic pathogen, which is rarely seen in humans but when isolated is typically seen in patients who have direct contact with horses or have consumed homemade/unpasteurized milk or cheese. Our patient reported that he owned four horses at home that all recently had "a cold". Extensive review of literature publications shows few cases of human disease from this pathogen, most dating to the 1980s. Case reports included meningitis, glomerulonephritis, rheumatic fever, cellulitis, pericarditis, toxic shock syndrome, endovascular infections, pneumonia, septicemia, spondylodiscitis and purulent arthritis. This pathogen which can reap serious and detrimental consequences if not caught in a timely manner. It is crucial to have a high suspicion of this infectious organism, S. *equi zooepidemicus*, when patient presents with history of horse interaction or consumption of unpasteurized dairy products.

CONCLUSION: It is important to have high suspicion of S. equi zooepidemicus when patient presents acutely ill with unique history of horse interaction or consumption of unpasteruized dairy products.

SUBACUTE ENDOCARDITIS: SEARCHING BEYOND HACEK ORGANSIMS

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LEARNING OBJECTIVE #1: Contrast clinical presentations of subacute vs. acute endocarditis

LEARNING OBJECTIVE #2: Recognize treatment challenges of endocarditis in the absence of guideline directed therapy

CASE: A 62-year-old man with hepatitis C and intravenous drug use presented with a one-month history of lower extremity edema and dyspnea. He was afebrile and normotensive. A 3/6 systolic ejection murmur was present at the apex and 2+ pitting edema extended to the mid shins.

A transthoracic echocardiogram revealed LVEF of > 65% with severe mitral regurgitation and a vegetation on the posterior leaflet of the mitral valve. An additional vegetation on the anterior mitral valve leaflet was found on transesophageal echocardiogram. One the fourth day of admission, blood cultures returned positive for gram negative rods, later identified as burkholderia cepacia. Two years prior, he was treated with ceftazidime for a urine culture positive for burkholderia.

He was started on medical therapy with ceftazidime. Despite medical therapy, he developed septic arthritis of his left shoulder. He developed aphasia and an MRI revealed multiple septic cerebral emboli. Thus, he underwent mitral valve repair. At the time of discharge his edema and dyspnea had resolved; however he continued to have cognitive-linguistic defects secondary to cerebral emboli.

IMPACT/DISCUSSION: Subacute bacterial endocarditis is most commonly due to streptococcus viridans in patients with preexisting heart disease. Burkholderia Cepacia complex, a multidrug resistant genus of gram negative bacteria, is a rare cause of endocarditis, described only in a few case reports to date. It is a low virulence organism that usually affects immunocompromised patients such as those with cystic fibrosis and chronic granulomatous disease. B. Cepacia is found in water sources and thus is an increasingly common pathogen in IV drug users due to the use of tap water when reusing needles.

Infective endocarditis (IE) carries high rates of mortality, approaching 40% at 1 year. While patients with acute IE typically present with high fevers and rigors (80-90%), the diagnosis of subacute endocarditis is often delayed due to non-specific symptoms such as fatigue and dyspnea over the course of months. Subacute endocarditis thereby poses a significant diagnostic challenge. However, with recent advances in genome sequencing, more infections of Burkholderia including endocarditis are being diagnosed. Our ability to detect an increasingly wider array of pathogens may lead to a shift in the paradigm of categorizing IE by simply acute or subacute presentation. This case of burkholderia endocarditis was successfully treated with ceftazidime despite known expression of several B lactamase and cephalosporin target mutations in burkholderia species.

CONCLUSION: Clinical presentation of acute and subacute endocarditis varies as subacute endocarditis may be more indolent. An internist must remain aware of the organisms associated with subacute endocarditis to aid in the investigation and treatment.

SUBACUTE INFECTIVE ENDOCARDITIS MANIFESTING AS DYSPNEA IN A PATIENT WITH ASTHMA

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LEARNING OBJECTIVE #1: Recognize that subacute infective endocarditis typically follows an indolent course with subtle clinical manifestations

LEARNING OBJECTIVE #2: Consider alternative diagnoses in patients who fail to improve with initial interventions in order to avoid delays in necessary care

CASE: A 66 year old woman with a history of mild asthma and aortic valve replacement (AVR) in 2016 presented to her primary physician with dyspnea on exertion over the previous 3 months. She was diagnosed with

an asthma exacerbation and treated with albuterol and five days of prednisone. The next day she presented to the emergency department and was admitted for neck pain and new mild hypoxia. CT pulmonary angiogram, CT angiogram of the neck and point of care cardiac ultrasound were normal. She was discharged on 2 liters of oxygen for hypoxia attributed to presumed asthma. She followed up in clinic one week later for continued dyspnea. With a history of AVR and ongoing dyspnea, formal echocardiography was ordered. A possible mitral valve (MV) vegetation was noted and was directly admitted for urgent transesophageal echocardiogram (TEE) which confirmed an 11 mm vegetation on the MV with trivial regurgitation. Blood cultures were persistently positive for Streptococcus gordonii, likely from an oral source as no other possible sources were identified. The patient received 6 weeks of ceftriaxone with subsequent resolution of the mitral vegetation as well as her dyspnea and hypoxia.

IMPACT/DISCUSSION: The incidence of infective endocarditis (IE) is approximately 2-7 per 100,000 persons in the population and native valve endocarditis represents a majority of cases. Subacute endocarditis may have a protracted course over weeks to months and can be difficult to diagnose due to non-specific manifestations. In subacute IE, 60% of cases are attributable to the strep. viridans group. S. Gordonii is a known colonizer of the oral cavity and uncommonly implicated in cases of IE. While our patient did not have a recent dental procedure, routine oral care alone can lead to bacteremia. Our patient had dyspnea accompanied by subacute hypoxia, which is not typical of IE, and apart from case studies is not well documented in the medical literature. While fever occurs in 90% of IE cases, older patients are often afebrile such as in this case. Transthoracic echocardiogram has variable sensitivity (50-90%) and is often the first diagnostic imaging test in the evaluation of IE. In this case TEE (sensitivity and specificity 90%) confirmed the vegetation and guided her subsequent treatment.

CONCLUSION: Diagnosis of subacute IE can be a challenge with an often indolent course and non-specific symptoms. Older patients may not have fever and recent dental procedures are not required to develop bacteremia. S Gordonii is a streptococcus species capable of causing IE. In this case anchoring on asthma likely delayed diagnosis of IE. Persistent symptoms not responding to typical therapies should prompt pursuit of alternate diagnoses in patients with unexplained dyspnea.

SUBCAPSULAR LIVER HEMATOMA WITH RUPTURE- A RARE COMPLICATION OF HELLP SYNDROME

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LEARNING OBJECTIVE #1: Recognize, diagnose and manage Subcapsular Liver hematoma (SLH)

CASE: 16-year-old nulliparous female at 36 weeks gestation presented to a local hospital with signs and symptoms of pre-eclampsia requiring emergent C-section with delivery of twins. Post-op the patient was hypotensive with increasing abdominal distension. A point of care HgB revealed that patient had severe anemia with symptoms of shock. She was transfused and underwent a laparotomy revealing hemoperitoneum and an encapsulated liver hematoma. She was transferred to our hospital for ongoing treatment. Vital signs on arrival were HR 104 and BP 156/88. She was mechanically ventilated and sedated. Heart was regular and tachycardic. Lungs were clear. Abdomen with wound vacuum in place with bloody drainage. Her laboratory showed an AST 7429, ALT 345, LDH >12000, Cr 1.8, WBC 18700, HgB 10.6, plt count 79.000, Fibrinogen 173, PT 16.6, and D-dimer >3000. CTA abdomen and pelvis showed a large right hepatic subcapsular hematoma with active arterial extravasation. After an emergent surgical consult, patient was initially sent to interventional radiology for embolization followed by exploratory laparotomy with unroofing of the hepatic capsular hematoma. She received multiple transfusions of PRBCs, fresh frozen plasma, platelets, and prothrombin complex concentrate intraoperatively and was transferred to the ICU. Given her liver function test abnormalities, low platelets and high LDH she was diagnosed with HELLP syndrome and DIC complicated by SLH. Patient was extubated on postoperative day 1 and was stable for discharged to home on day 5.

IMPACT/DISCUSSION: SLH is associated with less than 2% of pregnancies complicated by HELLP. Incidence of rupture in pregnancies varies from 1/40000 to 1/250000. Rupture can lead to life threating complications such as DIC, acute liver failure and kidney failure. Mortaliy associate with rupture is 18-86%, Symptoms can be non-specific and include epigastric or right upper quadrant pain, nausea, vomiting, anorexia and dyspnea. Rupture presents with signs of hypovolemic shock and hemodynamic compromise. Ultrasound, CT and MRI can be used for diagnosis. Hemodynamic and coagulation parameters should be followed and patients are evaluated with serial imaging, avoidance of liver manipulation and replacement of blood products as needed. Medical treatment is first line for stable patients; however, surgical management is indicated for hemodynamically unstable patients in addition to ICU level supportive care.

Overall, SLH is a rare severe complication of HELLP in pregnancy that required expertise in diagnosis, medical and surgical management to assure optimal outcomes.

CONCLUSION: SLH with HELLP syndrome is a rare complication of preeclampsia.

Clinical clues include right upper quadrant pain, nausea, vomiting and anorexia or hemodynamic instability. SLH carries a high mortality if not recognized and treated with combined medical, obstetrical, radiology and surgical team.

SUBCUTANEOUS EMPHYSEMA A WHOLE LOT OF AIR

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LEARNING OBJECTIVE #1: Identify the clinical and diagnostic features of subcutaneous emphysema

LEARNING OBJECTIVE #2: Know the risk factors and management of subcutaneous emphysema

CASE: A 66-year-old woman with end-stage COPD, bronchiectasis, RA with associated ILD and HFrEF (EF 35%) presented with facial swelling and diffuse chest pain radiating to the neck. Exam noted severe tachypnea and tachycardia but no hypotension or hypoxia. Cardiopulmonary exam found a tachycardic rate, regular rhythm, no murmurs, rubs or gallops, increased breathing effort, bibasilar crackles, and subcutaneous crepitus over chest. ABG revealed compensated respiratory acidosis. CBC, CMP, and EKG were unremarkable. CXR showed diffuse subcutaneous emphysema in the chest and neck. Patient was intubated for airway protection. CT Chest showed subcutaneous, mediastinal, subpleural and peritoneal free air without pneumothorax. Small subcutaneous incisions on the chest and subcutaneous angiocatheter placement helped to relieve the patient's pressure and pain. Patient's respiratory status slowly improved. She was successfully extubated and discharged to a rehabilitation facility

IMPACT/DISCUSSION: This case teaches the value of physical exam findings, and the importance of understanding risk factors for subcutaneous emphysema. Subcutaneous emphysema presents as stabbing chest pain and swelling of the chest, neck, and face. Patients have auditory crackles with breathing and crepitus when pressing on the skin. Leukocytosis and fever may be present, and ECG may show low voltage and axis shifts. Our patient likely suffered from barotrauma due to her chronic

bronchiectasis and end-stage COPD. This caused air to leak from the ruptured alveoli to the surrounding fascial planes. Other common causes of subcutaneous emphysema include trauma, infection from gas-forming microorganisms, GI trauma, or iatrogenic origins. Risk factors are extensive and common ones include pulmonary insults (asthma, pneumonia, tuberculosis, mechanical ventilation), seizures, diabetic ketoacidosis, GI abnormalities (colon cancer, ulcer perforation), and factious events (injection of air under skin). CXR or chest CT will reveal radiolucent linearities in subcutaneous tissues representing free air. Patients should be closely monitored in the hospital given the high risk for cardiovascular and respiratory instability from air compressing the great vessels or trachea. Treatment is supportive, occasionally requiring surgical intervention in trauma-related cases. Placement of chest tubes, performing tracheostomy or inserting mediastinal drains is not advised, although in our patient it aided in her recovery. Clinicians should have a low threshold for intubation for airway protection

CONCLUSION: When subcutaneous crepitus is noted on the cardiopulmonary exam, always get a STAT CXR to assess for subcutaneous emphysema and pneumothorax. Reassure patients that once the causative condition is identified, subcutaneous emphysema is a self-limited process but requires close monitoring and supportive treatment

SUCH VARIABLE BLOOD PRESSURE (BP) READINGS!

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LEARNING OBJECTIVE #1: Recognize the pathophysiology of orthostatic hypotension/supine hypertension (OH/SH) syndrome in uncontrolled diabetes mellitus (DM).

LEARNING OBJECTIVE #2: Understand the management options for OH/SH syndrome in uncontrolled DM.

CASE: A 47-year-old man with uncontrolled insulin dependent DM presented with lightheadedness. He has had multiple falls resulting in head trauma. Prior to falling, he feels lightheaded and shaky with visual darkening. Generally, symptoms worsen when he stands from a seated position. Vital signs revealed supine blood pressure (BP) 120/67, pulse 85 and standing BP after 2 minutes 57/47, pulse 75. He had multiple admissions for syncope; all cardiac and neurologic work ups were negative except head up tilt table testing, which was positive for orthostatic hypotension without reflex tachycardia, consistent with dysautonomia. He was treated with fludrocortisone, midodrine and compression stockings with improvement of symptoms. Four months later, he had standing BP 87/67 and supine BP 175/110. Twenty four-hour BP monitoring was diagnostic for supine hypertension (HTN). Even with beta blocker therapy, ambulatory BP monitoring continued to reveal supine HTN up to 204/130. After discussing the pathophysiology, therapeutic goals to prevent end organ damage due to supine HTN, and improving quality of life with controlling orthostatic hypotension, he decided to pursue pharmacologic intervention for orthostatic hypotension and lifestyle modifications for supine hypertension, which improved his supine and postural BP.

IMPACT/DISCUSSION: Long-term uncontrolled DM can result in autonomic neuropathy, which can manifest in several different organ systems. From cardiovascular point, sinus tachycardia is often the first sign of autonomic neuropathy. Orthostatic hypotension may also develop, due to a blunted sympathetic response to the gravity-dependent decrease in BP upon standing from a seated position. Furthermore, the normal diurnal rhythm can be reversed in these cases, such that blood pressure often rises at night and falls in the morning. The OH/SH syndrome poses a difficult therapeutic dilemma – treating one aspect may worsen the other. Lifestyle changes which may help include lying in head up tilt position and wearing compression stockings. Pharmacotherapy includes volume expanders and sympathomimetics, but these may exacerbate supine HTN. This syndrome is often overlooked, as seated BP readings in the office may not reveal the whole story. It is important to be aware of OH/SH, so as to identify patients that should be screened for this disorder. Early detection will allow for a patient-centered discussion about treatment options, and can decrease morbidity.

CONCLUSION: OH/SH syndrome should be considered in patients with diabetes and signs of autonomic dysfunction. Discussing therapeutic goals with the patient can be helpful in controlling symptoms and improving overall outcome.

SURGERY OR NO SURGERY - THIS IS THE QUESTION: A CASE OF SUPERIOR MESENTERIC ARTERY SYNDROME (SMAS)

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LEARNING OBJECTIVE #1: Failure to diagnose and treat SMAS can carry morbidity and mortality

LEARNING OBJECTIVE #2: Early surgical intervention should be considered

CASE: A 79-year-old man with no significant medical history presented with abdominal discomfort, nausea, dark brown emesis, and significant weight loss. On physical exam, patient was cachectic. The abdomen was soft and diffusely tender upon palpitation with positive bowel sounds. He was found to have hypokalemia, hypomagnesemia, hypophosphatemia, and metabolic alkalosis with prealbumin level of 13 mg/dL. The CT scan of the abdomen and pelvis showed a moderate to severe grade bowel obstruction with the transition point at the third duodenal segment. There was also dilation of the first and second duodenal segments, stomach and distal esophagus. Upper gastrointestinal endoscopy revealed a dilated first and second portion duodenum with solid, undigested food present within the stomach and intestines, with no intraluminal pathology. Clinical presentation and imaging suggested that this patient has SMA syndrome. A nasogastric tube was placed to decompress the stomach and the patient was not given anything by mouth. A peripherally inserted central catheter was placed for total parenteral nutrition. Surgery was consulted; no intervention was recommended. The patient's symptoms slowly improved so he was advanced to clears which he tolerated well. The patient was given dietary recommendations and discharged home with outpatient surgery follow up.

IMPACT/DISCUSSION: SMAS is a rare disease with incidence of 0.1% to 0.3%. The disease is caused by loss of the fat pad surrounding the SMA, decreasing the aortomesenteric angle to less than 25° (Normal aortomesenteric angle is 28–65°), and allowing the artery to press the small bowel against the aorta, narrowing the lumen of the intestines. Therefore, this disease should be suspected in patients who have a recent history of severe weight loss. Patients present with symptoms similar to small bowel obstruction. SMAS diagnosis is challenging. CT or MR angiography enable visualization of the vascular compression of the duodenum and precise measurement of the aortomesenteric angle. Conservative treatment usually comes first, which includes nutritional support and electrolyte correction. Failure of conservative management warrants surgical intervention. Historically, patients fail conservative treatment and develop serious complications, including gastric atony and gastroparesis. Lee et al followed 80 patients with SMAS and reported a greater success rate in patients treated surgically than in patients treated medically both in terms of outcome and recurrence. For these instances, an early surgical correction should be considered.

CONCLUSION: SMA Syndrome can be easily missed due to vague symptoms but is a crucial diagnosis due to associated high morbidity and mortality. Early surgical intervention rather than conservative management should be considered.

SUSPECTED GASTRINOMA WITH NO KNOWN PRIMARY: FURTHER WORK-UP AND MANAGEMENT

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LEARNING OBJECTIVE #1: Diagnose suspected gastrinoma with negative conventional imaging

LEARNING OBJECTIVE #2: Management of metastatic gastrinoma with an unknown primary tumor

CASE: A 63-year-old Caucasian woman presents for outpatient evaluation of chronic abdominal pain and diarrhea. Her history is significant for gastroesophageal reflux disease (GERD), upper gastrointestinal bleeding, and persistent abdominal pain despite a cholecystectomy for suspected biliary colic a year prior.

Evaluation with esophagogastroduodenoscopy (EGD) revealed severe esophagitis, multiple duodenal ulcers, and negative gastric biopsies for *H. pylori*. She denied the use of non-steroidal anti-inflammatory drugs. Computed tomography (CT) and endoscopic ultrasound (EUS) demonstrated mild duodenal inflammation and benign hepatic cysts. Despite the use of proton-pump inhibitor (PPI) therapy, she continued to have 10 loose bowel movements a day.

At our tertiary center, Zollinger-Ellison Syndrome (ZES) secondary to gastrinoma was suspected. After holding PPI, gastrin levels measured at 1967 pg/ml and a stomach pH of 4. Repeat EUS was equivocal for primary tumor. Eventually, a Gallium Ga-68 DOTATATE scan demonstrated tracer uptake in the liver and peripancreatic lymph nodes. Liver biopsy, fine needle aspiration and subsequent immunohistochemistry were consistent with a metastatic gastrinoma.

Despite another negative repeat EUS for identification of the primary tumor, the patient proceeded with cytoreductive surgery of the metastatic tumor and hepatoduodenal lymph nodes. A 1cm primary duodenal mass was discovered perioperatively and was resected.

Since surgery, the patient's symptoms of reflux, abdominal pain, and diarrhea have greatly improved with reduced daily PPI use.

IMPACT/DISCUSSION: Although rare, ZES should be considered on the differential for patients with recurrent peptic ulcers, esophagitis, and diarrhea. Primary gastrinomas are often missed on preoperative imaging such as CT and EUS, and may go years without a diagnosis. This has been further complicated by the ubiquitous use of PPIs. Early detection of ZES is imperative to avoid metastatic disease and a poor prognosis.

This case demonstrates how specialty imaging like Gallium Ga-68 DOTATATE may be required for initial diagnosis of neuroendocrine tumors. It also suggests treatment recommendations for metastatic gastrinomas, which currently lack randomized data. Due to the uniquely insidious and slow-growing nature of gastrinomas, surgery may lead to better symptomatic control, primary tumor identification, and a potential prolongation of survival.

CONCLUSION: Gastrinoma is a rare and difficult diagnosis to make. With adequate pre-test probability, clinicians should continue diagnostic evaluation, even if costly testing is required.

Contrary to management in many other malignancies, early surgical intervention in metastatic gastrinoma may help with symptoms, survival rates, and identification of an unknown primary tumor.

SYMPTOMATIC ACUTE HEPATITIS C IN A HIV PATIENT

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LEARNING OBJECTIVE #1: Recognize HIV patients are at increased risk for symptomatic Acute Hepatitis C

LEARNING OBJECTIVE #2: Recognize that Acute Hepatitis C in HIV patients should be treated early

CASE: A 36-year-old male with past medical history of HIV on therapy presented to our hospital with intractable abdominal pain, nausea, and vomiting.

Three weeks prior to presentation, he was evaluated for acute abdominal pain. At that time, evaluation was only remarkable for elevated transaminases (AST 106, ALT 108). Notably, viral hepatitis serologies were negative, CD4 count was 731 and HIV viral load <20. Abdominal CT demonstrated bowel wall thickening. Patient was diagnosed with acute colitis and treated with a course of ciprofloxacin and metronidazole.

Over the next month, the patient developed worsening abdominal pain, vomiting, and nausea with associated pale colored stools and dark urine. He denied recent travel, sick contacts, fevers, alcohol, or intravenous drug use. He was sexually active with 3 male partners over the past year without regular barrier contraception.

On presentation, examination was notable for scleral icterus; however, mentation was intact without asterixis. Lab tests showed ALT 1607, AST 1456, total bilirubin 19.0, direct bilirubin 13.8 and INR 1.2. Acetaminophen levels were undetectable. HCV antibodies detected with HCV RNA PCR 45,435,994 IU/mL, genotype 1a. Our Hepatology service advised to rule out drug induced liver injury given recent ciprofloxacin use and timeline of symptomatology. Liver biopsy was consistent with acute hepatitis C infection. Patient was discharged after a period of observation and started on Sofosbuvir 400 mg / Velpatasvir 100mg for 12 weeks. Four weeks into therapy, his HCV RNA PCR fell to less than 15 IU/mL and his symptoms had largely resolved.

IMPACT/DISCUSSION: The majority of acute hepatitis C infections are asymptomatic and often unrecognized, with only 15% of cases presenting with jaundice.

Our case highlights how patients may present during the acute phase with negative HCV-specific antibodies. These are often missed as seroconversion takes 20-150 days, therefore, physicians must have a low threshold for re-testing in order to make the diagnosis.

The HIV-positive population are more likely to present with symptomatic acute HCV infection than negative patients. Although an uncommon mode of transmission, men who have sex with men are at particularly increased risk. A 2019 study of HIV coinfected patients in Austria identified 100% cure rates following direct acting antiviral therapy in early HCV infection. Studies in these populations also demonstrate spontaneous clearance in only 4-11%, highlighting the importance of early recognition and treatment.

CONCLUSION: Acute symptomatic hepatitis C and its association with HIV is an important entity to identify. The serological window period can mislead the physician into missing the diagnosis. A high index of suspicion in this population can confer early treatment that is effective and prevents chronic disease.

SYMPTOMATIC RESPONSE OF PULMONARY ADENOCARCINOMA TO CORTICOSTEROIDS

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LEARNING OBJECTIVE #1: Distinguishing between steroid responsive lung diseases and symptomatic improvement with steroids in patients with primary pulmonary malignancies.

CASE: A 59 year old female with a history of COPD and tobacco abuse presented with SOB, tachycardic, tachypneic with oxygen saturation ranging 88-92% on 2 litres of oxygen. Physical exam was unremarkable. She had an elevated d-dimer and proceeded with CTA demonstrating multiple bilateral subsegmental pulmonary embolism along with extensive alveolar infiltrates and bulky perihilar lymphadenopathy. She was started on anticoagulation.

Workup for pulmonary infiltrates and lymphadenopathy was negative for autoimmune, vasculitis, HP and infectious etiologies. Pulmonology was consulted for biopsy of the mediastinal lymphadenopathy but felt further optimization was required before bronchoscopy. She had deteriorating respiratory status and increasing oxygen requirements. Subsequently she was started on steroids for symptomatic control while waiting for EBUS and biopsy for definitive diagnosis. Her clinical picture and infiltrates on chest x-ray improved while on steroids, and she was considered to have an unknown steroid responsive disease, likely sarcoidosis. Steroids were continued while waiting for clinical improvement before further procedures. Although the patient showed steroid responsiveness for 2 weeks, she expired due to sudden deterioration of respiratory status despite intubation and ECMO. Her autopsy showed adenocarcinoma of both lungs with extensive lymphangitic spread and metastases to liver, bilateral adrenal glands and kidneys.

IMPACT/DISCUSSION: As internists we come across categorizing lung disorders as either steroid responsive or steroid non-responsive. Steroids have proven benefit in the treatment of Asthma, COPD, ILD, pneumonitis, and sarcoidosis. While steroids do not reduce the progression of lung malignancies, they have shown to have symptomatic benefits in patients who have active lymphangitic spread. The benefit of steroids is likely due to a decrease in angiogenic growth factors like VEGF and PDGFR which leads to decrease in tumor expansion and inflammation.

This symptomatic improvement can be misinterpreted for an improvement in the progression of the disease and can mislead clinicians when the underlying diagnosis in unknown and delay the diagnosis, as in our patient. Although patients may show an improvement in symptoms on steroids, full work up for a definitive diagnosis should not be delayed as a result of symptomatic improvement.

CONCLUSION: 1) While steroids may not alter the disease progression, it can lead to symptomatic improvement in the patient's respiratory status.

2) Steroid responsiveness of a disease should not limit our differential diagnosis or detract from the need for diagnostic procedures to find the definitive diagnosis.

SYNCHRONOUS GASTRIC AND PANCREATIC NEUROENDOCRINE TUMORS IN A PATIENT WITH UNEXPLAINED WEIGHT LOSS

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LEARNING OBJECTIVE #1: Recognize the possibility of gastrointestinal malignancy in patients with unintentional weight loss.

CASE: A 53-year-old male with diabetes mellitus was referred to our gastroenterology office for unintentional weight loss. He denied nausea, abdominal pain, or changes in bowel habits. A colonoscopy 4 years prior was normal. He reported no family history of gastrointestinal disease. Physical exam was unremarkable, and annual laboratory results were normal except for a hemoglobin of 13.4 g/dL.

An esophagogastroduodenoscopy (EGD) and colonoscopy were performed. A sessile 5-mm gastric body polyp was found and removed with cold snare polypectomy. Colonoscopy revealed a small benign sessile polyp. However, pathology of the gastric polyp revealed scattered nests of infiltrating well-differentiated NET cells extending to the edges of the biopsy. Endoscopic ultrasound (EUS) was performed for further resection, but the gastric body polyp was gone. A 4-mm submucosal lesion in the antrum was found and removed with ligation-assisted endoscopic mucosal resection (EMR), and a porta hepatis lymph node was biopsied with fine needle aspiration (FNA). The node, submucosal lesion, and mapping biopsies were all negative for malignancy. Fasting gastrin, chromogranin A, neuron-specific enolase, vitamin B12, 24-hour urine 5-hydroxyinoleactic acid, and serum serotonin were all normal. Parietal cell and intrinsic factor antibodies were not detected. Computed tomography (CT) of the head, chest, abdomen, and pelvis did not reveal metastatic disease. A positron emission tomography-CT (PET-CT) with gallium-68 dotatate did not show activity in the stomach but demonstrated increased activity in the head/body of the pancreas. EUS/FNA was performed on the 1.5-cm mass, and pathology showed a well-differentiated NET. After interdisciplinary consultation and shared decision making, the patient opted for middle pancreatectomy, somatostatin analog therapy, and regular interval EGD, EUS, and PET-CT gallium scans for surveillance.

IMPACT/DISCUSSION: In this case, we present a patient who was found to have a type III gastric NET that "disappeared" after polypectomy and subsequently was found with a primary NET in the pancreas. The occurrence of two NETs in the same patient is rare. Although type III gastric carcinoids are generally treated aggressively with at least partial gastrectomy, each case requires careful consideration. In our patient, a smaller lesion at diagnosis and subsequent negative imaging allowed for careful surveillance with monthly lanreotide injections rather than aggressive therapy. However, the patient opted for surgery given the chance of cure with surgical resection.

CONCLUSION: - NETs are rare heterogenous cancers that arise from neuroendocrine cells. While most occur in the lung and small intestine, NETs also occur in the pancreas and stomach.

- NETs are frequently not seen with traditional CT imaging and may require functional imaging.

- Unexplained weight loss should never be overlooked.

SYPHILIS IN THE MODERN ERA: STILL A GREAT MASQUERADER

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LEARNING OBJECTIVE #1: Rule out syphilis in an elderly non-HIV patient with systemic manifestations

LEARNING OBJECTIVE #2: Diagnose atypical neurosyphilis with parkinsonism

CASE: A 74-year-old male with diabetes, hypertension and bilateral hearing loss was admitted to the CCU for complete heart block noted in the setting of dyspnea and fatigue for four days. He was briefly confused, oriented to time and person only and behaved inappropriately with staff. Five months prior, he was seen by a neurologist for flat affect, abnormal gait, multiple falls and occasional confusion for four months. On exam at that time, he had a mild right hand fine resting tremor, mild rigidity in the right hand and bilateral lower extremities and a narrow-based shuffling gait. He was diagnosed with early Parkinson's disease and prescribed levodopa-carbidopa without any improvement. Prior CT imaging also

showed mild ascending aortic dilatation and several granulomas in the lungs, liver and spleen.

In the CCU, evaluation revealed an RPR titer of 1:64 and reactive serum Treponema pallidum enzyme immunoassay. To our knowledge, he had no prior syphilis testing. On further history, he reported multiple sex partners in the past six months with inconsistent condom use. A lumbar puncture (LP) revealed 80 white blood cells per mm3, 66% lymphocytes, normal protein and VDRL titer 1:8, confirming neurosyphilis. A serum HIV Ag/Ab test was nonreactive. He completed 14 days of intravenous penicillin G with improvement in his mental status and gait.

IMPACT/DISCUSSION: The patient had hearing loss, mild aortic dilatation, and complete heart block, which were attributed to age related changes without prior syphilis screening. With the additional findings of systemic granulomas and neurologic symptoms, syphilis was the likely etiology. Neurosyphilis can occur at any stage and can rarely cause parkinsonism without more typical features, even in HIV seronegative patients. Neurologic exam and LP should be performed three to six months after treatment and every six months thereafter until the CSF is normal and the CSF-VDRL is non-reactive. Complete heart block due to syphilis has been reported and has typically been diagnosed with the postmortem finding of gummas in the cardiac conduction system. It is important to keep a high index of suspicion for this great masquerader as it can be easily diagnosed and readily cured to prevent the onset of irreversible sequelae.

CONCLUSION: Consider syphilis on the differential of elderly patients presenting with hearing loss, aortic dilatation, complete heart block and/or non-specific granulomatous disease. It is a great imitator.

Consider neurosyphilis on the differential of parkinsonism and acute encephalopathy.

SYSTEMIC MANIFESTATIONS OF STEROID UNRESPONSIVE HYPEREOSINOPHILIC SYNDROME TREATED WITH IMATINIB

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LEARNING OBJECTIVE #1: To understand the diagnosis and systemic manifestations of hypereosinophilic syndrome

LEARNING OBJECTIVE #2: To recognize that hypereosinophilic syndrome not responsive to treatment with steroids and hydroxyurea can potentially be treated with imatinib

CASE: 32 year old female with no relevant PMH presented with a complaint of headache and many episodes of diarrhea. Physical exam was notable for a mobile mass in right axilla and hepatomegaly. Labs revealed WBC 26.99, absolute eosinophil count (AEC)10870, 40.3 % eosinophils (EOs). CTA head/neck was negative, but CT abdomen showed hepatosplenomegaly and extensive lymphadenopathy. Bone marrow biopsy showed hypereosinophilia with negative PDGFRA; lymph node biopsy was negative for lymphoma. Other negative work up included: lumbar puncture, BCR-ABL, JAK2, T-cell gene rearrangement, flow cytometry, karyotype analysis, IgE, stool ova/parasites, strongyloides Ab. PR3 and pANCA were positive. The patient was discharged after symptomatic improvement but was later readmitted due to worsening leukocytosis/eosinophilia and recurrent abdominal pain despite completing a week's course of empiric steroids as an outpatient. Repeat CT abdomen showed superior mesenteric vein thrombosis, which was treated with heparin gtt and then Eliquis. Colon biopsy showed eosinophilic infiltrate. CT chest showed bilateral opacities. Lung biopsy via VATS was positive for eosinophilic pneumonitis, but negative for vasculitis/granulomatous inflammation, helping to rule out eosinophilic granulomatosis with polyangiitis. The patient was treated with IV solumedrol and hydroxyurea for suspected hypereosinophilic syndrome, without a significant decrease in eosinophil count. The patient did respond to the subsequent initiation of imatinib, leading to a significant decrease in WBC to 9.79, AEC to 2710, 27.7% EOs and further symptomatic improvement prior to discharge.

IMPACT/DISCUSSION: This patient meets the criteria for hypereosinophilic syndrome due to AEC>1500 on more than two occasions, documented eosinophil multi-organ infiltration and eosinophil mediated organ damage. While most patients respond to initial steroid therapy, she experienced persistence of symptoms/eosinophilia despite steroid and hydroxyurea therapy, requiring the addition of imatinib. Imatinib is typically used in PDGFRA positive patients since they have an imatinib sensitive tyrosine kinase. Prior studies showed poor response rates in PDGFRA negative patients. However, our patient experienced a significant response despite being PDGFRA negative, which highlights the possible utility of the agent in this patient population.

CONCLUSION: Idiopathic hypereosinophilic syndrome is a rare condition which can have severe systemic manifestations and requires prompt identification and collaborative treatment by internists and hematologist-oncologists. Patients who are initially steroid unresponsive may respond to imatinib, even if they are PDGFRA negative and lack sensitivity to the tyrosine kinase traditionally targeted by the therapy.

TAFRO: THE IMPORTANCE OF EARLY RECOGNITION AND INTERVENTION

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LEARNING OBJECTIVE #1: Recognize clinical features associated with severe idiopathic multicentric Castleman disease.

LEARNING OBJECTIVE #2: Learn appropriate initial medical therapy for a patient with a severe Castleman's disease exacerbation.

CASE: A 54-year-old male with Castleman disease (CD) and obstructive sleep apnea was admitted to the medical intensive care unit for hypercapnic and hypoxic respiratory failure. The patient was brought in after his concerned son called the ambulance as the patient had refused to move from a proned position for over two weeks. On presentation, he was afebrile, normotensive, and tachycardic. Physical exam was notable for morbid obesity and anasarca. Initial chest X-ray revealed pulmonary edema and a patchy right upper lobe opacity. Laboratory results showed thrombocytopenia, elevated sedimentation rate and c-reactive protein, low albumin, and acute kidney injury. The patient was initially evaluated and treated for infectious etiologies. He received a course of ceftriaxone and azithromycin for community acquired pneumonia with minimal clinical improvement. Cultures including blood, urine, and abdominal cytology were all negative. He was progressively diuresed with lasix; with further escalation of therapy to a bumetanide infusion with intermittent paracentesis. At times, vasopressor support was required to maintain an adequate blood pressure. Additional laboratory testing was performed: HHV-8 was negative; IL-6 and sIL-2 were markedly elevated.

Patient met the criteria for Thrombocytopenia, Anasarca, Fibrosis of the bone marrow, Renal dysfunction and Organomegaly (TAFRO) syndrome and received a dose of siltuximab, allopurinol daily and a steroid taper. Inflammatory markers and albumin improved initially, however his clinical status worsened. Patient's hospital course was further complicated by multiorganism bacteremia and eventually expired.

IMPACT/DISCUSSION: Castleman disease is a hematologic disorder that involves a single or multiple lymph node stations which show plasmacytic, hyaline vascular or mixed overgrowths. TAFRO is a variant in the idiopathic multicentric Castleman disease (iMCD) associated with HHV-8 negative has more severe presentations and poorer outcome.

Severe iMCD is classified as meeting two or more of the following criteria: Eastern Cooperative Oncology Group performance score ≥2, hemoglobin ≤8g/dL, pulmonary involvement, stage IV renal dysfunction and anasarca/ascites/pleural/pericardial effusion. Given the poor outcome of severe iMCD, treatment with high dose methylprednisone and weekly dosage of siltuximab should be initiated as soon as possible in critical ill patients. Clinical improvement is usually expected after 1 month of therapy. Patients with delayed or failed response to siltuximab would require early adjunctive chemotherapy treatment.

CONCLUSION: It is important to recognize the clinical presentation of severe Castleman disease and initiate early treatment in critical ill patients.

TAKOTSUBO CARDIOMYOPATHY (TC) PHYSIOLOGY IN THE SETTING OF METASTATIC PHEOCHROMOCYTOMA: A UNIQUE CASE TO ILLUSTRATE THE MECHANISM OF TC

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LEARNING OBJECTIVE #1: Demonstrate a unique case of Takotsubo cardiomyopathy physiology

LEARNING OBJECTIVE #2: Address the proposed mechanism of TC physiology

CASE: A 39 year old female with known metastatic pheochromocytoma on terazosin and bisoprolol, hypothyroidism on levothyroxine, and insulin-dependent diabetes presented with severe chest and back pain, blood pressure 200/110, and heart rate 128. Laboratory studies revealed troponin 90. EKG showed sinus tachycardia without evidence of ischemia. CT angiogram of chest/abdomen was concerning for TC (otherwise known as stress-induced cardiomyopathy) with sluggish flow in left ventricle, reduced left ventricular ejection fraction (LVEF), and normal coronary arteries; as well as widely metastatic disease to the lung, mediastinum, pericardium, liver and left upper quadrant/adrenal gland. Transthoracic echocardiogram (TTE) demonstrated LVEF 27% with regional wall motion abnormalities. Plasma free normetanephrines were elevated at 102 (normal < 0.9). The tumor burden and normetanephrine elevation were so significant that phenoxybenzamine 40mg TID, metoprolol tartrate 200mg BID, and diltiazem 90mg QID were required to obtain blood pressure and heart rate control. With improvement in vital signs, the LVEF recovered to 56%, but regional wall motion abnormalities persisted. Subsequently, metyrosine and pazopanib were initiated as chemotherapy for medical management of the widespread metastasis. As plasma normetanephrines were better controlled, the regional wall motion abnormalities resolved. Follow-up studies revealed plasma free normetanephrines of 5.3, as well as TTE showing LVEF 69% and normal wall motion.

IMPACT/DISCUSSION: This case – involving massive catecholamine release in the setting of metastatic pheochromocytoma – provides an unusual and striking example of how excessive adrenergic stimulation may precipitate TC physiology. The syndrome of TC was initially described in 1990, with case series highlighting the common precipitant of extreme emotional stress, often among women. Coronary artery dysfunction has also been implicated; however, coronary artery angiography in patients with TC usually demonstrates no obstructions or evidence of vasospasm. In support of this, the Mayo Clinic Diagnostic Criteria for TC includes the absence of obstructive coronary disease or plaque rupture. In our patient, treatment for metastatic pheochromocytoma with chemotherapy resulted in drastic reductions in catecholamines, with resulting normalization of heart rate, blood pressure, and LV function. Therefore, this case provides a useful illustration of the catecholaminergic mechanism of TC.

CONCLUSION: Excessive adrenergic stimulation, including both pathologic and physiologic stress responses, can precipitate TC physiology.

TB OR NOT TB: A NOT SO SIMPLE CASE OF MONOARTICULAR TUBERCULOSIS OF THE KNEE

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LEARNING OBJECTIVE #1: Consider a broad differential in patients with unspecified knee effusion-proper workup almost always requires arthrocentesis

LEARNING OBJECTIVE #2: Recognize extra pulmonary tuberculosis (TB) is common and can present as monoarticular knee arthritis

CASE: A 33 year old male from Afghanistan with no past medical history presented for his first refugee health appointment. He reported right knee pain and swelling. He is a grocery store clerk who plays soccer in his spare time. He moved to Boston 3 months prior.

One month ago he underwent an arthrocentesis at an outside hospital. The arthrocentesis yielded clear yellow inflammatory fluid (<1000 RBC/ul, 9,300 nucleated cells/ul-58% PMN, 23% lymph,18% mono- and no crystals). Standard cultures had no growth for 5 days. Ibuprofen helped with discomfort, but swelling and pain recurred gradually. He denied history of knee trauma, weight loss, fevers, night sweats, cough and any other symptoms except mild fatigue for years.

On exam, the right knee was warm, swollen, with a palpable effusion, but non-tender. ROM and gait were normal. Physical exam was otherwise unremarkable. Laboratory studies showed: hemoglobin of 12.6g/dl, no leukocytosis, ESR of 104 and CRP of 20.2. X-ray showed mild patellofemoral degenerative change and a small joint effusion. Quantiferon gold, ordered as part of his immigrant health screening, was positive. MRI showed a moderate-sized knee joint effusion, capsular thickening, and synovitis.

One month later the patient returned for his second refugee health visit, with worsening knee pain, large effusion, and mildly reduced ROM. Arthrocentesis yielded cloudy red inflammatory fluid (99,000 RBC/ul, 3118 nucleated cells/ ul-42% PMN, 41% lymph, 17% mono- and no crystals). It was sent for standard, fungal, and mycobacterial cultures. Cultures grew M. Tuberculosis.

IMPACT/DISCUSSION: Chronic knee pain (6 weeks or longer) affects up to 25% of adults. Its presentation varies widely, and a differential diagnosis is developed largely based on history and exam. Our case highlights the importance of evaluating effusions with arthrocentesis.

Monoarticular knee involvement amongst all patients with TB is rare (0.1-0.3%). Most cases share the following features: years of persistent knee pain, false negative or inadequate initial cultures, unremarkable standard cytological and biochemical analysis of synovial fluid, and confusion for more common autoimmune or rheumatologic diseases.

CONCLUSION: Persistent knee pain with effusion carries a very broad differential. Physicians should consider imaging to investigate extent of possible joint damage. If there is evidence of effusion it is critical to obtain synovial fluid, send for broad scope of cultures, and in some cases even refer for surgical debridement to prevent further joint destruction and obtain definitive diagnosis. This is especially important in patients with or who are at risk for latent TB.

TB OR NOT TB?: CHALLENGES IN DIAGNOSING TB IN THE AMBULATORY SETTING

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LEARNING OBJECTIVE #1: Atypical presentations of Mycobacterium Tuberculosis (MTB) can lead to delays in diagnosis and treatment. Maintaining a high clinical suspicion when treating patients from endemic areas is critical to early diagnosis.

CASE: A 43-year-old Filippino woman presented to an internal medicine residency clinic to establish care three years after immigrating to the United States. Past medical history notable for endometriosis, and a recent history of right-sided lower back mass. The mass was initally thought to be a lipoma when evaluated previously by rural primary care physician. Inital evaluation with x-ray revealed incidental findings of pulmonary nodules in the right lower lobe of her lung. A follow-up CT thorax showed multiple lung lesions, and masses within chest wall musculature. The suspected lipoma was excised and a collection of milky-white exudate was drained. Culture of the purulent material was unrevealing. Initial blood work notable for thrombocytosis. She was then referred to our quaternary care center for further evaluation.

On presentation to our clinic, she denied shortness of breath, hemoptysis, sputum production, or fevers. Her physical exam was only remarkable for healed 1cm scar over right posterior lumbar spine. Due to continued uncertainty about the etiology of her multiple masses, she scheduled for an ultrasound-guided biopsy of one of the chest wall masses. Anaerobic, fungal, gram stain and smear, and acid-fast bacilli (AFB) cultures of the aspirate were initially negative. Positive AFB cultures resulted two weeks later. DNA probe isolate sent to the Department of Health (DOH) were positive for MTB and negative for mycobacterium avium complex. At the time of diagnosis, care was transitioned to the DOH. Rifampin, isoniazid, pyrazinamide, and ethambutol (RIPE) therapy was started. All three of the collected sputum samples were negative, and the patient remained symptom-free. Due to the positive AFB cultures, she was diagnosed as active TB. She completed RIPE therapy, and moved toward continuation phase therapy.

IMPACT/DISCUSSION: Strategies for preventing and controlling MTB in the United States include, early identification and prevention of transmission. Screening of asymptomatic individuals is often limited to healthcare workers and large communal settings, and aim to detect latent MTB. Early detection of active MTB, occurs when individuals from endemic areas present with classic clinical findings suggestive of disease, and high suspicion leads to investigation.

CONCLUSION: Our case represents a gray area as our patient did not present classically, but is actively infected and contagious. Three months elapsed between initial presentation in our office and diagnosis of active TB with resultant self-quarantine and initiation of treatment. As the consequences of MTB infections can be grave and widespread, clinicians should maintain high clinical suspicion and consider early intervention in all patients from endemic regions who present with pulmonary symptoms or findings.

TERMINATING THE PROVIDER-PATIENT RELATIONSHIP DUE TO PATIENT NON- ATTENDANCE

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LEARNING OBJECTIVE #1: Recognize the impact of non-attendance on the clinic and termination of patient-provider relationship on the patient

CASE: A 53 year-old female with history of depression and prior suicide attempt, borderline personality disorder, PTSD, alcohol use disorder in remission, obesity, sexual assault, and intimate partner violence presented with recent homelessness and worsening depression with active suicidality. She was admitted to inpatient psychiatry.

After discharge, she had poor follow up, failing to arrive to 4 appointments. The policy of the clinic is that the PCP may terminate the provider-patient relationship if the patient "no-shows" to 4 or more appointments within a year. Patients are notified of the policy by letter after each no-show. Notification letters, pre- appointment calls, and email reminders did not improve her attendance. After the fourth no-show, her PCP was asked whether to terminate the relationship. Noting 4 additional ED visits, including 1 admission, the PCP elected to continue the relationship due to concern for loss of care continuity, adverse health outcomes, and increased expenses. A multi-disciplinary team including primary care and community mental health providers discussed the patient and identified transportation issues as a barrier to access. Social workers helped the patient find insurance-provided transportation and her attendance improved. This allowed for better control of her depression, which improved her engagement in treatment plans, and ultimately helped avoid additional ED visits and hospitalizations.

IMPACT/DISCUSSION: Patient "no-shows", or non-attendance, occur when a patient schedules an appointment and does not appear or cancel. Non-attendance rates in primary care vary from 5% to 55%. For providers, non-attendance results in inefficiency and redundancy. Missed appointments reduce access for other patients and create extra documentation, rescheduling work, and revenue loss. For patients, decreased access to primary care increases the cost and number of ED visits, and poor care continuity is associated with higher costs, increased hospitalizations, and poorly controlled chronic conditions.

Healthcare organizations have tried various strategies to reduce no-shows, including open-access scheduling; exit interviews; telephone, email, and/or text message reminders; and a provider-patient relationship termination policy. These strategies decrease patient non-attendance by 10%-15%. Guidelines recommend patient dismissal be a last resort after efforts to address drivers of non-attendance. Common drivers include transportation issues (29%), scheduling problems (19%), forgotten appointments (18%), caregiver responsibilities (10%), childcare issues (10%), and financial problems (4%).

CONCLUSION: Social determinants of health including transportation and financial barriers can contribute to non-attendance. This case demonstrates that patient outcomes can be improved by engaging a multidisciplinary team to identify underlying causes of non-attendance.

TEXTING TOE-TALLY CHANGED CARE FOR OUR STUDENT FREE CLINIC LUPUS PATIENT

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LEARNING OBJECTIVE #1: Manage urgent clinical situations in uninsured patients through the use of technology in a Continuity of Care (CoC) program

LEARNING OBJECTIVE #2: Recognize the clinical features of vasculitis of the digital arteries in a systemic lupus erythematous (SLE) patient

CASE: Our 20-year-old uninsured patient was diagnosed with SLE at Weill Cornell Community Clinic (WCCC), a student-run primary care free clinic, and then assigned a CoC student—a medical student who attends all medical appointments as the patient's advocate and point person. Three months prior to this presentation, the patient was diagnosed with SLE (positive ANA, dsDNA, Sm, RNP, hypocomplementia; arthralgias, nasal ulcers, phototoxicity, fatigue) and referred to a rheumatologist at Hospital for Special Surgery, where she received free medical care with prednisone, azathioprine and hydroxychloroquine. The patient noted one

evening that her painful toes had "turned blue". She texted a photo to her CoC student, who swiftly alerted her providers. The patient was advised to go to the ED and received prednisone, aspirin and amlodipine, and then discharged. Two weeks later she returned to the ED for worsening symptoms, and was treated with IV steroids and anticoagulation. The toe discoloration and pain has since resolved.

Exam: Dusky distal left 1st and 2nd toes.

Positive ANA, dsDNA, Sm, RNP, cardiolipin and hypocomplementia.

MRI/MRA: Segmental enhancement of digital arteries suggestive of periadventitial disease seen with vasculitis. Poor visualization of arteries likely due to peripheral vasospasm.

IMPACT/DISCUSSION: Uninsured SLE patients have significantly fewer physician visits than Medicaid and privately insured patients, and often lack continuity in health care providers. A CoC student combats this disjointedness by serving as the consistent first contact for the patient and attending all medical appointments. In this case, the patient first reported her toe pain via text message to her CoC student, who then directed the patient to the ED. Because of her relationship with her CoC student, and the use of technology, this uninsured patient received prompt treatment in this urgent situation.

Vasculitis of the digital arteries in this SLE patient presented as toe discoloration and pain, and was supported by MRI/MRA. Vasculitis prevalence in SLE is between 11% and 36%, with nearly 90% of cases involving small vessels of the extremities. SLE patients with vasculitis can present with cutaneous features, including urticaria, ulcers and digital infarcts, and have a higher frequency of anemia and hypocomplementemia. Small vessel vasculitis can be confirmed via histologic or angiographic methods.

CONCLUSION: A Continuity of Care program that pairs a student with a patient helps deliver prompt care to an uninsured patient. Our use of technology improved the medical care provided.

Clinical features of SLE vasculitis include cutaneous lesions of the extremities with positive immunologic findings, and vasculitis can be confirmed via histologic or angiographic methods.

THE BLIND MEN AND AN ELEPHANT: A DIAGNOSIS LOST IN MULTI-ORGAN MANIFESTATIONS

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LEARNING OBJECTIVE #1: Examine the pathophysiology of Systemic Sclerosis

LEARNING OBJECTIVE #2: Develop a holistic approach to diagnoses with multiple organ system involvement

CASE: In an Indian fable, a group of blind men attempt to identify an animal by feeling different parts. Each describes a single component of the unseen elephant, mistakenly characterizing it due to isolated perspectives.

A 58-year-old man with Raynaud's, GERD, and hypertension presented with renal failure. His course was complicated by a perforated duodenal ulcer, respiratory failure, and 3 readmissions for cardiac arrest. The patient was transferred to our medical center for evaluation.

Vital signs showed hypoxemia and BP 160/90 despite 3 oral meds. Physical exam showed cachexia and diminished breath sounds.

Lab studies showed ANA of 1:1280. The patient had a renal biopsy, which was consistent with thrombotic microangiopathy (TMA). Cardiac amyloid scan was negative. Right heart catheterization revealed pulmonary hypertension, and CT chest showed ground-glass opacities.

Anti-RNA polymerase III antibodies returned positive, and the patient was diagnosed with Systemic Sclerosis (SSc), diffuse cutaneous subtype. Ten percent of patients with SSc carry this autoantibody, which confers an elevated risk of Scleroderma Renal Crisis (SRC).[3] This patient was started on lisinopril, but succumbed to his illness a few months later.

IMPACT/DISCUSSION: Systemic Sclerosis is a disorder of dysregulated connective tissue repair which presents with variable involvement of dermatologic, pulmonary, gastrointestinal, cardiac, and renal systems.

This patient displayed several manifestations of SSc: pulmonary arterial hypertension, interstitial lung disease, heart block, sclerodactyly, Raynaud's, ulcer and perforation, dysphagia, and SRC.

This patient's presentation is analogous to the exploration of the elephant by the blind men in the fable. One man, feeling the tail, concluded that the animal must be a horse. Another, feeling its trunk, asserted that it must be akin to a snake. Similarly, physicians focusing on this patient's heart block speculated that he suffered from amyloidosis. Others, concentrating on the renal biopsy, thought that he suffered from a TMA with systemic effects of renal failure.

The patient's heart disease was likely myocardial fibrosis, observed in half of patients with SSc.[2] Findings on the renal biopsy showed SRC, in which intimal fibrosis leads to endothelial cell damage.[3] Similarly, the patient's pulmonary and gastrointestinal illnesses were likely due to SSc processes.

CONCLUSION: Ultimately, discovering the true nature of the elephant – making the diagnosis – required a comprehensive evaluation of the patient's problems. This vignette compels clinicians to take a step back when approaching diagnoses, ensuring that they broaden their perspectives to avoid the availability bias of the ancient blind men.

1. Thanissaro, B (translator). *The Tipitaka: Udana 6.4.* Barne Center for Buddhist Studies. 2012.

2. *Lancet.* 2017. 390:1685-99.

3. *Nature Reviews.* 2016.12:678-691.

THE BLOOD UNDER MY SKIN: THROMBOTIC THROMBOCYTOPENIC PURPURA AS THE FIRST MANIFESTATION OF SYSTEMIC LUPUS ERYTHEMATOSUS

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LEARNING OBJECTIVE #1: Identify Thrombotic Thrombocytopenic Purpura (TTP) as a possible first manifestation of Systemic Lupus Erythematosus (SLE)

LEARNING OBJECTIVE #2: Recognize the importance of making the presumptive diagnosis of TTP and initiating treatment while waiting for the confirmatory test result.

CASE: A 23-year-old female presents with 2 days of urine darkening, eye discoloration, and fever up to 39C. She also had a rash on her forearms for 3 months. On exam she had a temperature of 38.5C but was otherwise hemodynamically stable. She had scleral icterus, pale conjunctiva, and hyperpigmented papules over her forearms. CBC revealed hemoglobin 7.9 g/dL (MCV 84) and platelets 5/mL. CMP revealed creatinine 1.5mg/dL, total bilirubin 4.5mg/dL, and direct bilirubin 1.5mg/dL. She had an undetectable haptoglobin, LDH >3000 U/L, fibrinogen 550 mg/dL, D-dimer 4.3mg/dL, normal iron studies, and APTT/INR. Urinalysis was positive for blood with RBC. Of note, she had normal baseline labs from 3 months prior. Peripheral smear showed schistocytes. She was diagnosed with microangiopathic hemolytic anemia (MAHA). On the second day of hospitalization, her hemoglobin decreased, and she required two units of transfused blood. Furthermore, her work up was remarkable for positive ANA (1:1280, speckled pattern), anti-smith antibodies, dsDNA, low C4, ESR > 100 mm/hr, and CRP 6.5 mg/L. She developed altered mentation with negative head MRI. We made the presumptive diagnosis of TTP and SLE. She was started on pulse dose steroids, hydroxychloroquine and plasmapheresis. Her mentation improved and her hemoglobin and platelet count improved. ADAMTS13 activity returned < 5%. At the time of

discharge, she had near-normal hemoglobin and platelets. Her ADAMTS inhibitor antibody resulted positive, confirming the diagnosis of TTP.

IMPACT/DISCUSSION: TTP is a type of thrombotic microangiopathic anemia primarily caused by ADAMTS13 deficiency due to autoantibodies, causing platelet activation, microvascular thrombosis, and vascular injury. Presumptive diagnosis is based on findings that include fever, neurologic changes, acute kidney injury, MAHA, and thrombocytopenia. Confirmatory tests include severe deficiency of ADAMTS13 activity and positive autoantibodies. It is important to have a high suspicion of TTP in order to start plasmapheresis and steroid therapy as early as possible. Starting treatment before confirmatory testing increases the survival rate from 10% to 75-92%. Patients with TTP that receive platelets have increased risks of arterial thrombosis and mortality and thus, platelets should be avoided. The association of TTP and SLE is incredibly rare, but TTP has been recognized as one of the initial manifestations of SLE in several case reports. Hospitalists and internists should consider SLE as an underlying association with TTP. **CONCLUSION:** -The association between TTP and SLE is rare but should be considered in patients with SLE that present with MAHA.

- Starting the treatment for TTP before confirmatory testing dramatically improves outcomes.

THE CANARY IN THE COAL MINE

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LEARNING OBJECTIVE #1: Diagnose SLE using the new EULAR/ACR 2019 criteria

LEARNING OBJECTIVE #2: Identify SLE by gathering proper medical history and ordering the appropriate workup

CASE:

The patient is a 32-year-old Asian male with PMH of ERSD secondary to minimal change disease (diagnosed at age 26) presented for acute onset shortness of breath, lower extremity edema, and abdominal distension.

He underwent CTPE which showed large left pleural effusion, moderate pericardial effusion and as well as ascites. Transthoracic ECHO showed moderate to large pericardial effusion with evidence of tamponade physiology. The patient underwent emergent pericardiocentesis and placement of a pericardial drain. The pericardial fluid was bloody in appearance, fluid studies showed RBC 2047709, cytology negative malignancy and culture showing no growth. The patient also underwent left-sided thoracentesis with the removal of 1L bloody fluid with the placement of a left-sided pleural drain. Pleural fluid studies showed RBC 30803, cytology negative for malignancy and culture showing no growth. Furthermore, paracentesis was done with the removal of 800cc peritoneal fluid with bloody appearance. Fluid studies showed RBC 112577 and cytology negative for malignancy, negative cultures. Hemoglobin was around 8, platelets 102, CRP 18 and sed rate 53. ANA 1:640 speckled pattern, low C3 and C4, negative ANCA, RF, CCP, RNP, Smith ds DNA, SSA, SSB, C3 low and C4 normal (both initially low). He met 4/11 SLICC criteria for SLE including serositis, +ANA, anemia/thrombocytopenia and low complements, history of MCD. He was started on methylprednisolone resulting in the improvement of anemia/thrombocytopenia. Then transitioned to oral prednisone with a taper and was also started on plaquenil and imuran.

IMPACT/DISCUSSION: To date, the association of SLE with MCD has been described only in isolated case reports. Initially, the etiology of the patient's MCD was unclear. He had no history of lupus nephritis and no known causes for secondary FSGS, but failed to recover renal function and ultimately progressed to ESRD. His dramatic presentation suggests that MCD was a harbringer of SLE—the metaphorical canary in the coal mine. In the context of his past medical history and his particular demographic, initial clinical suspicion for SLE was low. This case contributes to the body of literature supporting early consideration of SLE as a potential etiology for MCD and acute pericarditis.

CONCLUSION: SLE is an autoimmune disorder with a wide spectrum of manifestations. Acute pericarditis is an important and potentially a life threatening complication of the disease. According to the most recent EULAR/ACR 2019 SLE criteria, acute pericarditis scores 6 points. A total of 10 points is required to diagnose SLE, thus recognizing SLE as a potential underlying cause in a newly diagnosed acute pericarditis or cardiac tamponade is crucial to initiate treatment and improve outcomes. A relevant association may exist between SLE and MCD

THE CRYOGLOBULINS STRIKE BACK: RECURRENT CRYOGLOBULINEMIA FOLLOWING HEPATITIS C TREATMENT

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LEARNING OBJECTIVE #1: Describe recurrence risk of cryoglobulinemia despite treatment of hepatitis C.

LEARNING OBJECTIVE #2: Understand the diagnosis and treatment of mixed cryoglobulinemic glomerulonephritis.

CASE: A 69 year old male with a history of cured hepatitis C presented to the emergency department with one week of bilateral lower extremity rash, lower extremity edema and decreased urine output. The patient exhibited non-blanching, confluent palpable purpuric lesions extending from his toes to his knees bilaterally. Labs showed a creatinine of 3.09 from baseline 1.6 with low C3, C4 and CH50 levels; urinalysis demonstrated white blood cells and hyaline casts.

In 2015, the patient had hepatitis C-associated mixed cryoglobulinemic glomerulonephritis requiring plasma exchange, rituximab and two weeks of dialysis with return of renal function and resolution of cryoglobulins.

He underwent ledipasvir/sofosbuvir treatment of hepatitis C in 2015 with cure. Interval monitoring showed clearance of cryoglobulins, normal C3 and persistently low C4.

Cryoglobulin levels at current admission were found to be positive for type II (mixed) cryoglobulinemia. Renal biopsy showed diffuse type II (mixed) cryoglobulinemic proliferative glomerulonephritis similar to his 2015 biopsy. He was discharged on rituximab therapy; however, one month later, he developed worsening renal function requiring hemodialysis and plasma exchange therapy. His renal function improved; he was discharged with prednisone off dialysis.

IMPACT/DISCUSSION: Cryoglobulinemic glomerulonephritis is a known consequence of hepatitis C infection. Hepatitis C viremia induces B cell production of IgM antibodies which form precipitating immune complexes leading to glomerular deposition and damage. Data are limited regarding hepatitis C-associated cryoglobulinemia in the era of interferon-free treatment regimens for hepatitis C. It is hypothesized that the direct-acting antiviral agents do not have the same immunomodulating effects as interferon based regimens. Thus, patients may continue to have complications from cryoglobulinemia after hepatitis C cure. Presentation of cryoglobulinemia includes skin findings such as palpable purpura or livedo reticularis, peripheral neuropathies, nephrotic/nephritic syndromes and acute renal failure. Patients with acute renal failure require biopsy to distinguish from other forms of nephritis. This case provides evidence that despite hepatitis C cure and four years of remission from cryoglobulin-

related disease, recurrence and relapse are an ongoing risk and continued surveillance is indicated. Rituximab and plasma exchange can be effective therapies to induce remission in cryoglobulin disease.

CONCLUSION: High index of suspicion for cryoglobulin-related disease must be maintained even years after hepatitis C cure. Remission can be induced with rituximab and plasma exchange with avoidance of long term dialysis if remission is maintained.

THE CURIOUS CASE OF Q FEVER AND COXIELLA

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LEARNING OBJECTIVE #1: Characterize Q fever in the setting of hepatitis

LEARNING OBJECTIVE #2: Diagnose and treat *Coxiella burnetti* infection

CASE: A 30 year old Egyptian man with past medical history of hyperhidrosis presented to the emergency department with persistent fever, chills, sweats, weight loss and neck tenderness associated with frontal pressure-like headache. His only pertinent epidemiologic association was travel to U.S. from Egypt and remote exposure to sheep. Social history was significant for cigarette smoking and a monogamous homosexual relationship.

Physical examination was unremarkable except for left sided lid lag and fever. Laboratory data showed elevated transaminases with normal acetaminophen levels. Fever of unknown origin evaluation included testing for*Plasmodium* species, endemic fungi, rickettsia, arboviruses, HIV, sexually transmitted infections, *Brucella*, mycobacteria, blood/urine cultures, chest/abdomen/pelvis CT, MRI orbit/brain, transesophageal echo, thyroid and autoimmune diseases, all of which were negative. The patient refused lumbar puncture, but elevated *Coxiella* IgM and IgG confirmed the diagnosis of acute Q fever. He was treated with doxycycline 100mg BID x 14 days with resolution of fever and hepatitis after 3 days.

IMPACT/DISCUSSION: Q fever is caused by *Coxiella burnetii*, which is typically found in livestock such as sheep, goats, and cattle. Transmission to humans occurs after inhalation of contaminated aerosols/dust or from ingestion of raw milk or fresh goat cheese. Most cases reported in the U.S. present in the acute phase with incidence in Texas being 0.7 per million. Acute Q fever can manifest with a wide spectrum of signs and symptoms such as self-limiting flu-like symptoms, pneumonia, respiratory failure, hepatitis, or acute endocarditis. Persistent/chronic infection can present with vascular infection, chronic endocarditis, or bone and joint infections.

The few case reports of Q-fever hepatitis show that it commonly presents with fever and elevation of transaminases with or without jaundice [6]. Liver biopsy typically shows fibrin ring (doughnut) granulomas [3]. While characteristic of Q fever, this finding is non-specific and can be seen in other diseases such as tuberculosis, CMV and EBV. Typically, diagnosis of acute Q fever is based on serology, however diagnosis of Q fever hepatitis is more challenging. PCR detection from formalin-fixed liver tissues appears promising to accurately diagnose Q fever hepatitis [4].

CONCLUSION: The prevalence of Q-fever hepatitis is undereported. Historically, it has been frequently confused with tuberculosis due to similar morphologies on liver biopsy [5]. Our case illustrates *Coxiella* hepatitis should be considered by internal medicine physicians in patients who present with fever of unknown origin and transaminase elevation. Furthermore, accurate diagnosis of Q fever hepatitis has important implications in duration of treatment, development of persistent infection, and potential mortality.

THE DEADLY TRIAD

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LEARNING OBJECTIVE #1: Recognize the manifestations of an illness in a timely manner.

LEARNING OBJECTIVE #2: Utilize atypical symptoms to a working diagnosis

CASE: A 56-year-old white male presented as a transfer for stage 3 acute kidney injury and new dyspnea. He also had conjunctivitis, cough with hemoptysis, and rhinorrhea. He recently underwent tympanostomy tube placement for ear fullness. Prior to hospitalization he worked with concrete and had no functional limitations. He had no new occupational exposures and lived at home with his healthy wife and kids. He did not smoke or use recreational drugs.

On presentation he was afebrile but tachypneic with SpO2 of 96-98% on 6L nasal cannula. On exam he was in no respiratory distress. His lungs were diffusely wheezy with left base crackles. He had left conjunctival injection. His labs showed WBC 13.2 K/uL, Hg 7.1 g/dL, Cr 5.1 mg/dL. Urinalysis showed gross and microscopic hematuria with an estimated urinary protein excretion of 1.1g/day. INR, lactic acid, and LFT were normal. Nasal swab showed he was positive for Rhinovirus. CT of the chest showed multifocal pneumonia. He was started empirically on vancomycin and cefepime.

The night after admission the patient's respiratory status acutely decompensated and he went into cardiac arrest requiring CPR followed by venous-arterial extracorporeal membrane oxygenation, vasopressors and continuous renal replacement therapy. During intubation it was noted that he had pink frothy secretions, suggestive of diffuse alveolar hemorrhage. On day 4 of admission, cytoplasmic antineutrophil cytoplasmic antibody titers returned positive and rheumatoid factor was elevated. Anti-glomerular basement membrane antibodies were negative. The findings were consistent with granulomatosis with polyangiitis (GPA). He was started Cyclophosphamide and underwent plasmapheresis. He was later transitioned to intermittent hemodialysis and extubated to room air. He slowly improved and was discharged to a rehab facility.

IMPACT/DISCUSSION: The clinical triad of GPA includes pathologic changes in the upper and lower airway as well as glomerulonephritis. Although this patient had evidence of all three, the presence of rhinovirus and multifocal pneumonia altered the decision making. With that in mind, it was sensible at the time to trend the clinical course with antibiotics. Unfortunately for our patient, the presumed etiology was not the primary insult which led to a complicated course.

In addition, he had uncommon manifestations of GPA, namely the aural fullness which required tympanostomy tubes. What is more likely is that his nasal congestion, which is frequently seen in GPA, caused a sensation of aural fullness. This further reinforces the need to become familiar with typical and atypical manifestations of dangerous diseases.

CONCLUSION: The acute worsening that this patient suffered is not uncommon for GPA, which warrants immediate recognition of this illness so that it can be treated with immunosuppression.

THE DISGUISE OF EOSINOPHILLIA

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LEARNING OBJECTIVE #1: Distinguish the various types of differentials for eosinophilia

LEARNING OBJECTIVE #2: Treatment for eosinophilic pneumonia

CASE: A 61-year-old female with past medical history for tobacco abuse and depression presented to the emergency department for shortness of breath. On presentation, she was found to have a blood pressure of 156/87mmHg, heart rate 80bpm, respiratory rate of 18 with oxygen saturation of 93% on ambient air, and temperature of 36.7C. The patient was recently treated for pneumonia with steroids and antibiotics without resolution. She underwent a CT scan of the chest which showed multiple areas of mild peribronchial cuffing, peribronchial nodularity and focal areas of ground-glass opacity predominantly in the lung bases. Labs were within normal limits except for eosinophil differentials of 88.5%. She was also found to have an IgE level 1456IU/mL. On physical examination she was found to have bilateral inspiratory crackles at the bases with mild hypoxia. Due to the concerns for eosinophilic pneumonia, she was started on IV steroids 40 mg and symptoms started improving. Infectious workup including respiratory virus panel and blood cultures were negative. The patient was found to have been on fluoxetine for the last 8 years for depression and was advised to taper fluoxetine as it could be a contributing factor to eosinophilic pneumonia. Additonally, the patient was counseled on tobacco cessation prior to discharge.

IMPACT/DISCUSSION: Idiopathic Acute Eosinophilic Pneumonia is a rare disorder in which the lungs rapidly accumulate eosinophils. IAEP may occur at any age, however, is found to occur more between ages 20-40 years old. Risk factors include certain medications such as daptomycin, gemcitabine, infliximab, ranitidine, sulfasalazine/mesalamine, and venlafaxine. In this case, we have suspicion that fluoxetine may have contributed.

CONCLUSION: - Failure to recognize and treat IAEP can result in respiratory failure due to the progressive nature

- Maintain a high index of suspicion in patients taking common medications associated with IAEP

THE GIST ABOUT GASTROINTESTINAL STROMAL TUMORS

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LEARNING OBJECTIVE #1: Construct an illness script for gastrointestinal stromal tumors (GISTs)

LEARNING OBJECTIVE #2: Employ an evidence-based diagnostic approach in evaluating undifferentiated mesenchymal gastrointestinal tract neoplasms

CASE: 63yoF presenting with a one day history of 10/10 epigastric abdominal pain, hematemesis and melena. Patient endorsed taking 500mg Naproxen daily. Prior to presentation the patient was feeling well and denied nausea/vomiting, weight loss, abdominal pain, early satiety, dysphagia, acid reflux, diarrhea/constipation. The patient had no prior history of GERD, PUD, GI bleeding, prior EGDs and no family history of abdominal neoplasms. Patient was initially admitted to an OSH where she received 4 units pRBCs for an initial Hgb of 7.4 from baseline of 12.5. EGD found 3cm erythematous and bleeding submucosal polyp prolapsing into the lumen in the lesser curvature in the cardia with a clean based 1cm ulcer on top of it, endoscopic biopsy was indeterminate. Patient was transferred for further evaluation. CT abdomen and pelvis with contrast showed a 3 cm well-defined submucosal gastric fundal mass. Patient underwent combined laparoscopic and endoscopic resection of the gastric mass. Specimen found to be a GIST with low mitotic index. Suspicion for metastasis was low given unremarkable CT imaging, location, size, and mitotic index. The patient was discharged home with a PPI and outpatient follow up.

IMPACT/DISCUSSION: GISTs are most commonly sporadic mesenchymal neoplasms, however they rarely can be associated with familial autosomal dominant syndromes (NF-1, Carney-Stratakis syndrome). The median age of diagnosis is 63 years old with a near equal female:male ratio. GISTs most often present with signs and symptoms of GI bleeding including hematemesis, melena, or occult blood loss with anemia. Less than 20% of GISTs are discovered as incidental findings or after endoscopic evaluation for non-specific pain, bloating, or early satiety. In some reports, GISTs have presented with paraneoplastic consumptive hypothyroidism.

Other mesenchymal GI tract neoplasms, like leiomyosarcomas, have a similar endoscopic and radiologic appearance to GISTs. Contrast enhanced CT imaging is recommended to evaluate tumor involvement and assess presence of metastatic disease. Submucosal lesions >2cm should be resected given risk of future metastasis. Endoscopic biopsy does not provide sufficient tissue for diagnosis, and endoscopic ultrasound with fine needle aspiration (EUS-FNA) is only necessary if metastatic disease is suspected or if neoadjuvant imatinib therapy can shrink locally advanced disease. GISTs < 5cm in the stomach with low mitotic indices are at less (2-3%) risk for metastasis.

CONCLUSION: GISTs are sporadic GI neoplasms that are often clinically silent until bleeding or mass effect occurs EUS-FNA is not necessary if a mesenchymal GI neoplasm is highly suspected and is resectable

GISTs > 2cm should be resected given risk of future metastasis

THE GIST OF IT: UNCOMMON PRESENTATION OF GIST IN A YOUNG MALE PATIENT

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LEARNING OBJECTIVE #1: Recognize that gastrointestinal stromal tumors (GIST) are rare tumors that account for 1-3% of all gastrointestinal tumors.

LEARNING OBJECTIVE #2: Recognize that GIST may have an unusual presentation in young adults.

CASE: A 30-year-old African American man presented with left upper quadrant abdominal pain that started two days prior to presentation. Pain was described as dull and non-radiating, that was exacerbated by deep inspiration and worsened by eating. He denied having fever, nausea, vomiting, night sweats or unintentional weight loss. His medical history was significant for a prior positive purified protein derivative (PPD) test found during incarceration one year earlier. On admission, his vital signs were within normal limits. Physical exam revealed mild tenderness to palpation of the left upper quadrant with no appreciation of a definitive palpable mass. Peritoneal signs were absent. Laboratory workup revealed mild anemia with hemoglobin level of 12.3 g/dl. CT scan of the abdomen and pelvis revealed a complex, 2.3 x 2.1 cm, left-sided subphrenic soft

tissue collection with locules of extra luminal air, concerning for perforated gastric ulcer. In the absence of peritoneal signs, decision was made to proceed with endoscopy. An esophagogastroduodenoscopy (EGD) revealed a transmural defect in the greater curvature of the stomach, that appeared to communicate via a small tract with an extraluminal necrotic cavity, consistent with the findings of CT imaging. A CT-guided biopsy of the extra luminal gastric mass showed a stromal cell GIST which stained positive on immunohistochemistry for CD34, CD117 and DOG1. The patient was then started on neoadjuvant therapy with imatinib. He was then discharged in a stable condition with close outpatient follow-up.

IMPACT/DISCUSSION: Our patient's presentation is unique given his young age and unusual radiographic finding of an extraluminal mass communicating with the gastric lumen. This case is also interesting as the patient had a prior untreated PPD and the initial differential diagnosis included gastric tuberculosis; however, gastric biopsy did not show any evidence of TB. Our patient's clinical presentation can be explained by the high mitotic rates associated with GIST tumors causing the tumor to quickly outgrow the blood supply, thereby developing a necrotic core and increasing the risk of rupture, enteral communication and intraperitoneal hemorrhage. The current standard of care involves resection and neoadjuvant chemotherapy with a tyrosine kinase inhibitor such as imatinib.

CONCLUSION: GISTs can have variable presentations and diagnosis is often delayed due to its indolent course.

High mitotic rates associated with these tumors can often lead to rapid terminal growth and life-threatening complications.

THE GREAT MIMICKER: AN UNUSUAL PRESENTATION OF KLEBSIELLA PNEUMONIAE IN A MIDDLE-AGED MAN

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LEARNING OBJECTIVE #1: Recognize hepatic and lung abscesses as a rare invasive syndrome of Klebsiella Pneumoniae

LEARNING OBJECTIVE #2: Demonstrate an understanding of clinical/radiographic similarities between Klebsiella Pneumoniae and malignancy

CASE: A 44-year-old male with a history of alcohol abuse presented to the emergency department complaining of generalized weakness, weight loss, nausea, vomiting, and bloody diarrhea for 2 weeks. About 2 ½ weeks prior to admission he underwent a tooth extraction where he was prescribed a short course of penicillin. One day later he began experiencing nausea and vomiting at which point he was assessed at another hospital and was prescribed Bactrim, but symptoms worsened with subsequent generalized weakness and dyspnea. He suffered an 8lb weight loss during this time. In the emergency department, he was tachypneic and saturating 92% on room air with a total bilirubin of 1.2, Alkaline Phosphatase of 105, WBC of 14.4, and normocytic anemia with a hemoglobin of 9.7. On exam, he had no tenderness to palpation of the abdomen and normoactive bowel sounds. Lungs were clear to auscultation. CT A/P without contrast was notable for multiple scattered hypodense nodules throughout the liver and lower lung bases concerning for metastatic disease. Repeat CT A/P with contrast showed a concurrent large multilocular lesion occupying most of the left hepatic lobe. The patient denied a personal or family history of cancer. He works as a border patrol agent and drinks 1-1.5 bottles of wine per day. Hepatitis B and C serologies were negative. FNA biopsy of one of the liver lesions was performed to explore the etiology of the mass. FNA biopsy cytology of the lesion showed no evidence of neoplastic cells, but the culture did grow moderate Klebsiella Pneumoniae. Blood cultures subsequently grew Klebsiella Pneumoniae in 2/2 bottles. The patient was started on IV ceftriaxone and clinically improved over the course of 5 days. He was continued on outpatient IV antibiotic therapy for a total of 2 weeks with repeat CT imaging showing resolution of the lesions in the liver and lungs. Outpatient colonoscopy with biopsy showed no evidence of dysplasia or active bleed.

IMPACT/DISCUSSION: This 44-year-old male with a history of alcohol abuse, symptoms with supporting lab findings worrisome for cancer, and imaging studies suggestive of metastatic disease turned out to have a curable invasive monomicrobial infection. This case highlights the importance of maintaining a broad differential and resisting the urge to succumb to anchoring bias in medical practice. It further showcases the rare and deceiving presentation of Klebsiella pneumonia as liver and lung abscesses which can easily be mistaken for malignancy.

CONCLUSION: Hepatic and lung abscesses are a rare invasive syndrome of Klebsiella pnuemoniae. As clinical and radiographic findings are similar to that of cancer, it is imperative that these patients undergo biopsy for a definitive diagnosis to guide appropriate management and treatment.

THE GROUND ZERO OF NAPROXEN-INDUCED THROMBOCYTOPENIA

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LEARNING OBJECTIVE #1: Recognize Drug-Induced Thrombocytopenia as a cause from common medications

CASE: 41-year-old male with no medical history but with recent left ACL injury and left meniscal repair taking Naproxen for pain was seen in the orthopedic clinic earlier in the week and had an arthrocentesis performed which identified a large amount of blood revealing hemarthrosis but no infection. He was scheduled to follow-up again, however, went to the emergency department after having worse left extremity pain, hematuria, frequent bloody gums when brushing, and periods of epistaxis when blowing his nose. He was noted to be afebrile with normal vital signs. On exam, he was in no distress, no splenomegaly, no active bleeding was identified, but had multiple areas of petechiae across his body most notable in the lower extremities. On labs, he had a platelet count of 0 K/uL, with 2K/uL on confirmation without any other cell line abnormalities. He was noted to have baseline platelets of 209K/uL in 2017 and denied any blood thinner use. He was given multiple platelets with no change. DVT exam, HIT Antibody, HIV, HCV, TSH, B12, and Folate were all negative. His immature platelet fraction (IPF) was 11.6%. Naproxen was discontinued on admission and Hematology was consulted with recommendations to start dexamethasone for 4 days due to the possibility for an immune-mediated etiology. After 48 hours, the patient's platelets subsequently went to 9K/uL, 25KUL, and discharged with 111 k/ul.

IMPACT/DISCUSSION: Thrombocytopenia have many etiologies and rapid diagnosis is warranted as complications include life-threatening bleeding or thrombosis. Drug-induced thrombocytopenia is caused by drug-induced antibodies but often difficult to prove causing it to be easily overlooked, except for heparin antibodies. Testing for other medications are not widely available and can still be negative. As such, certain criteria were developed to help in diagnosis: 1. Use of the drug preceded development of thrombocytopenia and platelet recovery was sustained following drug discontinuation; 2. No other drugs were used prior to development 3. Other etiologies were eliminated 4. Re-exposure to the candidate

drug caused recurrent thrombocytopenia or drug-dependent antiplatelet antibodies. The presence of severe thrombocytopenia (<20K/uL) increases the likelihood for drug-induced thrombocytopenia as seen in our patient. Most common medications include Abciximab, Acetaminophen, Beta-lactams, Carbamazepine, Gold compounds, Heparin, Ibuprofen, Linezolid, Naproxen, Phenytoin, Piperacillin, Rantidine, Quinidine, Quinine, Rifampin, Sulfonamides, Trimethoprim-sulfamethoxazole, Valproic acid, and vancomycin. Treatment is generally discontinuing the drug. In severe thrombocytopenia, corticosteroids are often given but no evidence that they are helpful.

CONCLUSION: Clinicians should hold a high suspicion for drug-induced thrombocytopenia when there is an acute drop in the level after exposure for commonly implicated drugs.

THE IDENTITY OF THE MYSTERIOUS SIADH IN A PATIENT WITHOUT HEADACHE

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LEARNING OBJECTIVE #1: Tuberculous meningitis may occur without headache.

LEARNING OBJECTIVE #2: Lumber puncture should be conducted against unknown SIADH.

CASE: The patient was a 70-year-old man with hypertension. He presented to our clinic with a chief complaint of fever with trunk pain for three days. His blood pressure was 122/58 mmHg, the pulse rate was 85 beats/min and the body temperature was 38.3 degrees. He had mild tenderness of the bilateral chest wall without any neurologic abnormality. Blood laboratory tests revealed decreased levels of sodium (127 mEq/L) and chloride (92 mEq/L). Levels of WBC and CRP were normal. Levels of urine sodium and potassium were also normal. There were no clinical findings of hypovolemia such as postural hypotension, tachycardia or dry mucous membranes. These results suspected SIADH. We followed him at clinic but fever and hyponatremia sustained for 14 days. Then he admitted for further examinations. Both plane trunk CT and head MRI were normal. We suspected SIADH was caused by malignant disorders, drugs and collagen diseases including SLE but could not find out any remarkable results. Then we conducted lumber puncture because CNS disorders are one of the frequent causes of SIADH. Cerebrospinal fluid (CSF) analysis revealed the elevated levels of WBC(189 cells/mm^3;mono cyte 97%), protein(155 mg/dL) and adenosine deaminase(ADA) (10.2 U/L) and decreased levels of glucose(45 mg/dl). Ziehl-Neelsen stain, culture and PCR for tuberculosis of the CSF were all negative. We immediately started anti-tuberculosis agents including isoniazid, rifampicin, pyrazinamide, and ethambutol. After the initiation of Tuberculous meningitis(TBM) treatment, his body temperature became normal within a week and levels of serum sodium recovered in two months. Then we diagnosed TBM clinically.

IMPACT/DISCUSSION: SIADH is caused by malignant disorders, pulmonary disorders, disorders of CNS, drugs and so on. About 10% of SIADH is caused by disorders of CNS. In this case, the patient didn't have headache, nausea, abnormal neurological findings and mental agitation that are commonly seen in TBM patients, and there were no specific imaging findings. But the patient had unknown SIADH, we can suspect disorders of CNS and eventually diagnose TBM by CNF examination. Actually, one study reported 44.7% of TBM patients had hyponatremia. And some TBM patients didn't have a headache, which leads to be difficult to diagnose it.

To diagnose TBM, CSF examination is important. One study (the study defined an elevated ADA as 9 U/L) estimated the sensitivity and specificity of ADA for diagnosis of TBM to be 79 and 91%, respectively. We should detect TBM as soon as possible because it is a fatal disease with a fatality rate of 14-28% even in developed countries.

If we meet unknown SIADH, we should conduct lumber puncture to detect TBM even though the patient has no any clinical symptoms of meningitis.

CONCLUSION: If we meet an unknouwn cause of SIADH, we should conduct lumber puncture to detect meningitise even in a patient lacking headache.

THE IMPACT OF PROVIDER BIAS IN TREATING PATIENTS WITH SICKLE CELL DISEASE

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LEARNING OBJECTIVE #1: Diagnose and treat vaso-occlusive crisis (VOC) in Sickle Cell Disease (SCD)

LEARNING OBJECTIVE #2: Reduce bias in opiate prescribing in SCD

CASE: A 21-year-old woman with SCD (Hgb S/A$\gamma\delta\beta^0$-thalassemia) was admitted for pain in her right arm. She had a history of avascular necrosis of the right shoulder, pulmonary necrosis of the right lung, and repeated VOC of the right humerus. Pain had progressed over two days despite use of naproxen and oxycodone. Admission labs showed hemoglobin of 12.5 mg/dl and evidence of hemolysis. Her baseline hemoglobin was 12 and hemoglobin F was 20-25%, not on hydroxyurea. She was treated with IV fluids and fentanyl with improvement in pain prior to conversion to oxycodone. At discharge, the attending physician documented his reluctance to prescribe outpatient opiates, saying: "The question is, how much pain should a patient like this [Hgb S heterozygote] have?...I do know we have a national epidemic with opiates and we should be cautious in giving opiates at discharge." He documents speaking to a pathologist, however, did not contact the patient's hematologist or primary care doctor. He did not provide opiates at discharge.

IMPACT/DISCUSSION: SCD affects approximately 100,000 people in the United States (US), and one in twelve people of African descent are carriers. It leads to significant morbidity and early mortality. It is characterized by frequent episodes of severe pain, often requiring high dose intravenous opiates. The NHLBI guidelines recommend diagnosing VOC by the patient's report of pain severity, as no laboratory or imaging tests are reliable in diagnosis. Pain should be controlled using escalating doses of opiates. Many patients have significant opiate tolerance and require higher than typical doses of opiates to control pain. Once pain is controlled opiates should be converted to an oral equivalent with a slow taper to avoid withdrawal.

Patients with SCD face bias within the medical system. Many states lack comprehensive SCD programs for adults. Further, patients with SCD are often labeled as opiate dependent or "drug seeking" because of opiate use. This bias has been amplified in the setting of the opiate crisis in the US. However, patients with SCD have been shown to have low rates of addiction compared to other patients with chronic disease.

Various genotypes can lead to SCD, most commonly, Hgb S/S and Hgb S/β^0. Hgb S/ A$\gamma\delta\beta^0$ is a rare genotype that is associated with higher than average hemoglobin F and baseline hemoglobin, however reports in the literature show that patients with Hgb S/ A$\gamma\delta\beta^0$ have a particularly severe disease course.

This case highlights the difficulty that patients with SCD have in obtaining evidence-based care because of bias from their providers. It provides insight into the negative impact of the opioid crisis on patients with SCD.

CONCLUSION: Treatment of VOC should be guided by patient's report of pain

Patients with SCD have significant barriers to care because of provider bias and lack of knowledge.

THE MANY FACES OF VITAMIN B12 DEFICIENCY: AN INTRIGUING CASE HIGHLIGHTING BROAD SYMPTOMATOLOGY AND TREATMENT COURSE EXPECTATIONS

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LEARNING OBJECTIVE #1: Recognize the diverse presentations of vitamin B12 deficiency, including the rarer neurologic and hematologic manifestations

LEARNING OBJECTIVE #2: Promptly diagnose and treat vitamin B12 deficiency in order to relieve reversible symptoms in the expected timeline and avoid irreversible outcomes

CASE: A 65 year-old female with a history of Grave's disease presented for "failure to thrive," accompanied by symptoms of poor oral intake, intermittent diarrhea, bleeding gums, altered sense of taste, and a 30-pound weight loss. Neurologically, she had experienced increasing falls, urinary and bowel incontinence, altered sleep pattern, and abnormal behavior. Physical exam demonstrated poor memory, impaired concentration, disorientation, akathisia. A complete blood count showed pancytopenia with WBC of 0.8x10^9 cells/L, hemoglobin of 5.4 g/dL, MCV of 121 fL, and platelets of 59 x10^9 cells/L. She was neutropenic with an ANC of 196 cells/uL. The reticulocyte index was hypoproliferative. A peripheral blood smear showed segmented neutrophils, macrocytic anemia, and schistocytes. Hemolysis labs revealed LDH 682 U/L (high), haptoglobin <10 mg/dL, fibrinogen 92 mg/dL (low), d-dimer 2890 FEU (high), total bilirubin 3.9 mg/dL consistent with active hemolysis. Her vitamin B12 was 150 pg/mL (ref range 211-946 pg/mL), homocysteine was >50 umol/L, and MMA was high at 37.68 umol/L. She was treated with Vitamin B12 1000 mcg intramuscularly daily for nine days. On discharge, her CBC was much improved. Reticulocyte index was adequate. Neurologically, her abnormal movements were only rarely noted. She demonstrated orientation to person, place, time, and condition.

IMPACT/DISCUSSION: Given vitamin B12's role in a wide array of reactions, clinical manifestations of deficiency affect many organ systems and are highly variable. The most common manifestations of B12 deficiency are macrocytic anemia, hypersegmented neutrophils, polyneuritis, and ataxia. Rarer manifestations include pancytopenia, optic neuritis, bowel and bladder incontinence, hemolytic anemia, and thrombotic microangiopathy. Neuropsychiatric symptoms are highly variable. Abnormal movements are a rare manifestation and are seen more often in pediatric presentations. Early recognition of B12 deficiency is crucial for reversal of symptoms, especially the life threatening hematologic manifestations which always resolve with repletion. Neurologic manifestations are less likely to reverse and residual neurological abnormalities persist in most cases. Prompt treatment yields better results as irreversible changes in the brain may occur if left untreated. Hematologic improvements are rapid and occur within days to weeks. The timeline for neurologic improvement is more variable with maximum response at 6 months.

CONCLUSION: Given the importance and efficacy of early treatment in securing the best possible outcomes, it is imperative that internists consider a diagnosis of vitamin B12 deficiency in patients with hematologic and neurologic manifestations.

THE MEDICAL COMPLICATIONS OF EATING DISORDERS: WHAT INTERNISTS SHOULD KNOW

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LEARNING OBJECTIVE #1: Recognize the prevalance of eating disorders in the United States and review diagnostic criteria

LEARNING OBJECTIVE #2: Identify and manage the medical complications of starvation and refeeding based on evidence and best practice

CASE: HPI: 24 yr female with history of irritable bowel syndrome presents with fatigue, near syncope, and constipation. She endorses early satiety, nausea, and abdominal bloating which has been worsening over the past two weeks. She reports last bowel movement about 1 week ago; stool was hard to pass but normal. Reports no fevers, chills, emesis, or shortness of breath. Increasing fatigue is affecting her job performance and two days ago, she had a near syncopal event when she stood up. No loss of consciousness, palpitations, or other warning signs. She has had several similar episodes in the past few months. Over the past 6 months she has lost 20 lbs.

Past Medical Hx: irritable bowel syndrome, amenorrhea

Family Hx: mother with anxiety, history of binge eating disorder, and hypothyroidism. Father with depression and OCD.

Social Hx: she does not smoke tobacco, drink alcohol, or use illicit drugs (does not use THC).

Medications: multivitamin, bisacodyl prn

Physical Exam: Wt: 86lbs Ht: 5'3" Temp 35.9 Heart rate: 48 BP: 97/60 (no orthostatic changes) RR 12 Pulse ox: 100% RA. Bitemporal wasting, cool extremities with acrocyanosis, scaphoid abdomen with normal bowel sounds, no edema.

Labs: CBC with pancytopenia; normal chemistry; AST/ALT: 400/405; nl TSH; glucose 48

Patient sent to the emergency room. Admitted to gen med floor on telemetry. Started D5 and dietitian placed her on 2000 daily calories; patient not compliant. HOD # 3 persistently hypoglycemic with a phosphorus of 1.8. Treatment for refeeding syndrome started.

IMPACT/DISCUSSION: It is crucial to understand the pathophysiology of starvation and refeeding in order to correctly diagnose and treat starved patients. In addition, it's important to recognize the psycholigical milieu of patients with eating disorders in order to properly differentiate between organic, psychological, and somatic manifestations of medical complications. Nourishing a starved patient is associated with physical discomfort and a host of medical complications including the potentially deadly refeeding syndrome which is preventable when recognized. In addition to medical care, these patients require psychological care to reduce anxiety and fear that contribute to somatization and exacerbation of physical symptoms. In this clinical vignette we will identify pathophysiologic changes that occur with starvation as well as refeeding and address the management of such complications.

CONCLUSION: Eating disorders have the second highest mortality of any psychiatric illness, affect 30 million Americans, and are associated with a plethora of complications-from cardiac anomalies and functional gastrointestinal issues to severe psychiatric distress. It's critical for physicians to recognize eating disorders and aggressively treat their medical and psychiatric complications.

THE MONSTER INSIDE ME: THE CASE OF A DISSEMINATED PARASITIC INFECTION

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LEARNING OBJECTIVE #1: Recognize the need to keep a wide differential in immunocompromised patients.

LEARNING OBJECTIVE #2: Exclude potential invasive infections before ordering immunosuppressive therapy in patients from endemic areas.

CASE: A 45-year old male, originally from Ethiopia, presented to the hospital after 10 days of polyuria, anorexia, abdominal pain, fatigue, and shortness of breath. His medical history was significant for idiopathic membranous nephropathy on six weeks of oral prednisone with secondary hyperglycemia. Physical exam was significant for distended abdomen with diffuse tenderness. CT revealed obstruction at the level of the mid-ileum but no obvious obstructing mass. He had marked eosinophilia, E. coli and Klebsiella bacteremia, and was started on Unasyn. Gastrointestinal TB was high on the differential diagnosis, and IGRA was sent. HIV was negative. During intubation for progressing tachypnea and tachycardia, copious bloody secretions were seen, consistent with pulmonary hemorrhage, and he was placed on IV steroids. Endoscopy was performed. Stomach and jejunal biopsies were consistent with nematode infestation. Strongyloides stercoralis treatment was initiated with albendazole and ivermectin; ivermectin was continued for the duration of his hospitalization. His IGRA returned positive for latent TB, however GI pathology did not reveal tuberculous granulomas. He was eventually extubated, his abdominal pain resolved, and he was weaned off of steroids.

He was discharged and completed his course of ivermectin, as well as isoniazid and pyridoxine outpatient. A three month follow-up colonoscopy showed small bowel normal architecture and no histopathological changes. Follow-up nephrology visit confirmed resolution of his nephrotic syndrome with proteinuria less than 2 grams per day, correction of hypoalbuminemia, and resolution of his symptoms.

IMPACT/DISCUSSION: Strongyloidiasis is a parasitic infection secondary to Strongyloides stercoralis that affects 30-100 million people worldwide. Presentation ranges from asymptomatic to a disseminated fatal hyperinfection in mostly immunocompromised hosts. In this case, the patient's country of origin was a risk factor for this infection, which was worsened by his exposure to high-dose steroids. Additionally, this patient had idiopathic nephrotic syndrome. Strongyloides has been reported to cause nephrotic syndrome in a rare manifestation of unknown pathophysiology. Since disseminated disease is fatal in up to 80% of cases, it is important to exclude asymptomatic strongyloidiasis before prescribing steroids or immunosuppressive therapy in patients from endemic areas.

CONCLUSION: Strongyloidiasis is a disseminated parasitic infection occurring in immunocompromised hosts worldwide and can be a rare and overlooked cause of nephrotic syndrome. Early recognition of Strongyloidiasis and initiation of appropriate treatment is essential to prevent early mortality.

THE MONSTERS INSIDE US: PARASITES AS A CAUSE OF SYSTEMIC SYMPTOMS

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LEARNING OBJECTIVE #1: Diagnose parasitic infection in a patient from an endemic region with systemic symptoms and peripheral eosinophilia.

LEARNING OBJECTIVE #2: Recognize Löffler syndrome.

CASE: 51 year-old Ethiopian woman reporting new dyspnea on exertion, productive cough, chest and abdominal pain of one-month duration. Past medical history of hypertension and chronic low back pain. Cough productive of yellow sputum and shortness of breath worse with stair climb. Exertional, substernal chest pain was relieved by rest. Abdominal pain associated with nausea and bloating, worse with eating. Most recent travel to Ethiopia 1 year ago, no sick contacts. Physical exam of lungs and abdomen was unremarkable. Cardiac exam significant for a grade II/VI systolic murmur best heard at the RUSB and trace lower extremity edema. Lab studies showed a WBC 10.9, eosinophils 13% (absolute eosinophils 1.4), ALP 141 (previously normal), ESR 46, and CRP 5.6. ECG and chest x-ray were normal. Given that the patient was from Ethiopia, a parasite screen was sent, the results of which were notable for *Schistosoma mansoni* ELISA 42 (<10) and *Strongyloides stercoralis* antibody EIA 42.55 (<1.7). Treatment with Ivermectin and Praziquantel therapy completely resolved her symptoms.

IMPACT/DISCUSSION: This patient presented with cardiopulmonary and gastrointestinal symptoms, leading to a broad differential. However, given her history of living in Ethiopia, along with peripheral eosinophilia on initial testing, a parasite screen was an appropriate next step for evaluation. Of note, one study from Boulware, et al (2007) showed that only 9% of US resident physicians recognized the need for parasite screen in a patient presentation similar to that of ours, which highlights the importance of maintaining suspicion for parasitic infection in these patients, in order to reduce morbidity and mortality related to misdiagnosis. Most concerning is the potential for lethal hyperinfection syndrome seen in immunocompromised patients with *Strongyloides* (up to an 87% mortality rate).

While the rate of co-infection of *Strongyloides spp.* and *Schistosoma spp.* is unknown, between 30-80% of all parasitic infections are co-infections. Of note, Sub-Saharan Africa experiences a relatively high seroprevalence of *Strongyloides* and *Schistosoma.*

Furthermore, the patient's cardiopulmonary and gastrointestinal symptoms over a one-month period, along with the peripheral eosinophilia, are consistent with Löffler syndrome. Löffler syndrome refers to the rare and transient constellation of systemic symptoms, peripheral eosinophilia, and possible radiographic evidence of pulmonary eosinophilia, which are representative of the lifecycle of parasitic larvae. While this patient's chest x-ray was unremarkable, she exhibited the commonly-observed systemic symptoms and peripheral eosinophilia.

CONCLUSION: Suspect parasitic infection in a patient from an endemic region with cardiopulmonary and gastrointestinal symptoms with peripheral eosinophilia and appreciate the high prevalence of parasitic co-infection.

THE NEW STI ON THE BLOCK

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LEARNING OBJECTIVE #1: Recognize the transmission of Shigella in high risk populations

LEARNING OBJECTIVE #2: Demonstrate the impact of a through history on the differential diagnosis

CASE: A 33-year-old man with past medical history of HIV/AIDs (CD4 count 33) presented with diarrhea and fever for 14 days. Over the preceding 48 hours he began to have "watery gel" bloody bowel movements up

to 5 times a day. There was associated nausea, vomiting, and left lower quadrant abdominal pain. He denied sick contacts, recent antibiotic use, or recent travel. He was recently diagnosed with acute hepatitis A as an outpatient. Exam demonstrated a distended abdomen with no rebound tenderness or guarding.

Intravenous fluids and antibiotics were initiated due to prolonged history of diarrhea. Clostridium difficile testing and blood cultures were negative. GI PCR positive for Shigella. Diarrhea began to resolve after 48 hours and was subsequently discharged home.

After being discharged his stool culture grew shigella species. His primary care provider communicated further information about the patient's occupational history; the patient was a sex worker and engaged in sexual encounters with male clients.

IMPACT/DISCUSSION: Shigella is a well-known cause of bacterial dysentery; however, its infectious spread has more to show. Research was conducted in the mid-1970's studying shigella outbreaks among men who have sex with men (MSM). These outbreaks raised the concern of shigella being sexually transmitted. In developing countries, Shigella is transmitted via contaminated food or water(Goldberg, 2018); however, in developed countries it is more common to see transmission through direct person-to-person spread by fecal oral route (Goldberg, 2018). A very small inoculum of Shigella is able to cause disease; therefore, contact with even a miniscule amount of fecal matter during sexual activity could lead to an infection.

Another major factor of infection is immune status, particularly those who are HIV positive. These individuals can have prolonged symptomatic infection or even be asymptomatic carriers. Outbreaks may be accredited to reduced sex hygiene in the form of high-risk behavior, such as multiple partners, creating endemicity for shigellosis among some groups of MSM (Daskalakis & Blaser, 2007).

HIV negative men are also not safe. Contributing factors for the spread of Shigella among people who are HIV negative is the concept of strategic positioning. Where HIV negative men avoid open sex with men who are HIV positive, they may partake in sexual activities that are thought to be low risk (Daskalakis & Blaser, 2007). Though immunocompetent individuals are at lower risk of infection, the spread of shigella still occurs because of the low inoculum needed to infect.

CONCLUSION: High-risk individuals may contract Shigella through sexual transmission. Thorough acquisiton of social history may assist in understanding the risk factors for disease and guide patient education on the transmission and prevention of disease.

THE NOTORIOUS BCG: DISSEMINATED MYCOBACTERIUM BOVIS CAUSING MYCOTIC ABDOMINAL AORTIC ANEURYSM, EPIDURAL ABSCESS AND DISCITIS

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LEARNING OBJECTIVE #1: Identify disseminated mycobacterial infection as a rare complication of intravesical BCG treatment

LEARNING OBJECTIVE #2: Recognize mycotic aneurysm and spinal abscess as a manifestation of disseminated mycobacterial infection

CASE: A 77-year-old male presented with left leg numbness and weakness. Prior medical history included abdominal aortic aneurysm (AAA), L4 discectomy one year prior, and non-muscle invasive bladder cancer (NMIBC) treated with transurethral resection (TURBT) and intravesical Bacillus Calmette-Guérin (BCG) 7 months prior. The patient was afebrile with 4/5 strength in the left leg, hypoesthesia and 1+ patellar reflex. Lab studies were notable for WBC $6.7x10^9$cells/L, Hgb 7.5g/dL and CRP 1.7mg/dL. CT and MRI revealed L3-L4 osteomyelitis with concurrent epidural abscess and a paravertebral abscess with adjacent 6cm saccular aortic aneurysm. The paravertebral abscess was drained and AFB cultures of this fluid grew Mycobacterium bovis. The patient underwent endovascular repair of the AAA with a rifampin-soaked graft without complication. Recovery was uneventful, and the patient was discharged to complete 6 months of anti- mycobacterial treatment with isoniazid, rifampin, ethambutol, and pyridoxine.

IMPACT/DISCUSSION: Intravesical BCG therapy after TURBT is the gold standard for patients with intermediate to high risk NMIBC. Used for four decades, it is the only agent shown to reduce progression to muscle-invasive disease. BCG is a live attenuated M bovis, thought to infect malignant urothelial cells and initiate a complex immune cascade of antitumor activity via $CD4^+$, $CD8^+$, natural killer cells, neutrophils, and macrophages.

Side effects of BCG are usually local (cystitis, hematuria, and dysuria) while disseminated disease occurs in <5% of patients. Mycotic aortic aneurysm (MAA) is an exceedingly rare complication with only 30 or so case reports of M bovis-associated MAA. It often goes unrecognized as most develop months to years after BCG therapy. The most common symptoms are abdominal pain, lower back pain, and low-grade fever, but more than half present with MAA rupture. While MAA due to BCG therapy is rare, BCG discitis with contiguous mycotic aneurysm is even rarer; our search identified only two case reports.

In this patient, the MAA was likely due to disruption of the aortic intima by the pre-existing AAA allowing for bacteremic seeding, although contiguous spread from the paravertebral abscess cannot be ruled out. The discitis was likely due to bacteremic seeding of the prior surgical site.

CONCLUSION: Here, we present a case of mycotic abdominal aortic aneurysm, epidural abscess, and discitis caused by disseminated M bovis infection. It is important to be aware of these rare complications of intravesical BCG therapy in patients treated for bladder cancer. Management of these patients is challenging and requires prolonged antimicrobial therapy often with surgical intervention.

THE OUTSIDE HOSPITAL TRANSFER AND ANCHORING: A CASE OF UNDIAGNOSED CHOLANGIOCARCINOMA

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LEARNING OBJECTIVE #1: Recognize anchoring bias especially when working up a patient who already carries a preliminary diagnosis.

LEARNING OBJECTIVE #2: Recognize similarities in clinical presentation between cholangiocarcinoma and drug-induced liver injury secondary to Augmentin.

CASE: The patient is a 62 year old Caucasian male with a history of NASH cirrhosis, CAD, and right lower lobe lung nodule who was admitted to an outside hospital with dark urine output, abdominal pain and fullness, worsening pruritus and jaundice after starting Augmentin for a sinus infection. A diagnosis of drug- induced liver injury secondary to Augmentin was made and he was transferred for expedited liver transplant work-up given acute on chronic liver disease.

On admission, the patient's physical exam was notable for generalized jaundice, icteric sclera and distended abdomen. Laboratory work up was notable for total bilirubin and direct bilirubin elevated to 23.4 and 18.5 mg/dL respectively (normal values 0.3-1.4 mg/dL and 0.0-0.3 mg/dL). Liver enzymes were elevated from baseline. Alkaline phosphatase was 225 (normal: 37-117 Units/L), AST was 172 (normal: 12-39 Units/L), ALT was 135 (normal: 7-52 Units/L). Ultrasound of the abdomen showed hepatic cirrhosis without focal lesion, splenomegaly, small ascites and

cholelithiasis without evidence of cholecystitis, no intrahepatic biliary ductal dilatation and common bile duct measuring 3 mm.

A CT of the chest was obtained to further evaluate the lung nodule seen on previous imaging as part of transplant work-up and was concerning for malignancy or metasteses. The CT also noted marked worsening of intrahepatic biliary ductal dilatation. An ERCP showed a malignant appearing stricture in the common hepatic duct and pathology showed adenocarcinoma, possibly cholangiocarcinoma. Because of his diagnosis of cholangioarcinoma, he was not eligible for liver transplant. Palliative medicine was consulted and the patient and his family decided to pursue comfort care.

IMPACT/DISCUSSION: Anchoring bias refers to the cognitive behavior in which physicians tend to rely on the first impression. Starting fresh from a diagnostic standpoint is essential to ensure that an alternative diagnosis is not missed. While this patient's clinical picture was consistent with liver injury secondary to Augmentin as diagnosed by the outside hospital, his underlying undiagnosed cholangiocarcinoma also presented with similar symptoms and biochemical markers. Developing a broad differential for mixed cholestatic and hepatocellular liver injury would have allowed earlier diagnosis of cholangiocarcionma.

CONCLUSION: Always start from scratch when admitting a patient in order to avoid ancoring bias, especially when they may already carry a diagnosis.

Cholangiocarcinoma and Augmentin related liver injury can present with a similar clinical picture.

THE PERFECT STORM: A CASE OF INFECTED CALCIPHYLAXIS IN RENAL FAILURE

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LEARNING OBJECTIVE #1: Identify risk factors for calciphylaxis.

LEARNING OBJECTIVE #2: Recognize superimposed infection as a common complication of calciphylaxis.

CASE: A 45 year-old obese woman with lupus nephritis on peritoneal dialysis and antiphospholipid syndrome presented with two weeks of drainage from a right breast wound. Four months ago she had a painful, stellate ulcer over the lateral side of the breast with eschar formation concerning for calciphylaxis. Mammogram displayed microvascular calcifications, and core biopsy revealed subcutaneous vascular thrombi and calcification. Her medications included Warfarin, which was switched to Apixaban two months ago. White blood cell count was 15.3 k/uL, serum calcium was 9.3 mg/dL, and serum phosphorus was 6.2 mg/dL. Empiric intravenous Vancomycin was started and transitioned to Linezolid and Cefepime after wound cultures grew Enterococcus faecalis and Serratia. She was transitioned to hemodialysis and started sodium thiosulfate and Cinacalcet.

IMPACT/DISCUSSION: Calciphylaxis is a rare and under-recognized condition characterized by microvascular calcification in the subcutaneous adipose tissue and dermis that results in ischemic skin lesions. The disorder typically affects patients with end-stage renal disease, and prognosis is poor, with a 1-year mortality of 45 to 80%. While biopsy is the standard confirmatory test, there is risk of provoking new, non-healing ulcers. Therefore, biopsy is not necessary in patients with renal insufficiency that present with classic necrotic ulcers. Known risk factors for calciphylaxis include obesity, diabetes mellitus, female sex, and dialysis dependence. Elevated phosphate and calcium levels increase the risk of subsequent calciphylaxis in patients undergoing dialysis. Vitamin K antagonists like Warfarin increase the risk of calciphylaxis by a factor of 3 to 13. There is no approved therapy for calciphylaxis, however an interdisciplinary approach with local wound care, elimination of risk factors such as hypercalcemia and hyperphosphatemia through calcimimetic agents or parathyroidectomy, intensified hemodialysis, and the addition of sodium thiosulfate is recommended. The most common cause of mortality in patients with calciphylaxis is sepsis, therefore clinicians should maintain a high index of clinical suspicion for superimposed infection. Treatment of suspected wound infection includes surgical debridement and antibiotics with empiric coverage against streptococci, Methicillin-resistant Staphylococcus aureus, aerobic Gram-negative bacilli, and anaerobes. In most patients, a specific organism is not identified, and superficial swabs of the wound are not reliable for diagnosing an infection.

CONCLUSION: Calciphylaxis is a fatal, under-recognized condition in end-stage renal disease.

Vitamin K antagonists significantly increase risk of calciphylaxis and should be avoided in chronic kidney disease. The most common cause of death in patients with calciphylaxis is sepsis from superimposed infection.

THERE'S NO SUCH THING AS A FREE LUNCH: COMPLICATIONS AFTER SUCCESSFUL EMBOLIZATION OF LOWER GI BLEED

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LEARNING OBJECTIVE #1: Identify patients who warrant angiographic embolization to control gastrointestinal bleeding (GIB).

LEARNING OBJECTIVE #2: Recognize clinical features concerning for clinical complications post intervention for GIB.

CASE: An 89-year-old woman with a history of diverticular disease, hemorrhoids, paroxysmal atrial fibrillation, patent foramen ovale and TIA on rivaroxaban, presented to the emergency room with presyncope and one episode of bright red blood per rectum. Her last screening colonoscopy, 15 years ago, was free of polyps. On arrival, her blood pressure was 105/56 and her heart rate 85. She appeared well, had mild left lower quadrant tenderness, no rebound or guarding. Hemoglobin was 12.6 mg/dL, platelets 224K, PT 16.7, INR 1.9, PTT 34.2. She continued to have episodes of hematochezia. Hemoglobin levels dropped below 7 mg/dL. She required blood transfusions to maintain hemodynamic stability. CT Angiogram (CTA) of the abdomen revealed acute arterial hemorrhage of the small bowel. Angiography of the superior mesenteric artery demonstrated extravasation of a jejunal artery branch. Glue embolization effectively stopped the bleeding. However, day 2 post-procedure she continued to have mild upper abdominal pain and became febrile. Leucocyte count rose to 20K. CT scan obtained with suspicion for mesenteric ischemia instead showed 7.4 cm of gas adjacent to the embolized arteries in the left upper quadrant suggestive of perforation. She underwent emergent laparoscopic bowel resection for a full-thickness perforation with intra-abdominal abscess and recovered completely.

IMPACT/DISCUSSION: Lower gastrointestinal bleeding occurs frequently. Most patients will stop bleeding spontaneously. However, a subset of patients with persistent bleeding requires transcatheter angiographic embolization with coils, liquid agents or polymer beads. Our patient met the criteria for embolization given active bleeding identified by CTA and hemodynamic instability on a direct oral anticoagulant. While these interventions are effective in controlling bleeding, there remains the risk for post- procedure rebleeding, bowel infarction and less commonly perforation.

CONCLUSION: Transcatheter embolization is an effective way to control severe lower GI bleeding but carries risks of re-bleeding, bowel ischemia, and perforation.

Though rare, perforation is associated with high morbidity and mortality.

Clinicians should have a low threshold to reimage patients with persistent abdominal pain post-procedure, even in the setting of stable hemoglobin and down-trending lactate.

THE RELATIONSHIP IS THE MEDICINE: BEING TRAUMA INFORMED WHEN CARING FOR UNDERSERVED POPULATIONS

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LEARNING OBJECTIVE #1: Recognize trauma as a barrier to medical care

LEARNING OBJECTIVE #2: Illustrate provider behaviors to gain patient's trust in the medical system

CASE: A 63-year-old female with hypertension, treated hepatitis C virus, left knee osteoarthritis, obesity presented to the outpatient clinic complaining of generalized fatigue. Physical exam revealed elevated blood pressure of 159/95, BMI 38.23, apprehensive and tense affect. Labs were significant for elevated cholesterol 278, hemoglobin A1c 5.8 and normal basic metabolic panel.

Although she was prescribed anti-hypertensive medications for over 5 years by her previous primary care physician, she stated she was able to treat her elevated blood pressure with homeopathic remedies. She repeatedly refused to take medications for both hypertension and depression, citing she experienced side effects which were intolerable. Despite her lack of medication compliance, she did follow up closely in clinic. After months of establishing a relationship and building rapport, she suddenly utilized a visit to reveal her long history of repeated trauma. She disclosed a childhood rape, a relationship with severe domestic violence and multiple losses of close family and friends to gun violence. She cited her trauma as her barrier to medication compliance and distrust in the medical system. She was offered resources for therapy and counseling along with medications, however she refused noting treatment for her trauma would feel like failure of character.

Over the next few months, she was scheduled for frequent visits to continue to monitor her health and assess her trauma. Even in short, 15-20-minute visits, she continually opened up and shared her fears. She started responding positively to the human touch, and even got in habit of hugging at the end of her visits. Finally, she felt she could trust the health care system again, and started to take her blood pressure medications.

IMPACT/DISCUSSION: Many patients have been affected by trauma; with the population we serve having an adverse childhood event rate of 70%. These are often not disclosed, and clinic time pressures are a common hurdle to exploring barriers to appropriate medical care. Instead, patients are labeled as noncompliant, and passed over. However, true trauma informed care, recognizes these barriers, and with compassion destroys the walls of fear and uncertainty that separates patients and physicians. In this case, recognizing her aversion to medication as a trust issue, rather than a compliance issues, allowed for a feeling of security by the patient, and a better medical outcome.

CONCLUSION: Trauma informed care, when successfully implemented, improves the patient-physician relationship and outcomes. This is particularly important in general medicine, where patients often first disclose and may not want to repeat their traumatic past experiences with others in the health profession, generalists are often those who care for both medical needs as well as trauma and subsequent mental health issues.

THE RETURN OF THE GREAT MIMICKER

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LEARNING OBJECTIVE #1: Provide a diagnostic approach for vision changes in HIV patients

LEARNING OBJECTIVE #2: Recognize the risk factors and clinical features of ocular syphilis

CASE: 54-year-old man with untreated HIV and previously treated syphilis admitted for bilateral vision loss.

6 months prior, patient had developed complete loss of vision in his right eye, diagnosed as retinal detachment. Due to insurance issues, patient did not seek further care. Ten days before admission, patient developed blurry vision in his left eye, which progressed until he could only delineate light from dark. At an outside hospital, CT orbits showed bi-ocular inflammatory changes; patient was transferred to our hospital for specialty care.

Admission exam notable for: complete blindness in right eye, and only the ability to detect light in left eye. Ocular exam in operating room revealed bilateral pan-uveitis with right retinal detachment. Labs revealed leukopenia (3.4×10^9/L), thrombocytopenia (124×10^9/L), CD4 count of 234, HIV viral load of 30,600, serum RPR 1:16 and CSF VDRL 1:4.

A diagnosis of ocular neurosyphilis was made and patient was treated with IV Penicillin, intraocular steroids, and left eye pars plana vitrectomy, lensectomy, and cryotherapy with significant improvement in vision. Follow up showed left eye acuity had improved to 20/100.

IMPACT/DISCUSSION: Ocular disease affects up to 75% of patients infected with HIV, and is classified into: HIV-induced vascular disease, opportunistic infections, neoplasms, and drug toxicities. The most common cause of HIV ocular disease is microvascular retinopathy. Common ocular infections include CMV retinitis, Toxoplasmosis, TB, HSV/VZV, Syphilis, Pneumocystis and Cryptococcus. HIV-associated ocular neoplasms include CNS lymphoma, Kaposi Sarcoma, and HPV induced SCC. Finally, some drugs used to treat HIV are associated with ocular toxicities.

Syphilis, the great mimicker, is a commonly overlooked cause of ocular disease. High-risk patients include those with HIV, men who have sex with men, and blacks. Ocular syphilis affects one or both eyes and can involve nearly every structure in the eye. The most common manifestation is uveitis. Other manifestations include keratitis, iridocyclitis, retinal vasculitis, optic neuritis, and exudative retinal detachment. Exam findings depend upon which structures are affected. Serological testing should include a treponemal and non- treponemal test. CSF studies with elevated protein, over 5 white blood cells, and a positive VDRL support a diagnosis of neurosyphilis, although a negative test does not rule out disease.

Treatment is with Penicillin G for 10-14 days with some data on the use of concurrent steroids.

CONCLUSION: HIV can cause ocular disease due to vascular changes, infections, neoplasms, or drug toxicities.

Ocular syphilis causes inflammation to many ocular structures and can present in many ways, including with uveitis and retinal detachment. High risk patients include blacks, patients with HIV, and men who have sex with men.

THE REVENGE OF RAW OYSTERS

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LEARNING OBJECTIVE #1: Describe severe infectious diarrhea and sepsis caused by *Plesiomonas shigelloides*

CASE: A 52 year old male presented with greater than twenty episodes of pungent, watery diarrhea for four days. He endorsed generalized abdominal pains and light headedness but denied melena, hematochezia, nausea and vomiting. His history was otherwise notable for employment as an oyster shucker and eating raw oysters while at work.

Initially, he was tachycardic to 132, normotensive, and had a temperature of 100.3°F. His exam was notable for pains on palpation of his upper abdomen but it was otherwise unremarkable. He additionally had multiple watery bowel movements in the emergency room. On lab analysis, he had a leukocytosis ($17.3X10^3/\mu L$), an elevated lactic acid (3.2 mmol/L), and an acute kidney injury (creatinine of 1.5 mg/dL from baseline of 1.0 mg/dL). He was empirically started on ciprofloxacin and metronidazole for infectious gastroenteritis. Stool PCR detected *Plesiomonas shigelloides*. His initial blood cultures grew *P. shigelloides*, with subsequent blood cultures negative for growth. Stool culture then began growing *Campylobacter*. Metronidazole was discontinued and azithromycin was begun. His diarrhea began improving, and he was discharged with instruction to complete the 10 day course of ciprofloxacin as an outpatient.

IMPACT/DISCUSSION: *P. shigelloides* is a gram negative bacterium that is primarily found in freshwater and estuarine ecosystems, favorable for oysters. Poor sanitation and sewage contamination are risk factors for growth of *P. shigelloides*. The bacterium commonly colonizes freshwater fishes, crustaceans, and shellfish; as well as other mammals, birds, or amphibians in these ecosystems.

Internationally, it is a known pathogen causing gastroenteritis; however, *P. shigelloides* is thought to cause less than 1% of the bacterial gastroenteritis within the United States. Risk factors for acquiring this infection include consuming raw seafood, travelling to underdeveloped areas, drinking non-treated water, and being immunocompromised. Extent of illness ranges from secretory diarrhea to dysentery; as well as skin and soft tissue infections, bacteremia, or other severe systemic infections. Co-infections with other pathogens may lead to more severe disease. Often, the diarrheal illness is self limiting; however, antibiotics are warranted in more severe cases. *P. shigelloides* is sensitive to many antibiotics but resistant to many penicillins as it expresses a beta-lactamase. For adults, azithromycin or ciprofloxacin are the first line of antibiotics. **CONCLUSION:** *P. shigelloides* is a common cause of gastroenteritis worldwide associated with seafood consumption in United States and contaminated water in underdeveloped areas

P. shigelloides is usually a self limited infection, but for more severe episodes of gastroenteritis or other sources of infection, a wide array of antibiotics are available

THERE'S NO PLACE LIKE HOME, TECHNICALLY

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LEARNING OBJECTIVE #1: Recognize clinical situations where video-to-home visits are appropriate

LEARNING OBJECTIVE #2: Assess the social environment for readiness and support

CASE: Mr. S is a 76-year-old veteran who was diagnosed with stage 2 colon cancer in 2017. He has a prior history of HTN, and a gunshot wound to the spine, which left him with leg weakness and chronic back pain. Mr. S refused surgery and hospice care (patient is DNR). The patient's stated goals are to be at home and to have good pain control. His last in person visit was in November 2018. Due to his underlying conditions the patient became increasingly immobile. He lives in a small home with a second-floor bedroom and transport to the ambulance is very difficult. At the last in person visit a video-to-home option for follow up was offered. His daughter had a video capable phone and was willing to learn the video connect process. The patient's daughter and wife have been present for all video-to-home appointments.

The visits are structured like a face-to-face visit: chief complaint, usually pain control and general well-being, ROS and vital signs (obtained at home) and medications are reviewed. A quasi physical exam is done, e.g. veteran often has difficulties with abdominal distension and alternating diarrhea and constipation. Patient's wife will focus phone's camera on patient's abdomen and palpate it with Mr. S reporting if there is any pain or discomfort. An assessment and plan are formulated and follow up visit planned. The patient and his family express at each visit deep gratitude that he does not have to leave his house for his visits.

IMPACT/DISCUSSION: Care at the end of life should be tailored to the patient's wishes, in this case to be at home and have good pain control. Nevertheless, ongoing evaluation and assessment is necessary. Video-to-home technology allowed patient care to continue without the patient having to leave his home. Mr. S has had no ED visits or admissions to the hospital. For providers in the VA system Video-to-home visit are equal to face-to-face visits (workload and time). There is some literature available on video health services, however one systematic review conducted in 2019 for telehealth services in palliative care stated that there is a lack of evidence and conclusions regarding this application in palliative care cannot be drawn. Despite that, adoption of this technology will likely continue, due to the benefits to patients. Integration into the provider's clinical duties, workload recognition and adequate technological support are essential.

CONCLUSION: Video-to-home enabled our patient to fulfill his wishes to be cared for at home with good pain control. When fully integrated into ambulatory care it is a patient centered technology tool for primary care providers.

THERE'S NO STOPPING IT ONCE IT GETS GOING

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LEARNING OBJECTIVE #1: Recognize that coagulopathy due to cancer in patients can progress rapidly and lead to early death.

LEARNING OBJECTIVE #2: All patients with malignancy should be assessed for the risk of thrombosis and considered for anticoagulant therapy.

CASE: A 55-year-old man with no previous history was referred by his family doctor, because of fever and right homonymous hemianopsia (RHH) that was noted the day before. One day before admission, he noticed he could not see one side. He went to his doctor immediately and was noted to have a fever and RHH. Thus, he was referred to our hospital for further evaluation. On physical examination, he appeared slightly jaundiced. His temperature was 38.0°C. Brain magnetic resonance imaging showed multiple high intensity areas in both cerebral hemispheres and the right occipital lobe, indicating multiple infarctions. Abdominal computed tomography showed multiple low-density areas in the liver, pancreatic tail and spleen. At first, septic emboli were suspected, however, abdominal ultrasound showed an irregular mass in the pancreatic tail, obfuscation of the boundary between the spleen and pancreas, and multiple masses with a halo in the liver, suggestive of multiple metastases of the liver and spleen. Trousseau's syndrome was considered. Intravenous heparin was started on the third day. On day 6, dyspnea and hypoxia developed, and pulmonary thromboembolism was suspected. On day 11, right kidney infarction was noted. On day 12, heparin was changed to fondaparinux, and then to edoxaban on day 16. On day 19, jaundice progressed rapidly and his D-dimer increased to 94.5 μg/mL. On day 26, he died. An autopsy revealed increased pancreatic mucin and nonbacterial thrombotic endocarditis. The specimens also showed both thromboembolic and tumor embolic lesions to various organs.

IMPACT/DISCUSSION: In patients with cancer, tumor cells have various mechanisms of thrombosis formation. Risk factors for thrombosis are grouped into the three categories: patient-related features, treatment-related features and cancer-related features (histology, site, and stage). Mucin is a known substance that leads to hypercoagulable state, and its presence indicates rapid dissemination from one organ to another. Examination of the pancreas and other organs on autopsy revealed massive emboli due to thrombosis and tumor cells. In this case, rapidly developing thromboses led to rapid worsening of his condition.

In general, the risk of cancer-associated thrombosis should be assessed and early anticoagulant therapy considered. In 2019, several clinical trials showed that direct oral anticoagulants as thromboprophylaxis in patients with cancer can offer important advantages, including shorter hospital stay, convenience, and cost. However, in Japan, there is no clear consensus on anticoagulant therapy for patients with malignancy.

CONCLUSION: Thromboembolism due to cancer can progress rapidly. All patients with malignancy should be assessed for risk of thrombosis and considered for early anticoagulant therapy.

THE SUGAR DANCE: A CASE OF HYPERGLYCEMIA-INDUCED CHOREA

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LEARNING OBJECTIVE #1: Recognize nonketotic hyperglycemia as a possible cause of chorea, athetosis, and ballism

CASE: A 57-year-old man with history of inadequately controlled Type II diabetes and schizophrenia complicated by drug-induced parkinsonism presented to the ED with one week of strange left-sided movements.

He reported subacute onset of intermittent involuntary "twisting" movements of his left arm and leg. His home insulin regimen had recently been stopped because of intermittent adherence leading to hypoglycemia at home. He was on quetiapine for schizophrenia, with no recent medication changes.

Exam was notable for involuntary writhing movements of the left hand and foot, and for left hemiballism when the extremities were held up against gravity. Labs showed glucose 450 with normal anion gap. The patient was unable to get MRI Brain because of shrapnel from a previous injury lodged in his orbit.

He was started on medical management for possible stroke, and glycemic control was achieved by titrating an inpatient insulin regimen. Several days after glycemic control was achieved, the patient's abnormal movements resolved. His chorea was thought to be due to nonketotic hyperglycemia rather than a vascular cause. He was discharged with insulin, and his movements have not recurred.

IMPACT/DISCUSSION: Chorea, athetosis, and ballism frequently coexist in the same patient and are together thought of as the choreiform spectrum. They result from an imbalance in basal ganglia pathways causing excessive dopaminergic activity. Chorea usually affects the distal limbs, and can also affect the face. It is usually present at rest and can increase with movement or with distraction, but disappears in sleep. Patients are often unaware of the movements, and they are frequently noticed by family members.

Most common causes of choreiform movements in US adults are vascular (basal ganglia stroke), metabolic (sodium, magnesium, and calcium disorders, as well as uremia, hyperthyroidism, and B12 deficiency), drug-induced (e.g. levodopa-induced dyskinesia in patients with parkinsonism), genetic (e.g. Huntington's), infectious (e.g. AIDS), autoimmune/inflammatory (including Sydenham's chorea, very common in children), paraneoplastic, & toxin-induced.

Nonketotic hyperglycemia is the second most common reported cause of acquired hemiballism after stroke. There is usually slow remission of abnormal movements when glycemic control is achieved, but the movements can persist up to a year.

In addition to treatment of underlying causes, chorea can be treated with second-generation antipsychotics (dopamine receptor blockade). VMAT inhibitors (e.g. tetrabenazine) can also be considered, but can cause depression.

CONCLUSION: - Nonketotic hyperglycemia is the second most common cause of choreiform movements after stroke.

- In hyperglycemia-induced chorea, glycemic control can result in resolution of chorea. Chorea can be delayed in resolving for up to one year once blood sugars are controlled.

THE TRENDING INJURY: E-CIGARETTE AND VAPING ASSOCIATED LUNG FINDINGS

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LEARNING OBJECTIVE #1: 1) Timely recognition and preventing delay in diagnosis of E-cigarette or vaping product use associated lung injury (EVALI)

LEARNING OBJECTIVE #2: 2) Challenging decision making for steroid use in EVALI patients

CASE: A 19-year-old man with a one-year history of vaping was evaluated for acute gastroenteritis. In the hospital, he was noted to have asymptomatic hypoxia with a PaO2 of 65 mmHg. Physical examination revealed good air movement without any crackles, rales, rhonchi or use of accessory muscles. Shallow breathing was noticed with a mild decrease in chest expansion during respiration. A chest CT scan was ordered and revealed bilateral diffuse nodular pattern of infiltrates similar to miliary tuberculosis. An infectious workup including Streptococcus and Legionella urinary antigens, HIV screening and Quantiferon testing were negative. He underwent bronchoscopy with bronchoalveolar lavage and bacterial and fungal cultures were negative. He was initially empirically treated for bacterial and fungal infection but showed minimal improvement. Systemic steroids were eventually added with the guidance of the Pulmonary and Infectious Disease service after which patient's oxygen saturations started to improve. Antibiotic therapy was discontinued given his lack of respiratory symptoms and after receiving a negative microbiologic workup.

His hypoxia continued to improve with systemic steroids, which he continued upon discharge on a tapering regimen.

IMPACT/DISCUSSION: 1) EVALI is a diagnosis of exclusion, and unfortunately as highlighted in this case, may produce clinically silent but severe lung injury.

2) Clarifying the use of vaping while taking a social history is critical due to the lack of emphasis in media of health hazards associated with vaping. Patients may not volunteer to provide the information which could delay diagnostic workup.

3) Timely diagnosis and appropriate management can reduce the need for ICU admission, intubation, and overall cost of care.

4) Empiric antibiotics should be initiated in parallel with obtaining a microbiological workup and discussion with specialists on the proper timing of steroid therapy.

5) There is a wide range of steroid dosing in current studies. Physicians should always consider treating with lowest dose possible depending on the patient's clinical response, in order to limit medication adverse effects.

CONCLUSION: 1) In vaping patients who present with non-specific symptoms, we should maintain a high suspicion for EVALI. A thorough assessment can prompt early diagnosis and intervention.

2) A patient's pulmonary symptoms may not correlate to radiological lung findings.

3) In the limited published literature available on EVALI, empiric antibiotics coupled with appropriate use of systemic glucocorticoids have shown to result in favorable outcomes.

THE UNCOMMON COLD

Jaeda M. Roth. Internal Medicine, Mayo Clinic, Rochester, MN. (Control ID #3391452)

LEARNING OBJECTIVE #1: Recognize when a patient's clinical picture is not improving as expected

CASE: A 50-year-old female with past medical history of breast cancer on active neoadjuvant chemotherapy with doxorubicin and cyclophosphamide was admitted with shortness of breath, cough and fevers. She was hypoxic requiring 2L of oxygen and febrile to 39.0°C. Labs revealed a WBC of 12.0 x 10^9/L (4.5-11.0 x 10^9/L) with mild lymphopenia, hemoglobin of 9.2 g/dL (12.0-16.0 g/dL), lactate of 2.3 mmol/L (<1.0 mmol/L), elevated D-dimer and a respiratory pathogen panel positive for rhinovirus. CT chest showed a tiny non-occlusive sub-segmental pulmonary embolism for which anticoagulation was started and bibasilar atelectasis with surrounding consolidation in the left lower lobe. She was treated with piperacillin-tazobactam for a superimposed pneumonia.

Despite antibiotics and aggressive pulmonary hygiene, the patient continued to fever and had increasing oxygen requirements. Repeat chest x-ray showed worsening bilateral opacities so antibiotics were broadened to vancomycin, cefepime and azithromycin on hospital day 3. Despite this, she continued to deteriorate. Further questioning revealed that the patient was receiving high doses of dexamethasone prior to chemotherapy for nausea prevention. A bronchoscopy was then performed which revealed a positive PJP smear. Trimethoprim-sulfamethoxazole and oral Prednisone were started while other antibiotics were discontinued. Within 48 hours of trimethoprim-sulfamethoxazole initiation, her fevers resolved and her respiratory status improved significantly.

IMPACT/DISCUSSION: This patient presented a unique diagnostic and therapeutic challenge. She was immunocompromised from chemotherapy, but initial workup yielded a reasonable diagnosis of rhinovirus with superimposed bacterial pneumonia. Given her immunocompromised state, we anticipated it may take her longer than usual to recover from a common viral infection or pneumonia. Her lack of improvement and frank worsening of her respiratory status prompted us to investigate further as it did not seem reasonable to attribute her deterioration to rhinovirus. This led to further questioning that revealed her significant steroid use, raising concern for PJP pneumonia. A bronchoscopy was then performed which revealed the diagnosis leading to successful treatment and a positive patient outcome.

CONCLUSION: - As general internists or hospitalists, it is important to recognize when patients are not improving as expected. Most illnesses have an anticipated course and we need to recognize when a patient's course is not following the expected trajectory.

- Physicians should not necessarily add on an extensive workup when the expected clinical course is not followed but instead should pause to ask, "What could we be missing?"

- In this case, further focused questioning identified risk factors for atypical infection, which led to the testing that correctly identified the pathogen.

THE UNUSUAL SUSPECTS WAS IT CARBIDOPA/LEVODOPA ALL ALONG

Callie Marshall, Megan Lewis, Sheena Grant. Internal Medicine, UT Health Science Center San Antonio, San Antonio, TX. (Control ID #3391969)

LEARNING OBJECTIVE #1: This case's temporal and possibly etiologic relationship to Carbidopa/Levodopa adds to a small yet significant body of literature describing drug-induced leukocytoclastic vasculitis.

LEARNING OBJECTIVE #2: Leukocytoclastic vasculitis can cause significant pain and must be kept on the differential for a purpuric rash.

CASE: A 59 year-old female with recently-diagnosed parkinsonism presented with two weeks of a painful rash that began on her legs. She had begun Carbidopa/Levodopa two weeks prior to the onset of the rash, but denied any additional recent lifestyle or medication changes. On physical exam, she had palpable purpura on the bilateral lower extremities, some of which had tense bullae in the center. Laboratory studies, including an autoimmune panel, were only notable for a CRP of 17. Biopsy revealed polymorphonuclear invasion of the vessel walls with signs of fibroid necrosis and neutrophil death manifested as leukocytoclasia. The patient began topical clobetasol/triamcinolone and a 15 day prednisone taper with improvement of her symptoms.

IMPACT/DISCUSSION: Leukocytoclastic vasculitis (LCV) is a small vessel vasculitis that typically targets dermal postcapillary venules. Up to 50% of cases are idiopathic. There is only one reported case of Carbidopa/Levodopa associated purpura. The case presented here details an incidence of purpura following Carbidopa/Levodopa administration with biopsy confirmed LCV.

CONCLUSION: Leukocytoclastic vasculitis can cause significant pain and must be kept on the differential for a purpuric rash. Although palpable purpura and petechiae are the major clinical findings, biopsy evidence of LCV has also been seen in urticarial rashes. Inciting factors for this skin condition include medications, viral and bacterial infections, malignancy and autoimmune diseases. A 2015 article on drug-induced vasculitis described TNF inhibitors, cocaine, Rituximab and statins as known culprits of leukocytoclastic vasculitis. Cases of Dagibatran, Glyburide, Pyridostigmine and Propylthiouracil have also been reported as causing LCV.

This case's temporal and possibly etiologic relationship to Carbidopa/Levodopa adds to a small yet significant body of literature describing drug-induced LCV. While identifying the cause of LCV is challenging, as up to 50% of cases are described as "idiopathic," 50% of cases are thought to be the result of a particular offending agent/incident. The process of understanding its etiology is made more challenging by the sparsity of cases, estimated to be about 45 per million. Further research is needed to bolster evidence for or against Carbidopa/Levodopa as a definitive cause of LCV and add to the existing knowledge base of medications that can lead to this rare dermatologic complication.

THIRD DEGREE BURNS: A COMPLICATION OF TRANSCUTANEOUS PACING

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LEARNING OBJECTIVE #1: Recognize that burns can be a complication of transcutaneous pacing

CASE: We present a 66-year-old male with medical history of CAD, ischemic heart failure, and first degree atrioventricular (AV) block who

arrived as a transfer from a referring hospital with complete AV block. He reported fatigue which started 5 days prior associated with intermittent nausea, vomiting, shortness of breath, and orthopnea.

At the outside hospital, his ECG showed third degree AV block with ventricular escape beats at a rate of twenty. Transcutaneous pacing was initiated at 50 milliamps prior to the patient being transferred to our institution for tertiary cardiac care. On arrival, his pacing rate was increased from 60 to 80 beats/minute for hemodynamic support.

Temporary transvenous pacemaker implantation was attempted but aborted secondary to concomitant respiratory distress. The patient was subsequently intubated and transcutaneously paced overnight for approximately 10 hours before a dual chamber pacemaker could be successfully placed. Upon removal of the transcutaneous pacemaker pads, the patient was noted to have full-thickness third-degree electrical burns covering <1% of his body (image 1-2). His respiratory status improved after placement of dual chamber pacemaker and he was extubated and discharged with appropriate follow-up.

IMPACT/DISCUSSION: This case highlights a rare but significant complication of transcutaneous pacing. To date, there are only three other cases of burns caused by transcutaneous pacing reported in the literature. In this case, due to inability to place a transvenous pacemaker overnight, the patient was paced transcutaneously for longer than is standard. There is uncertainty whether the burns were present from the onset of transcutaneous pacing or due to the cumulative effect of prolonged transcutaneous pacing. Assuming the pacemaker was functioning correctly it would be reasonable to suspect the risk injury is proportional to the amount of time, current amperage, and the rate of transcutaneous pacing. Depending on the device, pacer pads may also need to be replaced as degradation of the adhesive on the pads can occur increasing the risk of burns. In general, pacemaker pads should be changed. In our patient, the pacer pads were not replaced for the duration of continuous transcutaneous pacing.

CONCLUSION: -All reasonable attempts should be made to facilitate implantation of a temporary transvenous pacemaker in those who are actively transcutaneous paced to minimize the risk of burns.

- In patients who complain of chest pain with transcutaneous pacing despite analgesia, consideration and evaluation should be performed given the risk of electrical burns.

- Consider changing pacemaker pads more frequently in patients who require prolonged transcutaneous pacing and preform skin checks in patients who cannot communicate discomfort.

THIS PAIN IS GIVING ME BAD BLOOD: A CASE OF ACUTE MYELOID LEUKEMIA (AML) PRESENTING AS HIP PAIN

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LEARNING OBJECTIVE #1: Recognize the musculoskeletal clinical manifestations of acute myeloid leukemia (AML) in a young adult.

CASE: A 30-year-old woman with no significant past medical history presented to the clinic with three weeks of severe right lateral hip pain radiating to her groin and anterior thigh with no preceding inciting event. Physical exam demonstrated prominent tenderness of the groin and pain with flexion and internal rotation of the hip. Complete blood count and inflammatory marker values were within normal limits. X-ray and CT imaging were unremarkable. MRI demonstrated a T2 hyperintense lesion occupying the right iliac intramedullary space with associated periosteal edema concerning for a marrow infiltrating process. Bone scintigraphy showed increased uptake in the same location with no skeletal abnormalities elsewhere. Two weeks later, she developed fever and had new pancytopenia with a predominance of blasts on peripheral blood smear. Bone marrow biopsy demonstrated hypercellular marrow with 92% blasts and cytogenetic testing compatible with acute myeloid leukemia (AML) with myelodysplastic features. She was treated with cytarabine plus daunorubicin 7+3 induction chemotherapy and had complete resolution of her musculoskeletal pain. Follow up bone marrow biopsy demonstrated no recurrence of AML blasts and consolidation chemotherapy was initiated.

IMPACT/DISCUSSION: This case demonstrates the challenge of diagnosing AML in a young woman presenting with non-specific musculoskeletal pain. The incidence of AML is highest between age 65-74 years but can develop at any age. While musculoskeletal pain is a well described presenting symptom of acute leukemia, particularly acute lymphocytic leukemia (ALL), in children, it does not commonly present in adults with AML. One study estimated that 4% of adults with acute leukemia present with musculoskeletal symptoms. AML can manifest as severe bone and joint pain and lead to rare complications of bone marrow necrosis, avascular necrosis, and intraarticular hemorrhage. Musculoskeletal symptoms often precede abnormal hematologic values and have been associated with diagnostic delay in the pediatric literature. Bone pain results from expansion of the medullary cavity by proliferating blasts and is most common in the long bones of the extremities. Joint pain results from synovial infiltration and most often presents as an asymmetric large joint arthritis but can also present as a migratory or symmetric polyarthritis mimicking reactive arthritis and rheumatoid arthritis. Leukemia-associated osteoarticular pain is commonly out of proportion to exam and poorly responds to NSAIDs and corticosteroids though generally improves with treatment of the underlying malignancy.

CONCLUSION: Musculoskeletal pain can be an initial manifestation of AML even in the setting of normal peripheral blood lab values. Acute leukemia should be considered in cases of unexplained musculoskeletal pain in the absence of an inciting event in order to not delay diagnosis.

THROMBOCYTOPENIC PURPURA OR HELLP - A CHALLENGING CASE OF THROMBOTIC THROMBOCYTOPENIC PURPURA AND HELLP SYNDROME IN PREGNANCY

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LEARNING OBJECTIVE #1: Distinguishing TTP and HELLP syndrome in pregnancy

CASE: A healthy 27-year-old woman, G1P0 presented at 29 weeks gestation with complaints of three days of headaches, intermittent confusion, blurry vision, vomiting, shortness of breath with hypertension and petechial rash on extremities. Labs showed hemoglobin of 5.9 g/dL, platelets 11,000 K/mcL, schistocytes on peripheral smear, Cr 2.2, AST 83, ALT 35, T bilirubin 2.7, LDH 1670 U/L, undetectable haptoglobin, urinalysis +3 proteinuria, negative direct Coombs test and coagulation panel. She was started on treatment for Thrombotic Thrombocytopenic Purpura (TTP) and HELLP (Hemolysis, Elevated Liver enzymes, Low Platelets) with FFP, corticosteroids, RBC transfusions, magnesium for seizure prophylaxis and daily plasma exchange (PLEX). On day 4 of admission, she underwent a successful emergent C-section for worsening HELLP. ADAMTS 13 activity level resulted after delivery at less than 5 % without detection of ADAMTS13 inhibitor which confirmed TTP. Postpartum course was notable for improving transaminitis with two relapses of TTP on day 10 and day 25, treated successfully with PLEX. She declined Rituximab due to concerns for adverse effects, discharged home on low dose aspirin

IMPACT/DISCUSSION: Thrombotic microangiopathies (TMA) include but are not limited to TTP (hereditary:10% and acquired:90%) and HELLP. Up to 5% of thrombocytopenia in pregnancy is related to TTP and the prevalence of HELLP syndrome is about 1%. Both conditions are triggered by pregnancy and present with microangiopathic hemolytic anemia and thrombocytopenia. The diagnosis of HELLP requires elevated liver enzymes whereas the diagnosis of TTP requires ADAMTS13 activity less than 10%. The case we described fulfills the criteria for both conditions. Very high transaminases are very unusual in TTP. The patient scored 7/7 on the Plasmic score, which is a recently validated tool used to support the diagnosis of TTP in TMAs and initiation of PLEX. ADAMTS13 activity is usually delayed; therefore platelet transfusions should be thoughtfully discussed as transfusions can worsen disease course. Despite PLEX, the patient had continued elevation of liver enzymes, which improved after delivery. This finding further supports the co- occurrence of both conditions. Up to 66% of women who have their first episode of TTP during pregnancy are diagnosed with late-onset hereditary TTP. Although genetic studies are missing the absence of an inhibitor and the initial presentation during pregnancy support the diagnosis of hereditary TTP. If TTP and HELLP are suspected, clinicians should have a low threshold to initiate PLEX for treatment of TTP as well as emergent C-section for HELLP based on clinical grounds

CONCLUSION: Hospitalists are often confronted with the management of medical conditions in pregnant women. TTP and HELLP are rare conditions, making an accurate and timely diagnosis is of utmost importance to ensure better feto-maternal outcomes and appropriate subspecialty follow up.

THYROID INDUCED REVERSIBLE CARDIOMYOPATHY

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LEARNING OBJECTIVE #1: Assessing the Thyroid function in patients with signs of heart failure to rule out a potentially reversible cause of cardiomyopathy.

LEARNING OBJECTIVE #2: Recognizing symptoms concerning for a late-onset Sheehan Syndrome in females with a remote history of postpartum hemorrhage.

CASE: A 39-year-old female presented with acute shortness of breath and severe dyspnea on exertion. She endorsed fatigue, weakness, cold intolerance and feeling unwell in general for 1-2 weeks. She was hypotensive (80s/60s) and her physical exam showed a raised JVD, B/L crackles on auscultation and lower extremity edema. Labs revealed critically low thyroid hormone levels (Free T4: 0.2), low blood glucose of 34, Hemoglobin of 7.4 with normal MCV and an elevated ferritin at 691. She had a past medical history of Stage 2 Cervical Cancer (now in remission) treated with chemoradiation (Cisplatin) 3 years ago. She was lost to follow up after that and was currently not on any medications. TTE revealed a severely depressed Ejection Fraction of less than 10% showing akinesis of lateral and inferior walls with hypokinesis of the remaining and dilated left ventricle. Patient denied any chest pain and had no risk factors for ischemic heart disease. Her constellation of symptoms prompted a STIM test which revealed a suboptimal cortisol response (cortisol level: 2.8 at 60 minutes) leading to a diagnosis of adrenal insufficiency. She had no prior history of steroid use. Endocrinology recommended a Pituitary MRI which showed Pituitary atrophy consistent with Sheehan Syndrome. Patient's last pregnancy was 17 years ago, which of note was complicated by severe postpartum hemorrhage. Patient was diagnosed with a late-onset Sheehan Syndrome. Her overt heart failure/DCM was attributed to undiagnosed chronic hypothyroidism leading to a stark decline in her cardiac function and decision was made not to pursue an ischemic workup. Patient was managed with corticosteroids, thyroid hormone supplementation and diuretics with significant improvement in her symptoms prior to being transferred to a nursing home for further care.

IMPACT/DISCUSSION: Hypothyroidism is the most common hormone deficiency in the U.S. population with a prevalence of over 13%. There has been emerging evidence of association of chronic hypothyroid state with the development of DCM and subsequent heart failure. Hypothyroidism can produce clinical phenotype of heart failure from a number of diverse mechanisms including changes at genetic and molecular levels resulting in impaired cardiac muscle relaxation, decreased heart rate and reduced stroke volume, ultimately leading to heart failure.

CONCLUSION: DCM is usually idiopathic disease with progressive and irreversible poor prognosis outcome. In contrast, in some cases, DCM can be secondary to various causes such as hypothyroidism and hormonal treatment with L thyroxin can significantly improve myocardial function. Hence, thyroid function tests should be systematically performed in all patients with DCM in order to rule out hypothyroidism.

THYROID STORM WITH MILD BIOCHEMICAL HYPERTHYROIDISM: A MIMICKER OF SEPTIC SHOCK

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LEARNING OBJECTIVE #1: Recognize signs and symptoms of thyroid storm that often mimic other pathologies in critically ill patients

LEARNING OBJECTIVE #2: Identify thyroid storm as a clinical diagnosis that may occur despite only mild abnormalities in thyroid hormone levels and utilize clinical tools to aid in diagnosis

CASE: A 30-year-old woman with type 1 diabetes mellitus presented to the emergency department after being found unresponsive at home. She was febrile, tachycardic, hypotensive, and tachypneic on arrival. Labs showed blood glucose 567 mg/dL, pH <7.00, HCO3 <5 mmol/L, WBC 26.1 K/UL, and 4+ ketonuria. The patient was intubated and started on intravenous fluid, vasopressors, an insulin infusion, and broad-spectrum antibiotics. She was admitted for diabetic ketoacidosis (DKA) and presumed septic shock.

Later that day, the patient's TSH resulted <0.01 mIU/mL. T3 and free T4 were only mildly elevated at 186 ng/dL and 1.93 ng/dL respectively, but her Burch-Wartofsky score was calculated to be 75, highly suspicious for thyroid storm. Stress-dose steroids, beta blockade, and methimazole were initiated and the patient improved. Infectious work up was ultimately negative and antibiotics were discontinued. Once extubated, the patient reported a history of Graves' disease, further supporting the diagnosis of thyroid storm.

IMPACT/DISCUSSION: Thyroid storm is a clinical diagnosis based on a constellation of severe and life- threatening symptoms in patients with biochemical hyperthyroidism. This patient presented with signs and symptoms suggestive of septic shock, but infectious workup was negative. She was ultimately diagnosed with thyroid storm, likely precipitated by DKA.

Thyroid storm can be challenging to diagnose, as it is rare and its signs and symptoms (e.g. fever, tachycardia, volume overload, CNS dysfunction) mimic common pathologies including sepsis, heart failure, and meningitis. While thyroid function tests help make the diagnosis and should be measured if there is suspicion for thyroid storm, the degree of

hyperthyroidism does not correlate with the illness severity and is not a diagnostic criterion. This patient had only mild elevation of T3 and free T4 despite critical illness.

There are no universally accepted diagnostic criteria for thyroid storm, but the Burch-Wartofsky and Akamizu scoring systems are often used in diagnosis. Both use clinical signs and symptoms to stratify patients by degree of suspicion for thyroid storm. While alternative diagnoses should be considered, clinicians must consider thyroid storm in patients with abnormal thyroid function and critical illness, as a missed or delayed diagnosis can result in multiorgan failure and death.

CONCLUSION: Thyroid storm can be challenging to diagnose, as it can mimic other pathologies. Its morbidity and mortality may be compounded by delayed diagnosis. Clinicians should maintain a high index of suspicion in critically ill patients with abnormal thyroid function. The Burch-Wartofsky and Akamizu scoring systems can aid in its diagnosis.

TIME WILL TELL: ACUTE ARTHRITIS DIAGNOSED TEN MONTHS FOLLOWING PRESENTATION

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LEARNING OBJECTIVE #1: Assess for systemic manifestations of sarcoidosis with cutaneous lesions.

LEARNING OBJECTIVE #2: Recognize the need for continued follow-up after symptom resolution with uncertain underlying diagnosis.

CASE: A 29 year-old obese, otherwise healthy Caucasian woman presented with acute onset bilateral knee, ankle, elbow, and hip pain with concurrent eruption of skin lesions on the lower extremities and forearms.

Review of systems noted fever and chills; bilateral heel pain; and facial flushing. Affected joints had full range of motion without effusion. Punch biopsy confirmed panniculitis consistent with erythema nodosum. Laboratory studies noted markedly elevated C-reactive protein, microcytic anemia, and normal white blood cell count and differential with negative antistreptolysin O and antinuclear antibody titers. Chest X-ray showed no hilar adenopathy or lesions. A working diagnosis of idiopathic erythema nodosum was made in the absence of additional symptoms. Joint pain resolved within four weeks. Ten months following initial presentation, a cutaneous biopsy revealed granulomatous dermatitis, sarcoidal type. She remained asymptomatic. Repeat chest X-ray, pulmonary function testing, echocardiogram, and Holter monitor were within normal limits. High-resolution CT scan of the chest revealed hilar adenopathy and diffuse micronodules consistent with pulmonary sarcoidosis.

IMPACT/DISCUSSION: Sarcoidosis is a multisystem granulomatous disorder with diverse presentations. Up to 50% of patients are asymptomatic at diagnosis. Cutaneous manifestations affect approximately 25% of patients and include both specific (granulomatous) and nonspecific findings such as erythema nodosum, Sweet syndrome, and calcinosis cutis. In patients presenting with cutaneous sarcoidosis, the risk for involvement of other organs is unknown but estimated at 30-85%. Evaluation for systemic disease begins with history and physical exam and includes metabolic profile, blood counts, urinalysis, chest imaging, pulmonary function testing, electrocardiogram, and ophthalmologic exam. Transthoracic echocardiogram and Holter monitoring may also be considered. Lofgren syndrome is typically defined as erythema nodosum, acute polyarthritis, and hilar adenopathy and has a 95% specificity for sarcoidosis. This patient's presentation likely represents Lofgren syndrome with adenopathy not evident on chest X-ray but visible on high- resolution CT. The patient will be followed by the sarcoidosis clinic for continued surveillance. This case emphasizes the need for continued follow-up for patients with unclear etiology of symptoms and the importance of thorough history and physical exam.

CONCLUSION: Sarcoidosis can have a variety of presentations and should be considered in the differential diagnosis of acute arthritis. Patients presenting with cutaneous sarcoidosis are at risk for systemic illness and warrant evaluation for involvement of other organs. Any patient with unexplained symptoms should be followed closely even if symptoms resolve.

TKI-RELATED CARDIOTOXICITY: A HEARTTHROB

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LEARNING OBJECTIVE #1: Recognize Tyrosine Kinase Inhibitor (TKI) related cardiac toxicity

LEARNING OBJECTIVE #2: Understand the workup for patient on TKI presenting with chest pain

CASE: 33-year-old female, with PMH of Ph+ chronic myelogenous leukemia on Dasatinib, presents to the ED with acute chest pain. Pain began at rest while supine and worsened with movement, inspiration, and exertion. Previously she had been feeling well with no viral prodrome.

Upon arrival, patient's vital signs were stable and she was administered Aspirin 325mg and Nitroglycerin 0.4mg with no relief. All parts of her physical exam were within normal limits. Lab work was drawn showing elevated D-dimer troponin ESR and CRP. CT showed no signs of PE. ECG showed sinus tachycardia, minor diffuse ST elevations in the inferior and lateral leads. Her symptoms self-resolved 2 hours after presentation. The patient's troponins were trended showing a progressive rise and fall. TTE was performed showing no abnormalities with EF of 60%. Given rising troponin levels patient underwent cardiac catherization which showed no evidence of occlusion. Given the presentation and diffuse ST segment changes on ECG she was diagnosed with myopericarditis. She was started on guideline directed therapy for pericarditis with Ibuprofen 800mg TID and Colchicine 0.6mg BID with resolution of her symptoms and improvement in her lab work on outpatient follow.

IMPACT/DISCUSSION: Dasatinib is a tyrosine kinase inhibitor (TKI) approved for use in Ph+ CML. Although effective in the treatment of CML, there are known associations between TKI and cardiotoxicity, but there is little data characterizing this relationship. A 2019 study showed TKI therapy to significantly increase cardiovascular related mortality compared to general population.

Based on the presentation in our case of positional pleuritic chest discomfort, diffuse ST segment changes, increased inflammatory markers, and positive troponins the diagnosis of myopericarditis was made. Given no other preceding illnesses or other potential etiologies for this young patient to develop myopericarditis, our assumption would be this is secondary to Desatinib. To our knowledge, this is the first reported study showing acute myopericarditis secondary to Dasatinib therapy.

Although it appears to be a rare, it is important to recognize myopericarditis as a potential complication of someone presenting with chest pain while receiving TKI therapy. Due to its rare presentation, a high index of suspicion, along with appropriate testing, should be utilized in the workup. T2 weighted cardiac MRI or endomyocardial biopsy can also be used to confirm the diagnosis of myocardial inflammation.

CONCLUSION: In Summary, patients on chronic TKI therapy presenting with acute onset chest pain with elevated troponin markers should be worked up for ACS. Furthermore, there should be suspicion for TKI related myopericarditis.

TO BE SEEN BUT NOT EXAMINED: A CASE OF "GASTROENTERITIS" IN A HALLWAY BED PATIENT

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LEARNING OBJECTIVE #1: To recognize the importance of a thorough physical exam including sensitive areas when clinically relevant

LEARNING OBJECTIVE #2: To illustrate how the lack of privacy in a hallway bed can impact patient care

CASE: 53 year-old man with no past medical history presented to the office with fevers, abdominal pain, diarrhea and the onset of a rash. He had been in his usual state of health until 5 days ago but developed GI symptoms and fever after eating at a seafood buffet. On day 4 of symptoms, a rash developed on his buttock, so he sought care in the emergency room. There, he was triaged to a hallway bed. Initial labs and abdominal ultrasound in the ER were overall unremarkable, except for new hematuria. Given that the patient had minimal symptoms, further exam and evaluation for presumed renal stones were deferred to the outpatient setting and the patient was discharged.

He presented to our office the day after discharge from the ER. Pt reported resolution of fever and diarrhea but persistence of rash.

Medication: none

Physical Exam: abdomen soft and non-tender. Large round purpura on bilateral gluteal cheeks with several

Overlying flaccid vesicles.

Labs:

BMP/CBC normal

UA 2-5 RBC, trace protein

IgA 787 (70-400)

Based on his clinical presentation, he was diagnosed with henoch-schönlein purpura (HSP).

IMPACT/DISCUSSION: HSP is a clinical diagnosis characterized by lower extremity purpura or petechiae in the presence of one of the following: abdominal pain, histopathology, arthralgia, or renal involvement. This patient had palpable purpura with abdominal pain and new hematuria and proteinuria. His elevated IgA level is found in 70% of HSP cases. The fact that this patient's buttock rash was not appreciated on the ER exam may have changed the framing of his presentation and thus lead to a missed diagnosis. The finding of the purpura was the linchpin for the diagnosis of HSP, therefore the skin exam was essential in his case.

The patient's triage to a hallway bed, with its inherent lack of privacy, likely contributed to the incomplete physical exam. Either the medical team, or the patient, or both may have felt uncomfortable. In a cross- sectional survey of 409 emergency physicians regarding their patient encounters in the hallway setting, 78% endorsed deviation from standard history-taking, 90% endorsed alteration in their standard physical exam. Moreover, clinicians who had more frequent patient encounters in the hallway were more likely to report delays or diagnostic-error related to altered history-taking (OR 2.34, 95% CI 1.33-4.11). Unsurprisingly, the most common organ system linked to a delayed or diagnostic error was the genitourinary system.

CONCLUSION: One should recognize that the mere assignment of a patient to a hallway bed can consciously or unconsciously create barriers to optimal care. Therefore, vigilance and effort should be taken to interview and examine the patient privately when relevant.

TOO HIGH, TOO LONG

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LEARNING OBJECTIVE #1: Recognize the importance and lack of screening for hypertension in otherwise young healthy individuals.

CASE: A 40-year-old Asian male with no known past medical history presented to the emergency department complaining of a severe headache, progressive over 3 days resulting in loss of consciousness. He was hypertensive (BP 230/120mm Hg) and tachycardic (HR 120) on presentation. Initial neuroimaging showed diffuse white matter disease and microhemorrhages. He was also found to have left ventricular hypertrophy on EKG and elevated creatinine. He was admitted to the ICU for strict blood pressure control, where he was subsequently intubated due to neurological decompensation with worsening mental status. Further imaging was revealing for a left-sided intraparenchymal hemorrhage. ECHO showed biatrial enlargement and severe left ventricular wall thickening. Over the course of three days, the patient progressed to anuric renal failure requiring hemodialysis. Secondary workup for hypertension including plasma aldosterone and renin, metanephrines and duplex renal ultrasound was unrevealing. The serologic workup for vasculitis was also unyielding. Ten days after the initial presentation his mental status improved and the patient was extubated. His neurological exam at that time was notable for slow, dysarthric speech and confusion. He was subsequently transferred to inpatient rehabilitation for further care.

IMPACT/DISCUSSION: Undiagnosed hypertension resulted in devastating sequelae in the above- mentioned patient, who had not been to a physician's office in over twenty years. Hypertension has a prevalence of 7.3 % in persons aged 18 to 39 years. The USPSTF recommends ambulatory blood pressure monitoring every three to five years in adults aged 18 to 39 years with no risk factors. For a young healthy individual, who is part of the general workforce, a pre-employment physical or insurance incentives may be one of the few opportunities for monitoring of high blood pressure. Hypertension screening is a ubiquitous, essentially harmless and inexpensive answer to an insidious malady.

CONCLUSION: There is a large gap in blood pressure screening amongst young healthy individuals. Patients will often have an initial presentation with irreversible hypertensive stigmata. Universalizing blood pressure monitoring can be a powerful weapon in our armamentarium to combat this very common but potentially catastrophic condition.

TOO HIGH TO HEAD HOME? DISPOSITION OF A PATIENT WITH A BLOOD PRESSURE OF 200/100 IN PRIMARY CARE CLINIC

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LEARNING OBJECTIVE #1: Recognize that patients with acute severe hypertension do not always need emergency department assessment and hospitalization

LEARNING OBJECTIVE #2: Manage acute severe hypertension in the outpatient setting in patients with chronic hypertension

CASE: Mrs. C is a 76-year-old female who presented to her primary care provider (PCP) for a physical examination. Her past medical history is notable for hypertension, type 2 diabetes, hyperlipidemia, stage III CKD and hyperparathyroidism. Her initial blood pressure reading was 200/100. She felt well and had no complaints; she denied headache, visual disturbances, chest pain, shortness of breath or leg swelling. Of note, her

antihypertensive regimen included lisinopril 40mg and atenolol 25mg, and she reported not taking these prior to this appointment. Physical examination including fundoscopy was unremarkable. On repeat manual check, her blood pressure was 202/108 and the PCP deliberated if this patient should be evaluated in the emergency department for hypertensive urgency and blood pressure reduction.

IMPACT/DISCUSSION: Acute severe hypertension is a common condition seen by PCPs and accounts for an estimated 4.6% of emergency department visits. Although this condition, if left untreated, has long term implications such as cerebrovascular and cardiovascular mortality, it is not associated with negative short- term outcomes. Studies comparing disposition to either home versus hospital have shown that rates of adverse cardiovascular events in both groups were low with no significant differences up to six months. As in this patient, most patients presenting with this condition have a known diagnosis of hypertension, with non- adherence being a common precipitant along with excessive salt intake, drugs such as cocaine or NSAIDs, and anxiety. Patients with mild symptoms such as headache, dyspnea, atypical chest pain or epistaxis may be treated with short acting antihypertensive agents such as clonidine or labetalol in the outpatient setting. Non- adherent patients, such as Mrs. C, should resume home medications and return for close follow-up. Adherent patients presenting like this may have their anti-hypertensive treatment adjusted or be provided with an ambulatory BP monitor.

As this patient was asymptomatic with a normal examination and a likely precipitating factor, she was advised to return home and take her medications. To the PCP's relief, she called the clinic a few hours later with a BP measurement of 162/94. She returned to clinic the following day (having taken her medications) and her BP was 136/84.

CONCLUSION: Asymptomatic or mildly symptomatic acute severe hypertension may be safely treated in the outpatient setting. Despite the lack of evidence for immediate blood pressure lowering, outpatient providers are hesitant to send patients home with acute severe hypertension and we hope that this case encourages PCPs to help patients avoid potentially unnecessary and expensive trips to the hospital.

TOO MUCH OF A GOOD THING: HYPERVITAMINOSIS D-MEDIATED HYPERCALCEMIA

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LEARNING OBJECTIVE #1: Recognize the risks of hypervitaminosis-D particularly among patients with underlying primary hyperparathyroidism

CASE: A 90-year-old woman with history of inflammatory bowel disease, stage 3B chronic kidney disease and hypothyroidism presented with worsening weakness, nausea, confusion and constipation for months. In addition to levothyroxine, oral budesonide and zolpidem, she had been taking a commercial liquid formulation of vitamin D3 for one year. Each drop contained 1400 International Units (IU) of vitamin D3 and the patient took approximately 10 drops (14,000 IU) PO daily. Her physical exam was notable for mild confusion. Laboratory investigation revealed creatinine of 1.9 mg/dL (baseline1.4 mg/dL), potassium of 5.7 mmol/L, calcium of 12.8 mg/dL, phosphorus of 3.8 mg/dL, 25-OH-Vitamin D >126 ng/mL, parathyroid hormone (PTH) of 16.1 pg/mL, albumin of 4.2 mg/dL and TSH of 2.12 micro-international units/mL. She was treated with sodium chloride 0.9% fluid intravenously at 200 mL/hour, furosemide 20 mg IV once for mild hypervolemia, and calcitonin 4 mcg/kg SQ once. Her serum calcium returned to normal range after 24 hours, and her confusion, nausea and constipation improved. Upon discharge, her serum calcium was 8.7 mg/dL (corrected to 9.5 mg/dL) with a creatinine of 1.2 mg/dL. She was discharged with instructions to stop all vitamin supplementation.

IMPACT/DISCUSSION: This case of vitamin D-related hypercalcemia is particularly unique due to the patient's inappropriately normal PTH and phosphorus levels. Vitamin D is commercially available in widely variable and unregulated dosages. The adverse effects of supplemental vitamin D are often minimized because toxicity is rare. Consumption of very high levels of exogenous vitamin D has been shown to cause hypercalcemia by increasing intestinal absorption and bone mobilization of calcium. The increase use of Vitamin D supplementation may correspondingly increase the prevalence of vitamin D-mediated hypercalcemia, especially among patients with underlying parathyroid dysfunction. Typically, vitamin D-mediated hypercalcemia is PTH-independent, resulting in suppressed serum PTH and hyperphosphatemia. The patient's unsuppressed PTH and normal phosphate level suggest that she had primary hyperparathyroidism in addition to hypervitaminosis D causing hypercalcemia. A similar case has been published in the literature (Bala et al.) of a woman with iatrogenic hypervitaminosis D and an elevated PTH of 1464.9 pg/mL due to a parathyroid adenoma. For this patient, it is likely that undiagnosed primary hyperparathyroidism caused subclinical elevation of her serum calcium, which was exacerbated and finally unmasked by her excessive Vitamin D supplementation.

CONCLUSION: This case highlights potential risks of exogenous vitamin D supplementation. Among patients with primary hyperparathyroidism, vitamin D deficiency is protective against hypercalcemia while it may increase the baseline risk for developing hypervitaminosis D with high-dose supplementation.

TOO MUCH SUGAR CAN MAKE ONE DANCE – CHOREA HYPERGLYCEMIA BASAL GANGLIA SYNDROME

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LEARNING OBJECTIVE #1: Diagnose Chorea Hyperglycemia Basal Ganglia Syndrome as a complication of uncontrolled diabetes

LEARNING OBJECTIVE #2: Recognize that acute MRI findings may not be reliable in C-H-BG patients with chronic basal ganglia infarcts

CASE: A 79-year-old male with type 2 diabetes mellitus presented after being found down by a neighbor. Patient reported generalized fatigue. On exam, he was not alert or oriented, but otherwise had a non-focal neurological exam. Glucose was 742 mg/dL, bicarb 15 mmol/L, anion gap 22.8 mmol/L, and beta- hydroxybutyrate 3.92 mmol/L. CT head was negative for acute findings, but notable for chronic infarcts at multiple lobes including bilateral basal ganglia. He was admitted on an insulin drip for DKA/HHS. HbA1c was 14.3%. On day 2, the patient's mental status improved, glucose level was 300 mg/dL, anion gap resolved, and he was transitioned to injectable insulin. On day 3, he developed high amplitude, non-rhythmic, asymmetric chorea/ballismus movements in bilateral upper and lower extremities. He was alert and aware during these bursts of involuntary movements, and expressed distress that the movements were not suppressible. MRI brain showed the previously known chronic lacunar infarcts in the basal ganglia and no acute changes. EEG was negative for seizure activity. Chorea Hyperglycemia Basal Ganglia Syndrome (C-H-BG) was suspected. With optimization of the patient's glycemia with insulin, he had complete resolution of his chorea within 2 days.

IMPACT/DISCUSSION: Uncontrolled diabetes can lead to a myriad of neurological disorders, including hyperglycemia-induced involuntary movement (HIIM). C-H-BG syndrome is a manifestation of HIIM. Proposed mechanisms of basal ganglia dysfunction in hyperglycemic and

hyperosmolar states include the shift to the anaerobic pathway in cellular metabolism resulting in the depletion of GABA, and hyperviscosity in the vasculature leading to disruptions at the blood-brain barrier.

C-H-BG syndrome has characteristic MRI findings of T1 hyperintensity in the basal ganglia. Given that our patient had chronic basal ganglia infarcts and negative acute MRI findings, the metabolic/vascular changes of hyperglycemia likely presented a second hit to the basal ganglia, explaining the uncommon presentation.

Treatment of C-H-BG syndrome consists of managing the hyperglycemia with insulin, with the addition of dopamine antagonists for symptomatic relief. In our patient the chorea completely resolved with hyperglycemic control.

CONCLUSION: Though differential causes of chorea are wide, the quick resolution of chorea with the optimization of blood glucose highlights the importance of considering metabolic causes of new, sudden onset chorea in a diabetic. T1 hyperintensities in basal ganglia are characteristic imaging findings in C-H-BG, but the absence of acute imaging findings does not exclude the diagnosis. Chorea is an uncommon manifestation of a common medical condition and early identification can reduce morbidity and unnecessary medical testing.

TO PE OR NOT TO PE: EXTENSIVE TUMOR THROMBUS MIMICKING PULMONARY EMBOLISM IN A PATIENT WITH A RENAL MASS

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LEARNING OBJECTIVE #1: Recognize the prevalence of tumor thrombus in renal cell carcinoma

LEARNING OBJECTIVE #2: Identify the need for a multidisciplinary approach in treating extensive tumor thrombus

CASE: An 82-year-old male with a past medical history significant for a known renal mass, coronary artery disease, chronic kidney disease stage IV, atrial fibrillation on apixaban, and heart failure with preserved ejection fraction who presented to the emergency room with a 2-week history of "lung pain," shortness of breath, and a non-productive cough. His pain was both positional and pleuritic. He was treated as an outpatient with a prednisone taper and an increase in his home diuretic, which did not improve his symptoms, so he presented to the hospital. Initial workup was significant for an acute kidney injury. He was noted to have left lower extremity swelling, and a Doppler showed a saphenous vein thrombosis close to the femoral vein, for which he was started on a heparin drip. There was still concern for pulmonary embolism given his symptoms. A CT angiogram of his chest was deferred given his renal function, and his chest x-ray showed pulmonary edema, precluding him from undergoing a ventilation perfusion (V-Q) scan; he ultimately underwent transthoracic echocardiogram that showed a dilated right atrium and a large (8.1 cm x 2.8 cm) mass in the right atrium, arising from the inferior vena cava (IVC), consistent with a large thrombus. The patient was subsequently transferred to an outside institution for possible vacuum extraction of this thrombus. Imaging done at the outside institution demonstrated a right renal mass with associated thrombus extending from the renal mass to the right renal vein into the IVC and right atrium. The surgical team evaluated the patient, but he declined any surgical intervention and instead was discharged home on palliative immunotherapy for his presumed renal cell carcinoma.

IMPACT/DISCUSSION: This case highlights the prevalence of tumor thrombus in certain cancers, particularly renal cell carcinoma (RCC), as well as the poor prognosis of untreated RCC with tumor thrombus; this patient had a known renal mass that was not worked up beyond serial imaging as a result of his poor surgical candidacy. Tumor thrombus can be present in RCC into the renal vein in up to 10% of cases, though less than 1% of cases extend to the right heart chambers. The definitive treatment of tumor thrombus in renal cell carcinoma is surgical with or without chemotherapy and immunotherapy, and the management of these patients involves a multidisciplinary approach. An additional point from this case include the challenge of diagnosing pulmonary embolism when there are contraindications to imaging modalities such as CT angiography or V-Q scanning.

CONCLUSION: Tumor thrombus is a relatively common complication of renal cell carcinoma and should be considered in patients presenting with signs of vascular involvement. The mainstay of treatment is surgical. If untreated, this locally advanced disease has a poor prognosis.

TOPICAL WINTERGREEN ESSENTIAL OIL AS A UNIQUE CAUSE OF SALICYLATE TOXICITY

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LEARNING OBJECTIVE #1: Recognize the importance of obtaining a detailed medication history including prescribed medicines, herbal medicines, and supplements

LEARNING OBJECTIVE #2: Recognize the potentially fatal complications of a commonly used herbal medicine

CASE: A 30-year-old obese Caucasian female with history of MDD and ADD presented to ED with intractable nausea and vomiting, coffee ground emesis, generalized abdominal pain, diarrhea, and tinnitus for the past day. The patient was on a boat with her children the day prior and consumed a fully cooked burger. The next morning, she awoke nauseous and started to vomit. The vomiting was constant and associated with coffee ground emesis, generalized abdominal pain, and ringing in the ears. She recollected 7-8 episodes of watery diarrhea daily for the past 2-3 months. The patient denied eating undercooked or raw foods; known sick contacts or recent travel; tobacco, alcohol, illicit drugs, or chronic NSAID use; or SI or HI. No one else on the boat became sick. In the ED, vitals were remarkable for RR 22. On physical exam, she was obese in moderate distress, actively vomiting coffee ground emesis with generalized abdominal tenderness. An ABG revealed pH 7.49 and pCO2 17.7. Labs were significant for CO2 15, anion gap 3.0, Hgb 13.4, WBC 24.0, iron saturation 6%, positive FOBT, and salicylate level 103.9. CT abdomen/pelvis showed mild wall thickening of colon suggestive of mild colitis. Two large bore IVs were placed and IV fluids, pantoprazole 40 mg BID, and Zosyn were started. Gastroenterology and nephrology services were consulted. Georgia Poison Control was contacted and recommended repeating the salicylate level and checking urine pH. Patient was admitted to ICU and started on a bicarb drip. A Vas-Cath was placed and patient underwent emergent HD. Salicylate levels down trended to less than 30 and patient was transferred to floor. Hgb down trended to 7.9 and patient was transfused 1-unit pRBCs. GI performed EGD with findings of hemorrhagic gastritis and mild duodenitis with tissue biopsies showing mild, active chronic gastritis. Further history obtained, during which patient admitted to wintergreen essential oil use. She applied the undiluted oil topically on her hands, chest, and hair daily over a 3-4-month period totaling 10 bottles containing 15-mL wintergreen essential oil each. Georgia Poison Control confirmed it the likely cause. Patient's symptoms improved and she was discharged with recommendation to avoid the essential oil in future.

IMPACT/DISCUSSION: This is to our knowledge the first case report on topical toxicity of wintergreen oil, comprised of 98% methyl salicylate (MS). One teaspoon, or 5 mL, contains 7000 mg of MS or the equivalent of 90 baby aspirin tablets. This case emphasizes the importance of a detailed medication history and the potential toxicity of a commonly used herbal medicine when used improperly. It reinforces the need for reform of the outdated 1994 DSHEA law.

CONCLUSION: Recognize the importance of an herbal medicine and supplement history

TORSEMIDE INDUCED PALISADED NEUTROPHILIC AND GRANULOMATOUS DERMATITIS

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LEARNING OBJECTIVE #1: Recognize the clinical and histological features of palisaded neutrophilic and granulomatous dermatitis

LEARNING OBJECTIVE #2: Treat palisaded neutrophilic and granulomatous dermatitis

CASE: A 77-year-old man presented to the emergency department with an exacerbation of heart failure with preserved ejection fraction while on torsemide, On examination he had nontender, scaly pink papules coalescing into plaques on his arms, legs, and torso. Antinuclear antibody, anti-double-stranded DNA, and anti-histone antibody were positive resulting in a diagnosis of drug-induced lupus, presumably from Torsemide. Punch biopsies from his arms revealed a layered pattern of granulomas with focal central necrobiosis and neutrophils surrounded by multinucleated giant cells. Colloid iron with and without digestion showed increased dermal mucin in the granulomatous inflammation, especially the areas of necrobiosis.

Acid-fast bacilli, Fite, and Gomori methenamine silver-stained tissue sections were negative for organisms. The histopathologic results supported a diagnosis of palisaded neutrophilic and granulomatous dermatitis (PNGD).

IMPACT/DISCUSSION: PNGD is a very rare dermatological disorder. Case reports are sporadic, and few case series have been published. A literature review in 2008 identified only 97 reported cases. It is associated with systemic diseases including rheumatoid arthritis, inflammatory bowel disease and SLE as in our case. It is considered an immune complex disease found along a spectrum that includes Churg-Strauss granulomas, cutaneous extravascular necrotizing granuloma, rheumatoid papules, and superficial ulcerating rheumatoid necrobiosis. PNGD clinically presents with tender erythematous violaceous papules, plaques or nodules, usually affecting the extensor surfaces. The underlying pathogenesis remains poorly understood. It is thought that T-cell dysregulation and immune complex deposition play a key role in the formation of the skin lesions. Histologically, palisading granulomas with prominent neutrophils and collagen degeneration are usually evident. Treatment is usually tailored towards treating the underlying disease, in our case, stopping the offending torsemide. Steroids, dapsone, cyclosporine, and methotrexate have been used with varying success. With appropriate treatment, recovery is usually favorable. To our knowledge, this is the first case of torsemide induced lupus resulting in PNGD.

CONCLUSION: Torsemide is a mainstay drug in the management of congestive heart failure. Internists must be vigilant for skin eruptions that arise after initiating this medication.

PNGD is found along a spectrum of diseases and treatment usually requires discontinuing the offending agent or treating the underlying disease. Occasionally, immunosuppressants are necessary to achieve resolution.

TO TEE OR NOT TO TEE? LIMITING UNNECESSARY TESTING WHILE ACHIEVING IMPROVED PATIENT CARE OUTCOMES

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LEARNING OBJECTIVE #1: Recognize when tests or treatments will not affect clinical management and limit wasteful spending to achieve better patient outcomes.

LEARNING OBJECTIVE #2: Assess the value of invasive and expensive testing to the patient and treatment team.

CASE: An 86-year-old male with history of mitral valve replacement due to mitral valve prolapse and a non- MRI compatible permanent pacemaker implanted more than a decade ago presented to the emergency department with hypotension, weakness and fever. Physical exam revealed a holosystolic crescendo- decrescendo murmur loudest at the left-lower sternal border, and abdominal distention without tenderness to palpation, rebound, or guarding. Blood cultures quickly revealed sepsis due to *Enterococcus Faecalis* bacteremia. The patient was empirically treated with Vancomycin + Ceftriaxone. The difficulty in this case arose in the search for a source of patient's bacteremia. Cultures were again positive at 48 hours but revealed sensitivity to Ampicillin so therapy was narrowed to Ampicillin + Ceftriaxone. A transthoracic echocardiogram (TTE) demonstrated no obvious evidence of endocarditis. As cultures continued to remain positive at 96 hours, we needed to decide whether to pursue advanced and risky procedures like a trans- esophageal echocardiogram (TEE) or a pacemaker removal and lead culture. The patient was not a surgical candidate as the pacemaker would be difficult to remove given the number of years it had been in place in addition to his age and other comorbidities not aforementioned. At this point, we asked ourselves: if we are presuming endocarditis and/or pacemaker infection and patient would get lengthy antibiotic therapy nonetheless, were we practicing high value care to find one definitive source? If the TEE were negative, would we not treat for 6-weeks? Ultimately, in a multidisciplinary approach with infectious disease and cardiology, we determined that the highest value for patient was an empiric 6-week course of antibiotics with infectious disease follow up. Fortunately, cultures remained negative after the 6-day mark. At this point, with the patient improving on antibiotics, no more procedures were performed, and he was discharged from the hospital, with a 6-week course of intravenous antibiotics and appropriate follow-up.

IMPACT/DISCUSSION: In recent years, there has been a focus on eliminating waste in our healthcare system and providing high value care.[1] This case illustrates this challenge as although the patient had various plausible alternative sources of infection, appropriate restraint must be shown in ordering more expensive, invasive, and risky imaging or procedures – *especially* when they would not change management.

CONCLUSION: Cases of endocarditis are frequent. In this case, as in many others, a TEE may not always be necessary nor therapy-altering.

References:

1. Berwick DM, Hackbarth AD. Eliminating waste in US health care. *JAMA*. 2012;307(14):1513-1516.

TOXOPLASMIC ENCEPHALITIS (TE)— ROLE OF EARLY EMPIRICAL TREATMENT IN DIAGNOSIS

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LEARNING OBJECTIVE #1: Recognition of opportunistic brain infections in patients with human immunodeficiency virus (HIV)

LEARNING OBJECTIVE #2: Therapeutic and diagnostic role of early empirical treatment for TE

CASE: A 29-year-old female with HIV, off antiretroviral treatment (ART), (CD4 count 63/microliter; HIV viral load 37482 copies/mL) presented with acute headache and confusion. Remaining exam was unremarkable. Magnetic resonance imaging (MRI) of the brain showed

13 x11 millimeter (mm) eccentric ring enhancing lesion at left temporal lobe. Lumbar puncture (LP) showed an opening pressure of 13- centimeter water column, 205/mm^3 nucleated cells with lymphocyte predominant, protein 84 milligram per deciliter (mg/dL), glucose 59 mg/dL. She was started on dexamethasone, ceftriaxone, vancomycin, ampicillin, and acyclovir as empiric therapy for meningitis/brain abscess and abacavir-dolutegravir- lamivudine for ART. After elevated serum toxoplasma Immunoglobin (Ig) G of > 900 international unit per milliliter (IU/mL) was found, treatment was changed to sulfadiazine, pyrimethamine, leucovorin. Her confusion improved significantly in 1 day. Additional workup including toxoplasma IgM, CSF culture, cytology, cryptococcal antigen, varicella and herpes polymerase chain reaction (PCR), positron emission tomography (PET), Tuberculosis QuantiFERON were all unremarkable. Follow-up MRI in 4 weeks showed the lesion decreased to 9 x 10 mm in size.

IMPACT/DISCUSSION: In general, when ring enhancing brain lesions are found, bacterial brain abscess is the most common concern. However, this case reminds us that in the HIV positive population, especially those individuals meeting acquired immunodeficiency syndrome (AIDS) criteria, Toxoplasma gondii infection should be higher on the differential and early empirical treatment is diagnostically important.

TE is the most common cause of brain mass in AIDS population followed by PCNSL in developed countries and tuberculoma in developing countries. The diagnosis is usually made presumptively, with 90% of probability in cases with CD4 count <100/microliter, positive serum anti-toxoplasma IgG, and ring enhancing lesion on imaging. 14% of TE has a solitary lesion on MRI, which would be difficult to distinguish with PCNSL, PET has very high of sensitivity and specificity for PCNSL, but may not be widely available. LP to demonstrate positive toxoplasma PCR is definitive but the sensitivity is low. On the other hand, response to appropriate antibiotic in TE is usually dramatic, with clinical improvement seen in about 3-7 days, and radiographic improvement in about 5-14 days. Thus, early empiric treatment with close follow up imaging is an important diagnostic tool when TE is suspected.

CONCLUSION: 1. Toxoplasmosis encephalitis should be on the differential for HIV/AIDS patients who present with altered mentation and focal brain lesion.

2. Treatment response is usually dramatic, which makes early empirical treatment diagnostically important.

TRANEXAMIC ACID UTILIZATION IN STEROID REFRACTORY ARB-INDUCED ANGIOEDEMA

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LEARNING OBJECTIVE #1: Treatment of steroid refractory angioedema

LEARNING OBJECTIVE #2: Tranexamic Acid utilization in ARB-Induced angioedema

CASE: We present the case of a 62-year-old Caucasian female with angioedema suspected to be secondary to Olmesartan use, which was relieved with tranexamic acid. Of note, this was the third time she had presented to the hospital with angioedema symptoms within in the past 6 months. Before this period, she states she had never had any angioedema like symptoms. On this hospitalization, it was noted that she was on Olmesartan for Hypertension and had been on it for many years. She had never been on an ACE-inhibitor prior to this. Her vital signs upon arrival were within normal limits, and her only initial laboratory values that were of note were leukopenia at 3.3 K/ul and hyponatremia at 134 mmol/L. A C1 esterase protein inhibitor was also ordered, to assess for possible heredity angioedema, and was slightly elevated at 42 mg/dL. Upon admission, Olmesartan was not restarted. She was started on steroids and given antihistamines with improvement in her symptoms. On second day of hospitalization she was kept for observation, with plans for discharge the next day due to her clinical improvement. That night, she developed angioedema and was treated again with IV steroids and antihistamines. Despite these IV medications, patient endorsed only stabilization but not full resolution of symptoms. It was then decided to try Tranexamic acid, as it has been reported to work for ACE- inhibitor induced angioedema. After administration, she had subsequent improvement of her symptoms but with better response than steroids and antihistamines alone.

IMPACT/DISCUSSION: ARB-induced angioedema has a significantly lower incidence than ACE-inhibitor induced. As with ACE- inhibitors, the management beyond removal of the offending agent is not clear, and there are no specific guidelines. Studies have shown that tranexamic acid may be used in emergent situations to provide treatment for these included angioedema episodes. Tranexamic acid works by blocking the activation of plasminogen to plasmin, which in turns leads to down-regulation of bradykinin which is implicated in angioedema. This case highlights Tranexamic acid use in ARB-induced angioedema not previously reported to the authors' knowledge. Given the relatively low incidence of ARB-induced angioedema, no studies have been conducted to assess any clinical utilization of treatment other than stopping the offending agent. Reports have shown use of tranexamic acid in use in idiopathic angioedema along with its potential use as a maintenance regimen for prophylaxis.

CONCLUSION: We postulate that tranexamic acid can be utilized in ARB-induced angioedema and is a viable option for angioedema resistant to steroids and antihistamines alone.

TRANSFUSION GONE WRONG: DELAYED HEMOLYTIC TRANSFUSION REACTION IN SICKLE CELL DISEASE

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LEARNING OBJECTIVE #1: Recognize the under-diagnosis of Delayed Hemolytic Transfusion Reaction (DHTR) in Sickle Cell Disease (SCD)

LEARNING OBJECTIVE #2: Consider IVIG if DHTR is suspected

CASE: 23 year old male with a history of sickle cell disease (Hgb SS) on hydroxyurea presented with worsening bilateral knee pain secondary to sickle cell crisis and received 2 units red blood cell (RBC) transfusion. He was re-admitted five days later for vaso-occlusive crisis and was found to have a hemoglobin (Hgb) of 8.0 g/dL (baseline 6-8 g/dL). Hgb subsequently down-trended to 4.5 g/dL resulting in transfer to our institution with concern for DHTR. Exam was notable for resting tachycardia, orthostatic hypotension and bilateral knee effusions. Labs showed Hgb 4.9 g/dL, white blood cell 9.1 k/uL, platelets 227 k/uL, lactate dehydrogenase 4819, total bilirubin 2.4 mg/dL, haptoglobin undetectable and reticulocyte production index (RPI) 0.9%. His blood type was O Rh positive with negative antibody screen. Direct and Indirect Coombs testing were negative. Hgb decreased to 3.5 g/dL despite intravenous fluids, dexamethasone, erythropoietin (EPO) and folic acid resulting in administration of IVIG. His Hgb and RPI then improved to 5.4 g/dL and 3.9% respectively with concomitant improvement in hemolysis labs and hemodynamics. He was discharged with instructions to consult with his hematologist prior to receiving future blood transfusions.

IMPACT/DISCUSSION: Patients with SCD are particularly susceptible to DHTR. Prevalence is likely under-reported due to a clinical

presentation which mimics sickle cell pain crisis. The mechanism of DHTR is controversial with theories including formation of alloantibodies against donor RBC, complement- mediated destruction of autologous RBC, and erythropoiesis suppression. This population undergoes numerous transfusions with resultant increased risk for alloimmunization, estimated to occur in as many as 47% of adult patients. Detection of alloantibodies is challenging as titers are often too low for pretransfusion testing. This delays recognition and treatment of a life-threatening reaction. Providers should maintain a high index of suspicion for DHTR in every SCD patient admitted for pain crisis, especially if the patient has received transfusions in the past month. Workup includes complete blood count, hemolysis labs, reticulocyte count, type and screen, and direct/indirect antiglobulin test. A negative antibody screen, as seen in this case, does not exclude diagnosis. No studies have defined optimal treatment of DHTR though case reports suggest benefit of steroids and IVIG. Our patient improved with high dose steroids, EPO, and IVIG (400mg/kg x 5 days). Strategies to prevent DHTR include judicious transfusions with extensive phenotypic matching when transfusion is vital.

CONCLUSION: 1.DHTR should remain on the differential for every SCD patient admitted for pain crisis even if antibody screen is negative

2. If DHTR is suspected, inquire about recent transfusions and treat promptly with high dose steroids, EPO, and IVIG

TRANSIENT ELEVATION OF TROPONIN IN DRUG-INDUCED RHABDOMYOLYSIS

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LEARNING OBJECTIVE #1: Distinguish the causes of elevated troponin due to different clinical scenarios

LEARNING OBJECTIVE #2: Recognize the pathophysiology of elevated troponin in rhabdomyolysis **CASE:** A 66-year-old man with hypertension, diabetes mellitus and opioid use disorder presented with syncope after snorting heroin. He denied chest pain, shortness of breath. On admission, patient was hemodynamically stable, but found to have elevated creatinine kinase (CK= 35,609 U/L) and cTnT (0.11 ng/ml). His ECG was negative for myocardial infarction. Intravenous fluids were started with a progressive improvement of both CK and cTnT levels. This transient borderline increase in cTnT reverted to normal within 3 days after resolution of rhabdomyolysis.

IMPACT/DISCUSSION: Cardiac troponin (cTn), particularly troponin T (cTnT) and I (cTnI), are well- stablished biomarkers for diagnosing myocardial infarction (MI). However, elevated cTn is not pathognomonic for acute coronary syndrome, it can also be elevated in different non-coronary related conditions. Moreover, cTn assays are not entirely specific for myocardial injury, as it can have false-positive and negative. Hence, the correct interpretation of elevated cardiac biomarkers can be challenging, and will depend on the clinical scenario, electrocardiogram (ECG) and imaging.

MI is a term used for myocardial cell death secondary to prolonged lack of oxygen supply. Myocardial necrosis will have elevated cTn in addition to clinical symptoms, ECG changes and imaging findings of new loss of viable cardiac tissue or wall abnormalities. However, the challenge begins when abnormal levels of cardiac enzymes are found in an asymptomatic patient without ECG changes or imaging suggesting ischemia/infarction. It is important to understand that even though cTn are specific to the cardiac tissue, cTnT can be identified in embryonic skeletal muscles. Jaffe et al. found the phenomenon of cTnT elevation in 17 patients with skeletal myopathy and without cardiovascular disease. It has been suggested that exposure of TnT isoform in the regenerating muscle cell during rhabdomyolysis explain abnormal elevation of cTnT. In our case, transient elevation of troponins was found in an asymptomatic patient without cardiovascular risk factors. cTnT and CK levels peaked at the same time, suggesting a more regenerating process during the acute phase. However, experimental studies are needed to clarify this important but still controversial entity.

CONCLUSION: This case report highlights the importance of adequately interpreting an elevation of cTn considering the clinical scenario, ECG changes, and if required, other imaging. Doctors need to be particularly aware of possible false positive troponin elevation in different clinical scenarios, such as rhabdomyolysis.

TRANSVERSE PERICARDIAL SINUS HEMATOMA FROM TYPE A AORTIC DISSECTION MIMICKING ACUTE CORONARY SYNDROME: A DIAGNOSTIC CHALLENGE

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LEARNING OBJECTIVE #1: To have a high index of suspicion for aortic dissection

LEARNING OBJECTIVE #2: Diagnosis of transverse pericardial sinus hematoma can be very challenging

CASE: A 77-year-old man who underwent recent coronary artery bypass grafting (CABG) presented to the hospital with sudden-onset chest pain and dyspnea. He was hemodynamically stable. Cardiovascular examination was unremarkable.

Diagnostic studies revealed an elevated troponin value of 0.05 ng/ml that peaked at 8.83 ng/ml (normal range < 0.03), EKG with first degree heart block and non-specific ST changes in lateral leads, and chest x-ray consistent with pulmonary edema.

Patient was admitted for a presumed diagnosis of acute coronary syndrome (ACS) from graft occlusion. He received dual antiplatelet therapy (DAPT), heparin, and intravenous diuretic. He underwent coronary angiography which revealed patent left internal mammary artery (LIMA) and saphenous vein grafts (SVG). Transthoracic echocardiogram (TTE) revealed an extra cardiac structure compressing the left atrium. Patient continued to complain of dyspnea. Computed Tomography Pulmonary Angiogram (CTPA) showed no evidence of pulmonary embolism, however, there was a marked mass effect on the pulmonary trunk and right pulmonary artery, and a large ascending aortic aneurysm concerning for Stanford type A aortic dissection. Patient developed respiratory distress requiring transfer to the intensive care unit and intubation. Bedside transesophageal echocardiogram (TEE) revealed a proximal ascending aorta aneurysm and dissection. There was a defect consistent with contained aortic rupture and flow into the transverse pericardial sinus.

Hematoma was compressing the left atrium. A large hematoma in the transverse pericardial sinus was extracted in the operating room and revealed a posterior perforation of the ascending aorta that extended into the left atrium. The ascending aorta was repaired with a vascular graft. The left atrial tear was oversewn. After separating patient form bypass and instilling the heart with blood, the left atrial repair completely dehisced.

Atrial tissue was not viable enough to hold a suture. Patient had lost a significant amount of blood and, unfortunately, the patient was loaded with ticagrelor on presentation which contributed to exsanguination and was pronounced dead.

IMPACT/DISCUSSION: In our patient aortic dissection resulted in contained transverse pericardial sinus hematoma most likely due to adhesions from prior CABG surgery. Diagnosis was delayed by workup for more common causes of chest pain and dyspnea like ACS, PE and heart

failure. Hematoma was compressing the left atrium causing pulmonary edema. It was also compressing pulmonary artery causing severe dyspnea; mimicking pulmonary embolism.

CONCLUSION: Troponin can be high in conditions other than ACS. Hence, in patients with chest pain and elevated troponin, especially with refractory symptoms and normal coronaries, the index of suspicion for alternative diagnosis like aortic dissection should be high.

TREATMENT OF INFECTIVE ENDOCARDITIS ASSOCIATED WITH EXTENDED SPECTRUM BETA LACTAMASES (ESBL) PRODUCING E COLI

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LEARNING OBJECTIVE #1: Initiating empiric broad spectrum antibiotic therapy for a suspected case of Infective Endocarditis in a patient with recent prosthetic mitral valve placement and Extended Spectrum Beta Lactamases (ESBL) producing E Coli bacteremia

CASE: A 74 year old male with a recent history of Mitral Valve Replacement with a bioprosthetic valve, presented to the Emergency Room complaining of dyspnea, palpitations and chills at home for 1 day. Patient also reported noticing lower extremity edema for the past few days. On physical examination, Patient had decreased breath sounds up till middle lung zones, and 2 + pitting lower extremity edema. patient displayed no peripheral stigmata of infective endocarditis, no murmurs were appreciated. On initial labs, his white count was 18.1, with 97.9 % Neutrophils. Initial CXR with mild pulmonary congestion and mild symmetrical bilateral pleural effusions. Blood cultures collected at admission grew ESBL E. Coli. A Transthoracic and transesophageal echocardiogram showed an ejection fraction of 40 percent which was his baseline, however no signs of valve vegetation were seen. Because of a recent mitral bioprosthetic valve, we planned to treat our patient for infective endocarditis with Amikacin and a carbapenem for 6 weeks. Repeat cultures six days later showed clearance.

IMPACT/DISCUSSION: In situation in which the primary infection is not identified in either the urinary tract, or the biliary system, the primary locations in which ESBL E. Coli may be suspected to originate, we suggest that it is important to consider endocarditis as a primary source of infection in patients with a history of valvular replacement and ESBL E. Coli positive blood cultures. This case suggests that there may be a brief window in time in which medical management can be successful in full eradication of ESBL E. Coli endocarditis. As transthoracic echocardiography and transesophageal echocardiography may be inadequate for diagnosis of endocarditis with prosthetic valves, it is critical to carefully choose broad-spectrum empiric antibiotic therapy which carefully takes into consideration the antibiotic resistance of the communities in which the organism was acquired. In areas where there is high prevalence of carbapenem resistance, it may be preferable to treat primarily with aminoglycosides which have not been used in a while, in appropriate cases.

CONCLUSION: The antibiotic resistance levels present within the community must be considered when deciding on which empiric treatment may be appropriate in the treatment of ESBL E. Coli endocarditis despite negative Echocardiogram findings as to not lose the minute window of opportunity in which medical management may be possible.

TRUST, BUT ALWAYS VERIFY!

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LEARNING OBJECTIVE #1: Recognize the role of a trusting patient-physician relationship

LEARNING OBJECTIVE #2: Acknowledge the importance of verifying information provided by patients

CASE: A 36 year-old woman with seizure disorder and schizophrenia was brought to the emergency department after being found unresponsive. Upon arrival, she was found to be lethargic with pin-point pupils. Labs revealed hypercapnia, lactic acidemia, rhabdomyolysis, and deranged liver tests. Her valproate level was sub-therapeutic. Computed tomography (CT) of the chest revealed bilateral pulmonary infiltrates. Infectious work-up was unremarkable. Patient was placed on non-invasive ventilation, and mental status improved gradually. She later reported that she may have had a seizure, as well as coughing up some blood. In addition, she reported occasionally smoking marijuana, but denied any other substance use or vaping. Urine toxicology screen returned positive for opiates, cocaine, and cannabinoids. In addition to seizure, polysubstance use was thus believed to account for the patient's presentation; hemoptysis from diffuse alveolar damage is a well-documented dangerous presentation of cocaine use, as well as hypercapnia due to opioids. All symptoms and signs improved within 24 hours. The patient was counseled regarding the importance of medication adherence, as well as abstinence from illicit drug use.

IMPACT/DISCUSSION: Communication and trust are essential components of the patient-physician relationship. Traditionally, the focus has been on patients' trust of physicians, which is necessary for shared decision-making and patient autonomy. In addition, it has been associated with positive patient experiences and higher quality of care. Nevertheless, physicians' trust of patients is also vital for more accurate and safer patient care. It is also crucial for better diagnosis, patient involvement, physician satisfaction, and building mutual trust. However, patients are not always easily forthcoming, which can be attributed to feelings of vulnerability, fear of judgment, or ineffective communication from providers that fails to establish a meaningful connection. Physicians must therefore be adept at setting the grounds for successful communication. Moreover, while they should trust information provided by patients, they must expend every effort to verify it. This includes medical history, medication adherence, living conditions, habits, as well as enlisting family and friends for collateral information. Often times, such information can prove beneficial in diagnosis or planning next steps of patient care. In this patient's case, verifying her habits served to provide a likely diagnosis and explain the findings seen on imaging, which would have otherwise led to further work- up and a different treatment strategy.

CONCLUSION: Patient-physician interaction and trust is a cornerstone of caring for patients. Yet, physicians should be aware of the importance of verifying information provided by patients to achieve better patient care and outcomes.

TUBERCULOSIS SEPSIS: AN UNCOMMON PRESENTATION OF MYCOBACTERIUM TUBERCULOSIS

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LEARNING OBJECTIVE #1: Recognize the prevalence of extrapulmonary tuberculosis in HIV-infected patients

LEARNING OBJECTIVE #2: Evaluate for tuberculosis in the workup of sepsis in an HIV-infected patient

CASE: A 44-year-old man with a history of HIV not on anti-retroviral therapy presented with one week of lethargy and low appetite. On evaluation, he had temperature 39.8 C, blood pressure 79/47, pulse 152, and respiratory rate 18. On examination, he was cachectic and ill-appearing, with two tender, erythematous masses noted in his left neck. Initial

laboratory studies were notable for white blood cell count 3.6, hemoglobin 9.1, sodium 122, and creatinine 0.93 (baseline 0.6). Broad infectious work-up including blood, sputum, urine, and stool cultures was collected. Empiric therapy with cefepime and vancomycin was started. CT neck showed extensive necrotic cervical lymphadenopathy. Cervical lymph node aspiration was performed, and culture of the aspirate rapidly grew acid-fast bacilli. Soon after, all sputum AFB cultures returned positive for Mycobacterium tuberculosis. Empiric antibiotics were discontinued, and antituberculous quadritherapy was started. Further CT imaging revealed numerous scattered lung nodules, a soft tissue mass in the left sacrum, and hypodense lesions in the left kidney and liver, consistent with disseminated tuberculosis. His course was complicated by circulatory shock briefly requiring vasopressor therapy. However, he clinically recovered and was discharged home with plan to continue antituberculous and antiretroviral therapy.

IMPACT/DISCUSSION: The diagnosis of tuberculosis (TB) remains challenging as many patients present with few or atypical symptoms. Pulmonary TB remains the most common form of the disease, with extra-pulmonary TB occurring in only 15–20% of patients and disseminated TB in only 2–5% of patients. However, the clinical course of TB varies in immunocompromised and HIV-infected individuals, who are much more likely to have severe and extra-pulmonary disease. Disseminated tuberculosis has been identified in 38% of cases of HIV-TB co-infection. Moreover, while extra-pulmonary TB most commonly has a subacute or chronic presentation, acute and fulminant presentations may also occur in this population.

Though rare, tuberculosis septic shock has been associated with 79% in-hospital mortality. As in our case, the wide differential for sepsis in an HIV-infected patient, makes the diagnosis of tuberculosis sepsis particularly challenging, causing antimycobacterial therapy to be delayed. As with bacterial septic shock, early diagnosis and initiation of appropriate antimicrobials have been reported to significantly improve mortality.

CONCLUSION: Due to its variable and often non-specific presentation, a high index of suspicion is required for the diagnosis of tuberculosis. Given its potential for rapid progression and multi-organ involvement, disseminated tuberculosis should be considered early in the differential diagnosis for an HIV-positive patient with undifferentiated sepsis.

TUMOR LYSIS SYNDROME IN POST-POLYCYTHEMIA VERA MYELOFIBROSIS AFTER RUXOLITINIB INITIATION

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LEARNING OBJECTIVE #1: Recognize the clinical features of tumor lysis syndrome

LEARNING OBJECTIVE #2: Anticipate the potential for tumor lysis syndrome after initiation of ruxolitinib for treatment of secondary myelofibrosis

CASE: A 66-year-old man with CKD stage 3B and post-polycythemia vera (PV) myelofibrosis presented to the ED with nausea and vomiting for two weeks. Two days prior to admission, ruxolitinib was initiated for myelofibrosis.

Physical exam was notable for left lower quadrant tenderness and right-sided costovertebral angle tenderness. Lab values were significant for potassium of 6.6 meq/L, creatinine of 5.4 mg/dL, calcium 8.4 g/dL, phosphate of 8.9 mg/dL, uric acid of 27.5 mg/dL, and hemoglobin of 7.1 g/dL. Urinalysis was negative for infection. CT abdomen & pelvis without contrast showed stable splenomegaly, moderate left peri-nephritic stranding, and mild concentric bladder wall thickening. Renal US showed no renal vein thrombosis or evidence of obstruction.

Patient was monitored on telemetry and treated with aggressive IV hydration, bumetanide, tamsulosin, and rasburicase for tumor lysis syndrome (TLS). His creatinine gradually improved to 1.5 mg/dL along with resolution of electrolyte abnormalities.

IMPACT/DISCUSSION: TLS is a metabolic life-threatening emergency most frequently encountered in patients with leukemia or lymphoma who are actively receiving chemotherapy. TLS can be diagnosed according to the Cairo-Bishop criteria: at least 2 abnormalities in uric acid, potassium, phosphate, or calcium levels within three days before or seven days after chemotherapy. It is rarely associated with myeloproliferative neoplasms and has not been noted in phase I, II or III studies of ruxolitinib treatment. This case demonstrates the risk of rapidly worsening AKI in the context of TLS in a patient with post-PV myelofibrosis after initiating ruxolitinib.

CONCLUSION: Physicians should be aware of the potential risk of TLS after ruxolitinib administration for treatment of post-PV myelofibrosis. In cases where ruxolitinib is the preferred treatment modality, practitioners should maintain vigilance for early recognition and immediate treatment of TLS.

TURN DOWN THE HEAT IN A CAJUN WITH COLCHICINE

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LEARNING OBJECTIVE #1: Recognize atypical features of Familial Mediterranean fever syndrome

LEARNING OBJECTIVE #2: Appreciate the efficacy of colchicine as a treatment for periodic fever syndrome of unknown origin

CASE: A 33-year-old Cajun man presented with a 20-year history of recurrent fevers. Fevers developed every two weeks with temperatures ranging from 101 to as high as 105 degrees Fahrenheit. Additional symptoms included myalgias, malaise and headache. Surgical history is notable for an exploratory laparotomy as a child that was unrevealing. The patient had no family history of autoimmune or rheumatologic disease. He was afebrile and no lymphadenopathy, aphthous ulcers, pharyngitis, or rashes were appreciated. IgG4 level returned elevated but otherwise had a negative infectious, malignancy, and rheumatologic workup while inpatient. He was referred to Allergy and Immunology for further evaluation as an outpatient. In clinic, the patient was initiated on colchicine 0.6mg orally twice daily. A periodic fever syndrome panel was ordered. Two months later, he reported no fevers since starting the colchicine. The periodic fever syndrome panel returned negative.

IMPACT/DISCUSSION: Fever is a common symptom encountered by a general internist with basic workup often yielding probable source of infection. Rarely does a patient develop persistent fevers without an identifiable source. Auto-inflammatory etiologies should be considered in patients in which malignancy, autoimmune disorders and unusual infections have been ruled out. Symptom patterns and risk factors, such as family history, patient ethnicity, and symptoms may aid the clinician in diagnosing a particular periodic fever syndrome. The diagnosis can be challenging due to variations in genetic mutations and inheritance patterns, likely seen in the patient discussed in the case. While diagnosis can be made clinically, the use of genetic testing allows for confirmatory testing in patients with an ambiguous presentation. However, despite advances in diagnostics, a large proportion of patients have negative genetic testing. In such patients, empiric treatment with either glucocorticoids, colchicine, or interleukin-1 antagonists may support the diagnosis of a periodic fever syndrome.

Periodic Fever syndromes patients are at increased risk for secondary complications if not started on appropriate therapy. Such complications include amyloidosis, small bowel obstruction and infertility. Empiric treatment is of importance as it can prevent such complications. Further, development of secondary complications could potentially further muddle the diagnostic picture in a patient with recurrent fevers.

CONCLUSION: Timely recognition of periodic fever syndromes can lead to appropriate treatment and prevention of secondary complications.

TYPHOID INTESTINAL PERFORATION IN LIBERIA, AFRICA

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LEARNING OBJECTIVE #1: Intestinal perforation is a common cause of peritonitis necessitating emergency surgical intervention. Perforation of the bowel from typhoid is a serious abdominal complication. The prevalence of typhoid fever is gradually decreasing worldwide; however, it still remains endemic in tropical regions. Perforation of terminal ileum is a cause for acute obscure peritonitis, heralded by exacerbation of abdominal pain associated with tenderness, rigidity and guarding, most pronounced over right iliac fossa.

CASE: A 62 yo male radiology technician came to ER in Liberia, West Africa co 2 day history of severe right sided abdominal pain.

Found to have severe rebound tenderness and with no bowel sounds.

Upright chest x ray showed large free air below the diagram. Patient was taken to surgery for laparotomy and a 2 cm perforation of the ilium was found and repaired.

He recovered well and was discharged home five days after surgery.

As a senior radiology technician, he had taught some of the technicians working in the ER that day!

IMPACT/DISCUSSION: Typhoid fever is a public health challenge which is concentrated in impoverished areas of the developing world which is due to unsafe drinking water and poor sanitation. Typhoid intestinal perforation (TIP) is the most serious complication observed in 0.8- 39%. TIP mortality rate fluctuates from 5 – 80% due to many factors including access to care.

In many areas, care is not available due to many issues including transportation, lack of provider and hospitals, lack of funding and ability to pay for services.

The authors believe that free air under the diagram was very helpful in confirming the need for surgical repair in this case. Labs were done later but played no part in the decision to go to surgery.

Primarily, the mortality and the morbidity rate do not depend on the surgical technique, but rather on the general status of the patient, the virulence of the salmonella and the duration of disease evolution before surgical treatment. That is why, it is so important to provide adequate preoperative management associating aggressive resuscitation with antibiotic therapy. In the literature, it is usually advocated that the last 60 cm of the ileum presents a high concentration of Peyer's patches whose infection is a source of intestinal perforation.

CONCLUSION: Inspite of global scientific development, typhoid fever and its complications continue to be a great health problem especially in developing countries. The management of typhoid enteric perforation needs appropriate early surgical intervention, effective resuscitation in the pre-operative period, post- operative care, and use of proper antibiotics. The key to improved survival in this deadly disease lies not in a better operation or improved perioperative care, but in the prevention of typhoid fever by providing safe drinking water and improved sanitation methods for all of the global community.

UNCLEAR AND PRESENT DANGER: AMBIGUITY IN THE PRE-OPERATIVE RISK ASSESSMENT

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LEARNING OBJECTIVE #1: Assess a patient's complete, rather than problem-focused, history when evaluating perioperative risk

LEARNING OBJECTIVE #2: Recognize clinical features of cardiac disease when masked by, or misattributed to, other conditions

CASE: Mr. H is a 62-year-old man who presented to clinic for a preoperative visit for a L4-S1 revision laminectomy scheduled in 3 days' time. He denied any chronic conditions other than low back pain, though had not seen a PCP in many years. He stated he can walk up a flight of stairs, though became frustrated when discussing this, as he is "out of shape" due to his back pain. With significant prompting, he eventually endorsed progressive dyspnea when walking more than 20 feet, though denied any associated chest pain. On exam, he was normotensive, though tachycardic to 133. Cardiac exam was otherwise normal, without murmurs. Lung fields were clear to auscultation. An ECG was obtained, showing sinus tachycardia with Q waves in III and aVF. No prior ECGs were available for comparison and patient denied a known history of MI. Patient was referred to cardiology prior to surgery. TTE showed left ventricular hypertrophy. Cardiac MRI diagnosed Hypertrophic Obstructive Cardiomyopathy (HOCM). Metoprolol was initiated with significant improvement in his exercise capacity. He electively canceled his back surgery due to resolved symptoms. He continues to follow regularly with both cardiology and at the primary care clinic.

IMPACT/DISCUSSION: While patients can be focused on obtaining "clearance" for their surgery, it is vital for providers to review all aspects of the patient's health to ensure they are medically optimized for their planned procedure. This can present a challenge for patients without regular follow up, who may be unaware of underlying conditions that may impact their outcomes. The 2014 ACC/AHA Guidelines provide a stepwise approach for further preoperative testing based on ACS symptoms and METs. However, the subjective assessment of METs typically completed in office can often overestimate functional capacity (Wijeysundera et al 2018), especially if symptoms are attributed to another etiology (i.e. Mr. H with his back pain). Upon initial questioning, he met the criteria for 4 METs by being able to walk up a flight of stairs and did not require further testing based on guidelines. However, additional specific questioning elucidated that his symptoms required further evaluation, eventually revealing a diagnosis of HOCM. While he was able to cancel an unnecessary surgery and avoid the increased risk of adverse outcomes associated with HOCM during noncardiac surgeries (Hreybe et al 2006), only through exploration of his entire medical history was the true risk elicited.

CONCLUSION:

- A full history should be obtained when evaluating perioperative risk, especially in patients with minimal health care utilization
- Careful elicitation of functional capacity can reveal hidden symptoms of cardiac dysfunction that require further workup prior to surgery

UNCOVERING THE DIAGNOSIS IN A PATIENT WITH ALTERED MENTAL STATUS

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LEARNING OBJECTIVE #1: Identify appropriate situations to measure thyroid function studies in hospitalized patients

LEARNING OBJECTIVE #2: Discuss inpatient management of thyroid replacement therapy

CASE: An 83-year-old man was admitted for six weeks of worsening right ankle pain. He had been taking amiodarone for atrial fibrillation and levothyroxine for hypothyroidism. His vital signs were within normal limits. Radiographic findings were concerning for osteomyelitis. He was treated with intravenous antibiotics. His mental status waxed and waned during his

inpatient stay. He was often oriented only to person and exhibited sundowning behaviors including daytime somnolence and severe nighttime agitation. He was edentulous and macroglossia was present.

TSH returned greater than 48.60 μIU /mL, free T4 equal to 0.26 ng/dL, and total T3 equal to 0.38 ng/dL. Due to severe hypothyroidism, he was started on IV levothyroxine after endocrinology consultation. Hydrocortisone treatment was also initiated. Mental status progressively improved.

IMPACT/DISCUSSION: Hypothyroidism can present with a wide range of nonspecific symptoms and is a common diagnostic consideration by hospital medicine providers. Ordering inpatient thyroid studies on individuals who are acutely ill is generally not recommended as lab results are often difficult to interpret due to acute illness. This testing can add unnecessary cost. Checking inpatient thyroid function is needed, however, in several clinical situations such as in patients who are on thyroid replacement, those who are on medications that can cause or contribute to thyroid dysfunction, and when the clinical presentation is concerning for overt thyroid dysfunction.

When abnormal thyroid function studies are identified, initiating or adjusting thyroid replacement may be necessary. A clinical presentation attributed to thyroid dysfunction or significant biochemical abnormalities (i.e. extremely elevated TSH) should prompt initiation of treatment. Thyroid hormone replacement can also increase cortisol metabolism and potentially unmask underlying adrenal insufficiency. Guidelines by the American Thyroid Association Task Force recommend if the decision is made to treat non critically ill inpatients with levothyroxine (newly instituted treatment or an increase from previous home dosing), oral replacement should be started with a goal of long-term normalization of TSH. If there is reason to suspect underlying adrenal insufficiency, this diagnosis should be ruled out or empiric corticosteroids should be started. For critically ill patients with myxedema, IV levothyroxine along with empiric corticosteroid treatment for adrenal insufficiency is recommended. Levothyroxine dosing should be titrated to clinical improvement. Thyroid studies should be followed every 1-2 days.

CONCLUSION: While thyroid studies may be difficult to interpret in acute illness, testing may be indicated to uncover thyroid disease and to prompt initation of treatment.

UNDIAGNOSED VITAMIN B12 DEFICIENCY AND ITS SEQUELAE IN A PATIENT ON A HUNGER-STRIKE: FOOD FOR THOUGHT

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LEARNING OBJECTIVE #1: Recognize various hematologic and neuropsychiatric symptoms of vitamin B12 deficiency presentation in atypical patient population

LEARNING OBJECTIVE #2: Diagnose and treat vitamin B12 deficiency before development of life- threatening irreversible sequelae

CASE: A 45-year old male was escorted to our tertiary medical center from a prison for evaluation of 40 lb weight loss, paraplegia and recently developed urinary and fecal incontinence. The patient had been on a 9-month hunger strike, during which he only consumed one meal per day. In addition to incontinence, he reported a progressive course of paresthesia, numbness and weakness in the legs. He became wheelchair bound. Neurological exam revealed a malnourished and disoriented male with 1/5 strength in the lower extremities, decreased muscle tone, bilateral lower leg swelling, and wasting of intrinsic foot muscles. The patient also had bilateral symmetrical loss of vibratory, tactile senses and proprioception in both legs. CBC demonstrated moderate anemia with high MCV (107 fL), low serum vitamin B12 (82 pg/ml), and elevated homocysteine (272.8 μmol/L) and methylmalonic acid (83,248 nmol/L). Serum and RBC folate levels were normal. Spinal cord MRI and myelogram were unremarkable. Anti-parietal cell and anti-intrinsic factor antibodies were elevated. NCS/EMG demonstrated severe, symmetrical, distal polyneuropathy of the lower limbs. Ultrasound showed lower extremity DVTs. The patient was diagnosed with subacute combined degeneration and pernicious anemia. Cyanocobalamin injections were initiated. Within a month of treatment, his anemia improved and strength in the lower extremities increased to 4/5; but his urinary incontinence persisted. Over the following nine months, the patient reached full hematological recovery; however, he remained weakened and Foley-dependent.

IMPACT/DISCUSSION: This case illustrates that diagnosing vitamin B12 deficiency still poses a formidable diagnostic challenge in atypical patient populations. If vitamin B12 intake ceases, deficiency typically does not develop for at least several years. However, deficiency will develop faster in patients with pernicious anemia which promotes the depletion of vitamin B12 stores via decreased absorption and impaired enterohepatic circulation.

Vitamin B12 deficiency promotes a hypercoagulable state, likely due to increased homocysteine which can lead to DVT and, potentially, pulmonary emboli. Neuropsychiatric symptoms often dominate over other symptoms, and appropriate treatment does not guarantee complete neurological recovery. Treatment extent, dosing regimens and monitoring need further investigation.

CONCLUSION: Vitamin B12 deficiency is still exceedingly common and likely under-diagnosed. The spectrum of manifestations varying from pancytopenia to neuropsychiatric symptoms is well-defined, but the natural course of the deficiency is poorly understood in part due to its highly variable presentation. A high index of suspicion and prompt treatment are necessary to avoid irreversible sequelae.

UNPACKING ANEMIA: DIAGNOSTIC APPROACHES IN A YOUNG ADULT WITH A COMPLEX MEDICAL HISTORY

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LEARNING OBJECTIVE #1: Describe the laboratory characteristics of anemia of chronic disease.

LEARNING OBJECTIVE #2: Recognize the presence of multiple acute complications in a young adult with complex medical conditions.

CASE: AF is a 19-year-old cisgender female with developmental delay who was found to have anemia on routine labs. She has a history of hypertension, cerebrovascular accident with residual left-sided weakness, dilated cardiomyopathy s/p cardiac transplant complicated by post-transplant lymphoproliferative disease of the antrum, drug-induced diabetes mellitus and end-stage renal disease on peritoneal dialysis. A routine CBC revealed a hemoglobin (hgb) of 4.2G/DL, reduced from 10.6G/DL 3 months prior, an MCV of 86.3 (79-98FL) and an elevated ferritin of 2152 NG/ML. On questioning, the patient's mother reported one episode of coffee ground emesis and one recent dark stool. She denied dizziness or shortness of breath. Her exam was notable for a heart rate of 104bpm, blood pressure 115/59, pale conjunctiva and abdominal tenderness to palpation. She was referred to the emergency department (ED) for presumed upper GI bleed. In the ED she was found to have a fever of 38.9 C with worsening abdominal tenderness. She was transfused with two units of packed red blood cells. Upper endoscopy revealed extensive Candida esophagitis without acute bleed. Infectious workup revealed peritoneal

white blood cell count of 55/uL with peritoneal and urine cultures positive for E. Coli. She was treated with ceftriaxone for catheter-associated peritonitis and cystitis, and fluconazole for esophageal candidiasis. Her post-transfusion hemoglobin remained stable, and she was discharged home to continue peritoneal dialysis and renal transplant evaluation.

IMPACT/DISCUSSION: AF's initial presentation of anemia in the setting of coffee ground emesis suggested upper gastrointestinal bleed. However, the ultimate cause of her anemia is likely multifactorial. Her normal MCV, elevated ferritin and relative lack of symptoms point to anemia of chronic disease as the primary etiology. Her endoscopy results of esophageal candidiasis without signs of bleeding support this conclusion, although less acute esophageal blood loss or small bowel blood loss could not be ruled out. Her additional symptoms of abdominal pain and fever in the setting of peritoneal dialysis prompted evaluation and diagnosis of catheter-associated peritonitis and cystitis. Multiple infections may contribute to worsening of anemia of chronic disease.

CONCLUSION: This case emphasizes the importance of considering a broad differential diagnosis, especially in patients with chronic complex conditions. The clinical reasoning approach for complex patients should take into account single unifying diagnoses, as well as multiple diagnoses to explain disparate symptoms and laboratory findings.

UNSAFE DRIVING, UNSAFE NOT DRIVING: PUBLIC SAFETY VS. PATIENT ACCESS TO AND ENGAGEMENT IN CARE

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LEARNING OBJECTIVE #1: Assess ethical obligations for physicians to report unsafe drivers in a state where physicians are not legally obligated to report impaired drivers to the Department of Motor Vehicles (DMV)

LEARNING OBJECTIVE #2: Recognize the importance of patient mobility in preventing social isolation and preserving engagement in care

CASE: Patient is an 84 year-old male with a history of COPD, CAD, CHF, HTN, and cerebral palsy with instability of gait. His wife is 81, with a history of mitral stenosis, and arthritis. They are each other's sole caretakers and support.

Since 2016, he noted a decline in visual acuity, with his most recent ophthalmology assessment notable for visually significant cataracts affecting activities of daily living in both eyes and a recommendation for bilateral surgical replacement of the lens. He was reluctant about surgery, cancelling appointments with late notice on several occasions. Meanwhile, his health and social situation deteriorated, including hospitalizations related to family violence and elder abuse, incarceration of his son, and food insecurity due a broken refrigerator. A home visit was performed by his PCP and medical student for safety evaluation. He fell during the visit, and multiple fall hazards were noted including a single exit from the home down steep and poorly maintained stairs. Shortly after this visit, he fell again and suffered a rib fracture.

The patient and his wife declined home health and home safety evaluations; their only engagement with medical care is through their PCP 3 miles from their home. Their only form of transportation is his vehicle, as their mobile home park is in an industrial area without access to bus routes. He continues driving, insisting this is safe because he only takes side roads. He still refuses cataract surgery despite concern about driving safety expressed multiple times by PCP and his wife. The ongoing and cumulative risk to personal and public safety led to an anonymous report to the DMV by PCP.

IMPACT/DISCUSSION: This case presented an ethical dilemma, balancing personal and public safety against a frail couple's connection to medical care and key resources. Driving safety is difficult to assess when patients refuse voluntary driving tests. While this patient's visual acuity meets Colorado minimums for licensure, his ophthalmologist deems his impairment significant. Reporting may improve public safety, or even prevent a fatal accident, but it may also break both the patient and his wife's connection to medical care and social resources. Without transportation, this couple would have no means to access care vital to their survival. Furthermore, reporting may threaten the therapeutic relationship with a vulnerable patient.

CONCLUSION: Physicians have an ethical responsibility to their community to report dangerous drivers. This responsibility must be balanced against our obligation to preserve the mobility and independence of our patients, important social determinants of health.

UNUSUAL CASE OF BACTERIAL ENDOCARDITIS IN A HEALTHY PATIENT WITHOUT INTRAVENOUS DRUG USE

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LEARNING OBJECTIVE #1: Recognize the clinical features and possible complications of infective endocarditis (IE), and importance of early accurate diagnosis.

LEARNING OBJECTIVE #2: Recognize the importance of transesophageal ECHO (TEE) in diagnosis, follow-up, and prognostication of patients with IE.

CASE: A 62-year-old female with no major past medical history presented with 5 days of fever, chills, and lumbago. On arrival, patient was tachycardic, tachypneic, and febrile (103.2F) with hypotension. She denied intravenous drug use (IVDU). Labs showed pancytopenia, lactate of 3.9mmol/L, and normal coagulation. Urine drug screen was negative. MR Lumbar Spine, obtained for lumbago, demonstrated early septic arthritic changes in posterior left facets of L3/L4. Patient was admitted to ICU for septic shock secondary to septic arthritis where she was treated with broad-spectrum antibiotics and fluid resuscitation. Blood cultures grew Cefazolin-sensitive Beta-Hemolytic Streptococcus B. While TEE was indicated, patient refused. A transthoracic ECHO (TTE) did not reveal valvular vegetation. She was discharged with 6 weeks antibiotics. While repeat blood cultures remained negative, patient was readmitted the following week with similar presentation. CT Chest revealed right upper, middle, and lower lobe pulmonary emboli with right heart strain. A 1.7x1.2cm vegetation on mid-basal posterior leaflet of tricuspid valve was identified on TEE. Antibiotics were optimized to ampicillin and gentamicin. Following 6 weeks of IV antimicrobial therapy, patient improved clinically but repeat TEE demonstrated unchanged vegetation size.

IMPACT/DISCUSSION: Here, our patient demonstrated a rare case of RSIE in a previously healthy, non- IVDU patient (with delayed IE diagnosis), who returned with further complications.

IE seldom presents as right-sided infective endocarditis (RSIE, 5-10%), which is associated with IVDU or indwelling-catheters/leads (none in our patient). Moreover, our patient's cultures grew Streptococcus, which is a rare cause of RSIE (50-80% are Staphylococcus aureus).

IE's high mortality (30% in 1 year) and morbidity rates warrant close monitoring. One review concluded ~57% of IE patients had at least 1 complication (including neurologic, renal, systemic infections, or cardiopulmonary as in our patient). Current recommendations prefer TEE (sensitivity 93-100%) over TTE (<80%) for IE imaging. Although timing may vary, literature suggests performing TEE after 7 days and on completion of the antibiotic course. Additionally, close monitoring of vegetation size is vital, as an increase in vegetation size or failure to regress (as seen in our

patient), despite antibiotic therapy, is a strong predictor of mortality and embolic events.

CONCLUSION: Early recognition of clinical features and accurate diagnosis of IE is vital in decreasing risk of complications and improving overall outcome.

Failure to regress or increase in size of vegetations on TEE despite antibiotic therapy is a strong predictor of mortality and embolic events.

UNUSUAL PRESENTATION OF AORTIC DISSECTION WITH SEIZURES AND BRADYCARDIA

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LEARNING OBJECTIVE #1: Emphasize on a high index of suspicion for aortic dissection with atypical symptoms.

LEARNING OBJECTIVE #2: Use of POCUS in diagnosing dissections.

CASE: A 30-year-old male with history of Hypertension and Polycystic kidney disease was brought to ER in an awake and diaphoretic state after being found unresponsive. On arrival, patient was significantly bradycardic which improved with Atropine but continued having left-sided dull chest pain. He was alert and oriented but mildly confused with no other focal systemic involvement. Initial cardiac enzymes were normal. Other workups including EKG, CXR and non-contrast CT Brain were unrevealing. Within 2 hours, the patient developed generalized tonic-clonic seizures followed by severe, postictal altered mental status requiring intubation. 6 hours later, troponins elevated to 696 ng/L with no new EKG changes. Left-arm BP readings remained around 90/60 mmHg. In 16 hours, the patient became increasingly tachycardic with HR 110-120bpm and soon developed neurological signs, specifically, loss of gag reflex and withdrawal to painful stimuli with EEG evident of anoxic brain injury. Incidentally, the patient was noted to have a weak right radial pulse with SBP 40mmHg unlike the left arm with SBP of 90mmHg. Point of care ultrasound (POCUS) of carotids identified a suspected intimal flap, concerning for carotid dissection. Stat CTA was done which showed extensive aortic dissection with extension to proximal carotids and distal thoracic aorta into the upper abdomen. Due to decline in patient's clinical status, EEG findings and highly grim prognosis, the surgical option was not pursued, and the family elected for transition to comfort-focused care only.

IMPACT/DISCUSSION: Aortic Dissection (AD) often presents as hypertensive emergency with chest pain, shortness of breath and occasionally neurological symptoms, specifically stroke. PKD has been associated with vascular malformations however presentations with aneurysm or dissection of the aorta are rarely reported. Though the presenting history and worsening neurological decline masked the underlying etiology, the patient's elevated troponins, unequal peripheral pulses, and POCUS findings lead to the discovery of underlying dissection. Simple bedside maneuvers like assessing bilateral pulses and inter-arm BP differences are frequently missed when presenting with such atypical symptoms. Widened Mediastinum in CXR is a helpful finding but lacks adequate sensitivity unlike CTA, always being the definitive test with high sensitivity and specificity. POCUS certainly helps to detect AD however this is limited to patients with dissections involving the aortic root or in those where dissection has spread to the carotid arteries.

CONCLUSION: Aortic dissection can rarely present with hypotension but still with significant interarm pressure difference. In cases with mixed features or wide differential diagnosis, performing a thorough examination is vital and also, POCUS can certainly have a role in triaging such patients at the bedside.

UNUSUAL PRESENTATION OF DERMATOMYOSITIS: TREAT THE PATIENT, NOT THE NUMBERS!

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LEARNING OBJECTIVE #1: Dermatomyositis (DM) is an idiopathic inflammatory myopathy, characterized by muscle inflammation leading to proximal skeletal muscle weakness. Typical presentation of DM includes characterstic skin eruptions along with muscle weakness with steroids being the cornerstone of treatment. We report a patient with atypical DM presentation with refractory response to steroids.

CASE: A 43-year-old woman presented to the hospital with subjective fevers and proximal muscle weakness which developed over one week. Her symptoms began with sore throat, rhinorrhea and generalized body rash, for which she was treated with azithromycin and a prednisone taper by her primary provider. On admission, she reported severe muscle pain (9/10) and significant weakness in the proximal hip/thighs for which she required assistance to get out of bed. She denied recent travel, sick contacts or tick bites. On presentation, she was afebrile and hemodynamically stable. Physical examination revealed mildly ill appearing woman with periorbital edema and diffuse dark pigmented rash on body; muscle power was 3/5 in upper and 2/5 in lower proximal muscles of extremities bilaterally. Laboratory findings were pertinent for WBC 16, creatine kinase (CK) 28,000, LDH 3581, positive ANA, ESR 38, AST 995 and ALT 330. Serologies were negative for antibodies to SSA, SSB, ds-DNA and smooth muscle. Myositis panel was positive for Mi-2. Infectious myositis panel was negative for viral infections. The patient received intravenous prednisolone 60 mg daily, however, muscle weakness worsened and CK increased to 140,132 with AST/ALT elevation to 4023/1101 respectively. Skin and muscle biopsy revealed hyperkeratosis, parakeratosis, and dermal perivascular chronic inflammation and severe active necrotizing myopathy with extensive fiber necrosis and regeneration confirming a diagnosis of DM. After 3 weeks of steroid treatment, CK started trending down without any improvement in muscle strength. This led to treatment with intravenous immunoglobulin for 5 days but no further clinical improvement. After additional treatment with high dose steroids, there was gradual improvement in muscle strength after 8 weeks. Later, low dose methotrexate was started while steroids were tapered.

IMPACT/DISCUSSION: DM commonly presents with a relatively slow onset of muscle weakness with cutaneous manifestations in the hands, face and chest. This case was unusual with cutaneous findings of diffuse, generalized rash and onset of severe muscle pain and weakness, over the course of a week and resulted in significant, necrotizing myopathy refractory to treatment. Even though there was improvement in CK levels, however, clinical response was delayed. Therapy in patients with DM should be tailored based on clinical improvement rather than CK levels.

CONCLUSION: It is crucial for clinicians to be aware of the variability in presentation and response to therapy in DM as illustrated by this case in order to optimize management for patients presenting for this condition.

URINE TROUBLE: A CASE OF ELEVATED CREATININE AND ABDOMINAL PAIN

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LEARNING OBJECTIVE #1: include intraperitoneal bladder rupture in the differential diagnosis of elevated creatinine in the setting of abdominal trauma

LEARNING OBJECTIVE #2: recognize that an ascites:serum creatinine ratio >1 should raise concern for uroperitoneum which is a surgical emergency

CASE: A 59-year-old man with hypertension and depression presented to the medicine floors from a psychiatric unit for evaluation of acute kidney injury, new ascites, and abdominal pain. He initially presented for suicidal ideation and a major depressive episode. Several days into admission, the patient assaulted a nurse and noted that security pushed him in the abdomen while restraining him. He then developed generalized lower abdominal pain, anuria, and increase in serum creatinine over the next 48 hours. Physical exam was significant for normal vital signs, a soft, mildly distended abdomen with dullness to percussion and tenderness to palpitation in the lower quadrants. There was no bruising, and the rest of the physical exam, including external genitalia, was unremarkable. CT abdomen and pelvis showed ascites with otherwise normal bowel, liver, kidneys, and bladder. Diagnostic paracentesis was significant for normal LDH, albumin, and total protein. The ascites creatinine was elevated at 13.7mg/dL (normally equal to serum level). Serum studies showed a rise in creatinine from a baseline of 0.9 to 5.3mg/dL after 48 hours. A foley catheter was placed which returned 3500mL of sanguineous urine. A CT cystogram with intravesical contrast revealed a defect at the dome of the bladder with foley tip and contrast medium in the peritoneum. Urology performed emergent exploratory laparotomy with repair of intraperitoneal bladder rupture. The patient had an uncomplicated postoperative course remarkable for prompt return of serum creatinine to baseline levels and was discharged back to psychiatric care once medically stable.

IMPACT/DISCUSSION: Bladder rupture is uncommon, but often presents in the setting of high-energy blunt trauma. When distended, the bladder dome may expand into the abdomen, where it is at greater risk to injury at the peritoneal surface following lower abdominal trauma. Signs and symptoms of intraperitoneal bladder rupture include history of trauma with abdominal pain with or without peritoneal signs, difficulty voiding, new ascites, and elevated serum creatinine. An ascites to serum creatinine ratio greater than 1.0 is highly suggestive of uroperitoneum, and should prompt further work-up for intraperitoneal bladder rupture. Definitive diagnosis is established with exploratory laparotomy or vesicular cystography in conjunction with urgent urology consultation. Intraperitoneal bladder rupture requires surgical repair.

CONCLUSION: -Bladder rupture is a rare cause of ascites that should be considered in patients with marked rise in serum creatinine abdominal pain and history of trauma.

-An ascites to serum creatinine ratio >1 is highly suggestive of uroperitoneum and should prompt rapid evaluation for bladder rupture.

USE OF KETAMINE TO RAPIDLY WEAN CHRONIC, OPIOID USE IN A PATIENT WITH SICKLE CELL DISEASE

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LEARNING OBJECTIVE #1: Ketamine is a common anesthetic agent that has been gaining attention for its use as an opioid-sparing analgesic at sub-anesthetic doses. It has been shown to be effective in managing pain refractory to opioids and to be beneficial in reversing opioid-induced hyperalgesia (OIH). Patients with sickle cell disease (SCD) are a unique population at high risk for developing chronic pain reliance on opioids.

Given the known risks of opioid use, this case illustrates the utility of ketamine for rapidly weaning patients off chronic opioids.

CASE: An 18-year-old female with SCD type SS on chronic opioids presented with a complaint of pain and escalating opioid requirements 24 hours after discharge from an outside hospital. Her SCD had been complicated by history of acute chest syndrome, internal carotid artery occlusion requiring chronic transfusion therapy, frequent vaso-occlusive (VOC) crises resulting in chronic pain; and depression. Over the past 9 months, she presented over 20 times to various hospitals for pain, and was admitted 8 times for inpatient pain management. During these admissions, she was treated with IV opioids including hydromorphone and IV fentanyl. On admission, our patient reported that her current pain was not representative of her VOC pain. Imaging was not consistent with avascular necrosis as a source of her pain either. Due to her persistent opioid use and uncontrolled pain with low suspicion for VOC, there was concern for OIH and opioid withdrawal if opioid therapy was not weaned under close surveillance. The decision was made to offer a ketamine-assisted, rapid opioid wean in the pediatric intensive care unit. Based on the patient's baseline low but persistent daily 30 morphine milligram equivalent use, ketamine was initiated at 0.1mg/kg/hr and titrated based on pain scores to a maximum of 0.35mg/kg/hr. Withdrawal assessment tool (WAT-1) scores remained at zero throughout the weaning process. Subsequently, the patient was monitored for 48 hours and then discharged to the general medical floors for continued care.

IMPACT/DISCUSSION: Ketamine provides a safe and effective method to rapidly wean patients off high dose opioids, especially in the setting of OIH. In some cases, ketamine may even help control pain that is refractory to opioids. Concomitant use of ketamine with opioids has been shown to blunt the development of OIH and reduces opioid consumption. The full potential of sub-anesthetic ketamine in chronic pain management has yet to be seen but shows promising benefit; particularly among patients with SCD.

CONCLUSION: This case is amongst the earliest to describe the use of ketamine to wean a pediatric patient with SCD off high-dose opioids and supports the use of ketamine in managing SCD pain.

VALVULAR HEART DISEASE ANTI-COAGULATED WITH DIRECT ORAL ANTICOAGULANTS

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LEARNING OBJECTIVE #1: Manage Valvular heart disease with DOACs. Direct acting oral anticoagulants (DOACs) are recommended for treatment of Non-valvular atrial fibrillation (AF). Historically, Warfarin has been used to prevent thromboembolism in valvular heart disease and mechanical valve replacements. Here, we present an unusual case of a patient with mitral valve disease who was started on a DOAC after risk benefit discussions.

CASE: A 44-year-old African American female presented with worsening right sided flank pain over the past several days. Physical examination showed tenderness in right flank. CT abdomen showed wedge shaped region in mid pole of right kidney consistent with infarct. ECHO showed left ventricular systolic ejection fraction of 20-25%. Mitral valve leaflets mobility is moderately restricted rheumatic appearing with mild stenosis. Stress ECHO showed no evidence of exercise-induced ischemia. MRI cardiac showed global decreased left ventricular contractility without focal wall motion abnormalities or areas of abnormal delayed enhancement to suggest ischemia. Thickened valve leaflet compatible with findings of rheumatic heart disease.

IMPACT/DISCUSSION: Patients with valvular heart disease with thromboembolic phenomenon are traditionally treated with Warfarin.

However, our patient was very non-complaint and refused regular PT/INR checks. After discussing with her, the decision was made to start her on Rivaroxaban. After discharge, patient never followed up.

CONCLUSION: Anticoagulation with Warfarin is recommended in patients with moderate to severe rheumatic mitral stenosis (MS) and one or more of following: AF, prior embolic event, left atrial thrombus. Clinicians also suggest anticoagulation with Vit K antagonist for patients with mild MS with above conditions The role of DOACs in patients valvular heart disease is less clear. Recent observational study showed DOAC reduce the risk of stroke, embolism, all-cause mortality compared to warfarin. Despite prior randomized trial data showing increased thromboembolic events with DOAC therapy in the mechanical valve replacement population Sub analysis of data from various trials suggest that DOAC's might be safe and effective in patients with valvular heart disease.

VALVULAR HEART DISEASE IN AN HLA-B27-POSITIVE ADULT

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LEARNING OBJECTIVE #1: Enumerate the cardiac manifestations of HLA-B27 positive seronegative spondyloarthropathies

LEARNING OBJECTIVE #2: Describe the diagnostic approach to HLA-B27 positive patient with new cardiac symptoms

CASE: GW is a 56-year-old cis-gender female with a past medical history of HLA-B27 seronegative spondyloarthropathy, bilateral uveitis, Hashimoto's thyroiditis who presented with fatigue and palpitations for one week. She also reported recent upper respiratory infection symptoms. Physical exam was significant for a blood pressure of 112/72mmHg, an irregularly irregular cardiac rhythm and III/VI holosystolic murmur best heard at the apex, with radiation to the axilla and back; no diastolic murmur was appreciated. No jugular venous distension or lower extremity edema. An electrocardiogram (EKG) was significant for atrial fibrillation with rate of 80-110. The patient was referred to cardiology clinic for urgent evaluation to rule out aortitis. Transthoracic echocardiogram (TTE) demonstrated moderate mitral regurgitation (MR) and mitral valve prolapse. No aortic or aortic valve pathology was noted. The patient was prescribed metoprolol 25mg daily for rate control and antiplatelet therapy, but declined anticoagulation. She is in the process of work up for possible surgical replacement of the mitral valve.

IMPACT/DISCUSSION: This patient, with significant autoimmune history, presented with new harsh murmur and atrial fibrillation, and was subsequently found to have MR on TTE. HLA-B27 positivity, while typically associated with seronegative spondyloarthropathies including ankylosing spondylitis, psoriasis, and reactive arthritis, has also been associated with certain cardiac pathologies, the most common being aortic insufficiency (AI) and the most dangerous being aortitis, with or without AI. The presentation of aortitis with AI can be acute and severe in patients positive for HLA-B27, frequently requiring emergent aortic valve replacement (AVR). Aortitis was the cause of isolated AI in 4% of patients that underwent AVR, demonstrating the need for immediate cardiac workup in patients with known HLA-B27 positivity who present with new cardiac murmurs. For this reason, our patient was urgently referred to cardiology for TTE. This patient's TTE demonstrated mitral regurgitation (MR) and no significant aortic valve abnormalities. Though MR is less frequently observed than AI in HLA-B27 positive patients, MR is still more prevalent in these patients than in the general population. MR in HLA-B27 positive patients occurs secondary to either mitral valve prolapse, as in our patient, or thickening and fibrosis of the subaortic tissues with extension to the base of the anterior mitral valve leaflet.

CONCLUSION: Providers should have a high index of suspicion for cardiac abnormalities in patients that are HLA-B27 positive. Primary care doctors should perform thorough cardiac auscultation in this population and have a low threshold to explore potential anomalies with EKG and cardiology referral.

VANISHING BILE DUCT SYNDROME: A PARANEOPLASTIC PHENOMENON SECONDARY TO OCCULT HODGKIN LYMPHOMA

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LEARNING OBJECTIVE #1: Develop an approach for the workup of cholestatic pattern of liver injury.

LEARNING OBJECTIVE #2: Recognize vanishing bile duct syndrome as a pathologic diagnosis in which the underlying etiology must be investigated.

CASE: A 27-year-old female with no medical history presented with one month of progressively worsening jaundice and a 30-pound weight loss. She was found to have conjugated hyperbilirubinemia with an acute cholestatic hepatitis. Ultrasound of the liver was unremarkable and magnetic resonance cholangiopancreatography revealed normal appearing intrahepatic and extrahepatic bile ducts without mechanical obstruction. An extensive workup for autoimmune and infectious etiologies of hepatitis was unremarkable. A liver biopsy was significant for features of cholestasis and ductopenia suggestive of vanishing bile duct syndrome (VBDS). A computed tomography scan of the chest revealed a large complex anterior mediastinal mass with extensive lymphadenopathy. A core needle biopsy of the right supraclavicular lymph node was obtained and pathology consistent with Hodgkin lymphoma. She was initiated on induction therapy with improvement in her liver enzymes.

IMPACT/DISCUSSION: A cholestatic pattern of liver injury describes an elevation in alkaline phosphatase that is greater in magnitude compared to hepatic aminotransferases. Patients presenting with this pattern should initially undergo ultrasonography to evaluate for mechanical biliary obstruction. Those without ductal dilation are said to have intrahepatic cholestasis, which should prompt a workup for autoimmune liver disease. Patients with unrevealing workup and persistent alkaline phosphatase elevation greater than two times the upper limit of normal should be considered for liver biopsy.

VBDS refers to a group of disorders with variable etiologies that cause a progressive destruction of intrahepatic bile ducts with resulting cholestatic liver injury. The diagnosis is made pathologically and requires a paucity of interlobular bile ducts, defined as less than 50% of portal areas with a bile duct on biopsy. Etiologies include infections, ischemia, autoimmune conditions, drug reactions, and malignancy, in which case VBDS may manifest as a paraneoplastic syndrome. Patients present with jaundice, pruritis, and cholestatic pattern of liver injury with hyperbilirubinemia. Treatment depends on the underlying cause and includes withdrawal of offending medications, immunosuppression, ursodeoxycholic acid, and liver transplantation in those with irreversible hepatic failure. Treatment for paraneoplastic VBDS consists of treating the underlying malignancy, which may be difficult in the setting of compromised hepatic function. Prognosis is variable as some progress to cirrhosis and others have regeneration of biliary epithelium with recovery of hepatic function.

CONCLUSION: Patients with intrahepatic cholestasis and unrevealing initial workup should be considered for liver biopsy.

Vanishing bile duct syndrome is a pathologic diagnosis with several potential etiologies.

VAPI: DON'T HOLD YOUR BREATH FOR A STRAIGHTFORWARD DIAGNOSIS

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LEARNING OBJECTIVE #1: Distinguish VAPI from other causes of acute respiratory failure

LEARNING OBJECTIVE #2: Recognize the importance of thorough social history especially in younger patients

CASE: A 24 year old male with no chronic medical problems presented for dyspnea and cough for one week with associated high fevers. He was seen in the ER for these symptoms 2 days prior and was diagnosed with community-acquired pneumonia and discharged home with antibiotics. His symptoms did not improve which prompted him to re-present to the ER. Regarding social history, he lives on a farm and works in glass installation. He smokes 1 PPD, uses marijuana, and drinks alcohol socially. Initial vital signs showed temperature of 103.3, tachycardia 104, O2 sat 95% on room air. Labs were significant for leukocytosis. Strep, monospot, and influenza were negative. Chest x-ray showed diffuse patchy infiltrates. He continued to be treated for CAP with empiric IV antibiotics and placed on supplemental O2. He had worsening respiratory distress even though he was on broad-spectrum antibiotics. By the time he required high flow nasal cannula he was quite frightened and admitted that he had been vaping multiple times daily for the past month. Vape-Associated Pulmonary Injury was now high on the differential. Pulmonology was consulted and they felt that VAPI was still less likely than CAP. They did not recommend initiating steroids. The primary team decided that CAP should have responded to antibiotics by now and started steroids despite specialist recommendations. The following day the patient was able to maintain O2 sats in the mid-90s on nasal cannula. He underwent bronchoscopy and analysis with Oil Red O stain showed lipid laden macrophages, consistent with other case reports of VAPI. The patient continued to clinically improved and after the fourth day of steroids he was on room air.

IMPACT/DISCUSSION: Diagnosis of VAPI is highly dependent on obtaining a thorough social history. Patients may be reluctant to offer this information, but after establishing rapport this part of the history can be revisited. This patient had multiple potential environmental exposures that could have contributed to his condition, including his work and home environment.

There are no current guidelines for treatment of VAPI, some case reports have used doses of 1-1.5mg/kg of prednisone daily. In this case, diagnosis was uncertain and there was a potential risk that we would administer steroids to a patient with an active infection. Primary team chose to treat with 40mg per day of prednisone, a compromise between 80mg (based on weight and case reports) and no treatment at all.

CONCLUSION: If treatment has been given sufficient time to work but has been unsuccessful, then differential diagnosis should be re-formulated.

Patients may present with a diagnosis where guidelines for treatment do not exist or may be inconsistent. Consultants are frequently asked for their expert opinion but ultimately the primary physician must make the final decision for appropriate management.

VAPING AND SMOKING ASSOCIATED ACUTE EOSINOPHILIC PNEUMONIA

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LEARNING OBJECTIVE #1: Recognize clinical characteristics of acute eosinophilic pneumonia (AEP) and its association with tobacco smoking.

LEARNING OBJECTIVE #2: Explore clinical and histologic features of vaping-associated lung injury.

CASE: A 57-year-old man presented to the hospital with 2 days of dyspnea, fever, and cough. He had recently relapsed to smoking cigarettes and began "vaping" nicotine-containing electronic cigarettes two weeks prior to presentation. The patient was ill-appearing, dyspneic, with SpO2 94% on room air. Lung sounds were diminished, with egophony and whispered pectoriloquy in the right lung field. Labs included WBC 22.7 K/uL with 90% neutrophils, and chest x-ray showed a diffuse interstitial pattern with right lower lobe opacities. Ceftriaxone and azithromycin were initiated for empiric community-acquired pneumonia treatment. Influenza, respiratory virus PCR panels, blood cultures, and HIV testing were all negative. By hospital day 3, the patient had progressive dyspnea and worsening hypoxemia that required supplemental oxygen. Lab work was notable for eosinophilia to 1.6K/uL; non-contrast CT chest revealed patchy ground glass opacities and interlobular septal thickening. He underwent bronchoscopy and bronchoalveolar lavage (BAL), which showed acute inflammation and reactive atypia. Transbronchial biopsy revealed chronic inflammation and increased eosinophil count, however lipid-laden macrophages were not seen on BAL or biopsy. Acute eosinophilic pneumonia (AEP) was suspected, and the patient was treated with prednisone 40mg orally daily with improvement in his symptoms. He was discharged with a corticosteroid taper and was asymptomatic at one-month follow-up. Repeat CT chest showed near complete resolution of previous airspace disease.

IMPACT/DISCUSSION: The clinical and pathologic spectrum of vaping-related illness remains incompletely explored. Studies have demonstrated that vaping results in cytokine-mediated inflammation. Recent reports have described pulmonary diseases associated with vaping, particularly acute lipoid pneumonia and diffuse alveolar hemorrhage. AEP, a febrile respiratory illness with hypoxemia, bilateral pulmonary infiltrates, and eosinophilia on BAL or lung biopsy, can be caused by recent onset of tobacco smoking or change in smoking habits. To our knowledge, AEP associated with vaping has been described in two case reports. Our patient's case adds to the evidence suggesting an inflammatory pathophysiology of vaping-associated pulmonary disease.

CONCLUSION: It is important for clinicians to be aware of the spectrum of tobacco-associated lung injury syndromes. Clinical suspicion must remain high for vaping- or smoking-associated lung injury in patients with a history of use of these products who present with acute respiratory illness without clear infectious etiology. Further research is warranted to characterize the disparate clinical and pathologic presentations of vaping-associated pulmonary disease.

VAPING-ASSOCIATED LUNG INJURY IN A PATIENT WITH FEVER AND DECREASED EXERCISE CAPACITY

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LEARNING OBJECTIVE #1: To recognize that E-Cigarette or Vaping Associated Lung Injury (EVALI) may have a variety of different presentations, including fever.

LEARNING OBJECTIVE #2: To emphasize that this is a growing area of study, with new literature developing knowledge about clinical presentation and etiology and evolving recommendations for prevention, diagnosis and management.

CASE: A 41 year old man presented with high-grade fever, chills and night sweats for 10 days. He had been diagnosed with a UTI and community acquired pneumonia (CAP) and received a course of

Levofloxacin, but fevers persisted so his PCP added Doxycycline. His fever broke at our ED, but night sweats continued. He also admitted some dyspnea on exertion (DOE). He used to smoke marijuana but started vaping 10 months back. He got it from a store, the cartridges containing tetrahydrocannabinol (THC). However, the last cartridge was from a friend with unknown contents. He had quit 2 weeks back ever since new evidence of vaping complications emerged. His exam revealed clear lungs. He had an elevated ESR, CRP and LDH with a normal procalcitonin and WBC count. CXR showed bilateral infiltrates (recently only seen on the left side). A CT chest showed diffuse ground-glass opacities (GGOs) and centrilobular micronodular disease. All infectious work-up came back negative (HIV, Histoplasma, Cryptococcus, Babesia, Lyme, Coxiella, AFB and a viral respiratory panel). He received empiric coverage for CAP. He underwent a bronchoscopy that showed a predominance of macrophages (55%). The case was reported to the US DOH who endorsed not starting steroids since supplemental oxygen was not required.

IMPACT/DISCUSSION: The CDC has reported 2290 cases of EVALI from 49 states with 47 deaths from 25 states as of November 20, 2019. THC and Vitamin E acetate have been implicated and recommended to be avoided. Clinical presentation is quite variable with respiratory, and constitutional symptoms and imaging with pulmonary infiltrates on CXR and opacities on CT. Histopathological findings reported patterns of acute lung injury, including acute fibrinous pneumonitis, diffuse alveolar damage, or organizing pneumonia, usually bronchiolocentric and accompanied by bronchiolitis (6). Generally, foamy macrophages and pneumocyte vacuolization were found on BAL/biopsy. For medical therapy, initiation of corticosteroids is recommended if severe, except when fungal/viral infection is suspected. This is a diagnosis of exclusion so other etiologies must be investigated along with early treatment for CAP. A CXR should be obtained on all patients with a history of e-cigarette or vape use who have respiratory or gastrointestinal symptoms, particularly when accompanied by decreased O2 saturation (<95%).

CONCLUSION: EVALI must be on the differential in patients presenting with fevers with a vaping history, particularly with the use of a THC vape. In milder cases, steroids are not indicated. Recommendations are being updated frequently as we better try to explain and manage this disease.

VENOUS THROMBOEMBOLISM IN EVANS SYNDROME

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LEARNING OBJECTIVE #1: Recognizing Evans Syndrome as many patients are not treated appropriately and/or not offered appropriate prophylaxis for their level of thrombotic risk

CASE: A 74-year-old female with a past medical history of hypertension who presented with gingival bleeding. On physical exam, there was dried gingival blood present with diffuse petechiae and ecchymosis over upper and lower extremities. Her labs were remarkable for platelet count of 5 from a baseline of 150K, Hgb 8. 2 with normal MCV, and WBC of 5.6. APTT and PT were slightly elevated and D-Dimer was at 2287 with normal fibrinogen. Her basic metabolic panel was unremarkable. Her hemolysis panel was positive with low haptoglobin, and elevated LDH and indirect bilirubin. Her peripheral smear showed no schistocytes. The direct antiglobulin test was positive with IgG and anti-complement antibodies indicating an immune hemolysis (AIHA). Evans Syndrome (ES) suspected given comorbid autoimmune hemolysis. DIC was excluded given normal fibrinogen and mildly abnormal coagulation profile and TTP was also excluded given normal creatinine and no schistocytes. The 4Ts Score was low <3 points and the SRA was normal. Other pertinent labs included normal B12/folate, copper/zinc levels and TSH. Part of the rheumatological work up showed negative ANA, RF, anti-double stranded DNA and anti-CCP antibody testing. Infectious work up was negative for CMV, VZV, HIV, Hepatitis B and C. Pt had also normal spleen on images. Doppler of the upper and lower extremities showed evidence of acute deep venous thrombosis in the common femoral and popliteal veins of the right leg. Computed tomographic pulmonary angiography showed pulmonary emboli within the right lobar pulmonary artery. Hematology consulted who suggested starting prednisone and IVIG. Patient's platelets improved to 150K. Pt was started on heparin drip when her platelet improved above 30K. Hypercoagulable work up revealed normal anticardiolipin and B2glycoprotein but mildly elevated lupus anticoagulant.

IMPACT/DISCUSSION: ES refers to the combination of Coombs-positive warm AIHA and immune thrombocytopenia, although, less commonly, some patients will also have autoimmune neutropenia. Although many cases are idiopathic in origin, ES has been associated with a number of other conditions in approximately one-half of the cases, including infections (eg, HCV, HIV), systemic lupus erythematosus, lymphoproliferative disorders, common variable immunodeficiency, and autoimmune lymphoproliferative syndrome.

CONCLUSION: This case illustrates that ES is a rare autoimmune disorder where immune system destroys body's RBC, WBC and platelets. It is a diagnosis of exclusion and any trigger that induces immune system for example infection, inflammatory disorder or lymphoproliferative disorder can be a potential cause. It is usually chronic with periods of worsening symptoms and remissions. VTE is reported up to 8% in patients with IPT and 15-33% with AIHA but the risk of thrombosis is limited for Evans syndrome.

VENTRICULAR FIBRILLATION ARREST: A RARE COMPLICATION OF NIVOLUMAB & IPILIMUMAB

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LEARNING OBJECTIVE #1: Recognize a rare and potentially fatal complication from checkpoint inhibitor immunomodulatory therapy

CASE: A 64 year old male with history of colon cancer and active metastatic malignant melanoma presented to the hospital after being noted to have hypotension at outpatient oncology follow-up visit. Shortly after arrival to the ED, patient went into cardiac arrest secondary to ventricular fibrillation. He had no primary cardiac history prior to this admission. Melanoma treatment included therapy with ipilimumab and nivolumab for four cycles, after which he was treated with nivolumab alone. Ventricular fibrillation arrest took place approximately 3 weeks after last dose of nivolumab. Echocardiogram revealed mildly reduced left ventricular systolic function (ejection fraction approximately 40-44%, global mild hypokinesis), and intermittent interventricular septal flattening with borderline right ventricular enlargement. Non-sustained polymorphic ventricular tachycardia with torsades was also noted. Pharmacologic stress test was negative for evidence of ischemia, with normal myocardial perfusion. Cardiac MRI was not pursued. After stabilization for streptococcal bacteremia, an automated implantable cardioverter defibrillator (AICD) was placed. Subsequent complications during this hospital course included central adrenal crisis, DIC, aseptic meningitis, and acute renal failure. Given this patient's history and clinical course, it is believed his treatment with immunomodulatory therapy played significant, causal roles in the above complications.

IMPACT/DISCUSSION: Checkpoint inhibitors represent a relatively new class of immunomodulatory treatment used to treat a variety of cancers, and have substantially improved the prognosis for some patients with advanced malignancies such as melanoma, non-small cell lung

cancer, and renal cell carcinoma. A broad range of immune-related adverse effects (IRAE) attributable to checkpoint inhibitors are increasingly being seen, primarily affecting integumentary, GI including hepatic, and endocrine systems, as well as other less common examples. While myocarditis has been found in a handful of cases, exceedingly few descriptions of ventricular fibrillation arrest have been reported. Studies have noted the onset of adverse cardiac effects generally within 2 to 31 weeks following initiation with checkpoint inhibitor therapy. Very rare cases noted fatal cardiac arrhythmias two weeks following initiation with dual checkpoint inhibitor therapy with nivolumab and ipilimumab. Treatment for IRAE due to checkpoint inhibitor therapy includes cessation of the offending agent and often also systemic corticosteroids. Given the rise of immunomodulatory therapy for these common malignancies, promoting recognition of potentially fatal complications is essential to allow close monitoring as well as early treatment of such.

CONCLUSION: This report presents a case of ventricular fibrillation thought to be caused by checkpoint inhibitor therapy with nivolumab and ipilimumab.

VERTEBRAL OSTEOMYELITIS MASQUERADING AS PULMONARY EMBOLISM

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LEARNING OBJECTIVE #1: Diagnose pyogenic vertebral osteomyelitis with atypical presentation

LEARNING OBJECTIVE #2: Recognize mimics of pulmonary embolism

CASE: 58-year old male presented to the emergency room with pleuritic chest pain, shortness of breath, and back pain. His past medical history includes hypertension, dyslipidemia, deep vein thrombus, recurrent pulmonary embolism, coronary artery disease with percutaneous coronary intervention, and paroxysmal atrial fibrillation. He was afebrile and had an oxygen saturation of 91% on room air. The rest of the physical exam was significant for irregularly irregular heart rhythm, left lower quadrant, and left-sided costovertebral angle tenderness. Computed tomography pulmonary angiography was negative for pulmonary embolism. He had leukocytosis, elevated erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP), and methicillin- sensitive Staphylococcus aureus (MSSA) bacteremia. Magnetic resonance imaging (MRI) of the thoracic and lumbar spine revealed left psoas abscess and osteomyelitis of the L3/L4 vertebrae. Computed tomography (CT) guided aspiration of the psoas abscess was done. Aspirate grew MSSA as well. Transesophageal echocardiography (TEE) did not reveal any valvular vegetation. The patient is currently receiving intravenous antibiotics with good clinical improvement.

IMPACT/DISCUSSION: The incidence of pyogenic vertebral osteomyelitis is about 2.4 cases per 100,000 population. The diagnosis can be challenging given the high prevalence of back pain in the general population, the rarity of the disease, and the wide spectrum of clinical presentations. Back pain and fever are the most common presenting symptoms. Our patient had a predominance of chest symptoms, which warranted initial workup for pulmonary embolism. Risk factors include injection drug use, diabetes mellitus, malignancy, long term steroid use, malnutrition, and infection with human immunodeficiency virus (HIV).

Our patient had none of these traditional risk factors. Pathogenesis involves direct inoculation, hematogenous spread, or contiguous spread from adjacent soft tissue infection as in our patient. Staphylococcus aureus and Streptococcus species are isolated in over 50% of cases. MRI is the preferred imaging modality. Blood culture and CT guided biopsy of the involved vertebrae are vital in making a microbiological diagnosis. ESR and CRP are highly sensitive and are useful in monitoring response. Antimicrobial treatment should be directed against an identified organism, and duration of therapy typically ranges between 4 and 6 weeks.

CONCLUSION: High index of clinical suspicion is vital in making prompt diagnosis in cases of pyogenic vertebral osteomyelitis with atypical presentation.

Microbiological diagnosis from tissue biopsy is imperative, and directs the antimicrobial therapy.

VIRAL, BACTERIAL OR BOTH? AN UNUSUAL CASE OF KLEBSIELLA PHARYNGITIS IN THE PRESENTATION OF ACUTE HIV INFECTION

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LEARNING OBJECTIVE #1: Recognize potential co-existing bacterial infections in the presentation of acute HIV infection

LEARNING OBJECTIVE #2: Recognize receptive oral intercourse as a risk factor for HIV transmission

CASE: A 61 year-old male presented to clinic with five days of objective fevers, malaise, anorexia and diarrhea. Physical exam was initially unremarkable and a non-specific viral syndrome was suspected. He was instructed on supportive care and given return precautions. Eleven days later, he returned for persistent fevers and new-onset sore throat. Additional history revealed he had engaged in receptive oral intercourse with a male partner three weeks prior. He denied anal or vaginal intercourse for the past six months. Outside records revealed a negative HIV test two months prior to presentation. Exam was now notable for anterior cervical lymphadenopathy, a white macule on the soft palate and mild oropharyngeal erythema. Rapid strep testing was negative and throat culture was obtained. Acute HIV and other diagnoses were considered and a broad STI workup was sent. He was called back four days later for positive Klebsiella pneumoniae on throat culture, at which time he was started on Augmentin with rapid improvement in odynophagia. Fourth generation HIV testing resulted positive and was confirmed with PCR. At his fourth visit, he was informed of the diagnosis and counseled appropriately. He was eager to initiate therapy and was escorted by an HIV case manager to an affiliated HIV clinic for treatment and care coordination.

IMPACT/DISCUSSION: To our knowledge, this is the first report of K. pneumoniae pharyngitis in the setting of acute HIV. Though an unusual source of pharyngitis, K.pneumoniae has been associated with deep neck space infections, primarily in Asia. While an increased susceptibility to other infections in acute HIV is not well known, it is well-established that gut-associated lymphoid tissue is among the earliest targets of HIV. This may suggest an area of further research on the risk of bacterial infections in acute HIV.

Additionally, this case demonstrates HIV transmission through receptive oral intercourse, which has previously been estimated as occurring in 0-4/10,000 exposures. For comparison, receptive anal intercourse is estimated at 138/10,000.

This patient's symptoms began in late fall and were initially suspicious for a benign viral syndrome. Fortunately, he returned when symptoms persisted, allowing for additional history gathering and diagnostic evaluation. This case highlights the utility of obtaining appropriate culture data and the importance of avoiding anchoring bias or availability heuristic.

Lastly, this case reinforces a multidisciplinary approach in managing new HIV diagnoses. Rapid availability of resources and treatment initiation can empower patients in disease management.

CONCLUSION: It is important to consider concomitant bacterial infections in the acute presentation of HIV Maintain a high suspicion for HIV even in the setting of recent negative serology and lower risk behaviors

VITAMIN B12 DEFICIENCY MIMICKING ACUTE LEUKEMIA

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LEARNING OBJECTIVE #1: Understand the presentation of vitamin B12 deficiency, including in severe cases

LEARNING OBJECTIVE #2: Develop differential diagnosis for pancytopenia

CASE: A 39-year-old male with no significant past medical history presented with four months of 20-lb weight loss, fatigue, generalized weakness, dizziness and leg swelling. He initially had a self-limiting episode of cough and chills, and subsequently developed fatigue, leg swelling, and multiple atraumatic bruises. He was found to have pancytopenia requiring multiple blood transfusions. Physical exam was notable for scattered petechiae and bilateral pitting edema. There was absence of scleral icterus, glossitis, and hepatosplenomegaly.

Labs were notable for pancytopenia (WBC 1.73 with ANC 0.64, Hgb 7.4 with MCV 101, PLT 68). Reticulocyte count was 0.85%, and bilirubin and LDH were both elevated at 2.2 (predominantly direct) and 1938, respectively. Vitamin B12 was low at 162 with elevated homocysteine and normal MMA; folate was low at 1.9. Peripheral smear showed hypersegmented neutrophils, 1+ schistocytes, anisopoikilocytosis, and hairy-like projections on lymphocytes. Infectious workup with HIV, hepatitis, and EBV was negative. Given clinical suspicion for leukemia, the patient underwent a bone marrow biopsy, which showed hypercellular (90%) marrow for age with no increase in blasts, increased iron storage, macrocytic anemia, and thrombocytopenia, consistent with vitamin B12 and folate deficiency. The patient was started on cyanocobalamin 1000 mcg SC daily and folic acid 1 gm daily with improvement of pancytopenia within days. His vitamin B12 and folate deficiency were likely due to a malabsorptive process or restrictive diet while living overseas, as the patient was found to have other deficiencies, including vitamin D and zinc.

IMPACT/DISCUSSION: Vitamin B12 and folate are required in the DNA synthesis process of hematopoiesis. Deficiency typically presents as anemia and neurologic abnormalities; however, severe deficiency can lead to pancytopenia and extramedullary hemolysis, mimicking acute leukemia. Evidence of hemolytic anemia can be seen with elevated LDH and bilirubin, schistocytes in the peripheral blood smear, as well as icterus and hepatosplenomegaly. Bone marrow biopsy is needed to rule out leukemia, and would characteristically show hypercellular and dysplastic cells but with no evidence of infiltrative disease.

Underlying cause of the deficiency needs to be investigated, including pernicious anemia due to autoantibodies against intrinsic factor or gastric parietal cells, strict vegan diet, malabsorption due to celiac disease, IBD, and pancreatic insufficiency.

CONCLUSION: Vitamin B12 deficiency is a known cause of megaloblastic anemia and bone marrow suppression, classically presenting with macrocytic anemia and hypersegmented neutrophils. Severe cases may mimic the presentation of an infiltrative bone marrow process due to hematologic malignancy, making diagnosis and appropriate treatment a challenge.

WALDENSTRöM MACROGLOBULINEMIA – A DIAGNOSTIC ENIGMA!

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LEARNING OBJECTIVE #1: Recognize the clinical features of Waldenström macroglobulinemia.

LEARNING OBJECTIVE #2: Discuss the management of Waldenström macroglobulinemia.

CASE: In 2019, an 87-year-old Caucasian male with a history of chronic back pain presented to his primary care doctor's office with a chief complaint of low back pain. In 2004, an X-ray of the lumbosacral spine revealed mild lumbar spondylosis. His back pain began after bending over to pick up his wife. He denied recent trauma, fevers, chills, intravenous drug use, unexplained weight loss, history of malignancy, saddle anesthesia, bowel or bladder incontinence or progressive weakness. He was referred to pain medicine for consideration of steroid injection. MRI lumbar spine was ordered which showed a pathologic compression fracture of L4 with abnormal bone marrow involvement of the left iliac wing. MRI cervical, thoracic spine and CT chest, abdomen and pelvis were ordered to work up malignancy. CT was without metastatic disease. Repeat MRI showed diffuse heterogeneous bone marrow signal concerning for an infiltrating process. The patient was referred to oncology clinic. His father passed away from lymphoma. Physical exam revealed a well appearing male without adenopathy or midline spinal tenderness. Labs showed WBC 7.2, Hb 15.1, platelet count 250, monocytes elevated to 1.0. IgM was elevated to 1,694 while IgG and IgA levels were decreased. 24-hour urine protein collection was negative. Bone marrow biopsy showed CD5 negative/CD10 negative B-cell lymphoproliferative disorder involving approximately 35% of the marrow cellularity. The differential included marrow involvement by a B-cell non-Hodgkin lymphoma such as lymphoplasmacytic lymphoma (favored by the presence of IgM monoclonal gammopathy) and marginal zone lymphoma. The MYD88 L265P mutation was negative.

IMPACT/DISCUSSION: Waldenström macroglobulinemia is a rare clinicopathologic entity demonstrating bone marrow infiltration by lymphoplasmacytic cells and a serum IgM gammopathy. Elderly, white males are more commonly affected with an annual incidence of 3-4 persons per million. Symptoms are due to the infiltration of lymphoplasmacytic cells in the bone marrow and IgM gammopathy of the blood. Milder symptoms can be secondary to anemia and organomegaly, while more severe symptoms can be due to CNS involvement and hyperviscosity syndrome. Diagnosis is made by monoclonal IgM gammopathy and a bone marrow biopsy demonstrating greater than 10% infiltration by small lymphocytes with a typical immunophenotype. The differential diagnosis includes IgM MGUS, CLL, marginal zone lymphoma and mantle cell lymphoma. Asymptomatic patients are managed by observation alone while symptomatic patients are treated with chemotherapy.

CONCLUSION:

- Waldenström macroglobulinemia is a rare clinicopathologic entity demonstrating bone marrow infiltration by lymphoplasmacytic cells and a serum IgM gammopathy.
- Asymptomatic patients can be managed by observation alone while symptomatic patients are treated with chemotherapy.

WASTING AWAY AGAIN IN MARAGARITAVILLE: A CASE OF DIABETIC NEUROPATHIC CACHEXIA

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LEARNING OBJECTIVE #1: Diagnose Diabetic Neuropathic Cachexia

LEARNING OBJECTIVE #2: Manage patients with Diabetic Neuropathic Cachexia based on available evidence

CASE: 55 M presented with an unintentional 35lb weight loss over two months and an inability to ambulate for three weeks due to numbness and

pain in his feet and lateral thighs. The patient reported anorexia, nausea and occasional non-bloody, non-bilious emesis. PMH included DM2, hypertension, peripheral arterial disease with a femoral bypass, and hyperlipidemia. A colonoscopy three years prior showed three tubular adenomas. ROS was positive for polyuria, polydipsia, and constipation.

Home meds included insulin approximately every other day and aspirin prn for pain. He did not measure blood glucose at home. Patient did not drink alcohol, worked as a mechanic and lived with his family.

Exam was notable for cachexia with bitemporal wasting and significant subcutaneous fat loss. The plantar aspect of both feet was exquisitely tender to palpation. The lateral thighs were minimally tender to palpation. Labs showed blood glucose 559 mg/dL and HbA1c >14. Creatinine, folate, B12, troponin x3, creatine kinase, HIV and TSH were all within normal limits. His peripheral smear, SPEP, UPEP and admission EKG were unremarkable. CT chest /abdomen/ pelvis demonstrated pulmonary nodules and LLL and lingual opacifications. Bilateral lower extremity arterial doppler studies were normal. The anti-GAD 65, anti-islet cell antibodies, insulin antibodies, and zinc transporter 8 antibodies were all negative.

The patient was treated with a high-calorie diet, insulin, gabapentin and empiric ceftriaxone and azithromycin for community acquired pneumonia. For several days, he reported no improvement in his symptoms of pain and numbness. On day five the initiation of capsaicin cream resulted in an almost immediate relief of lower extremity neuropathic pain. As glycemic control improved, the patient's appetite returned and before discharge he was able to ambulate independently.

IMPACT/DISCUSSION: Diabetic neuropathic cachexia (DNC) is a rare diabetic complication that presents with profound weight loss and severe bilateral neuropathic pain in the lower extremities. DNC was first defined in 1974 and only a few dozen cases have been reported to date.

The mechanism is hypothesized to be immune related. DNC is not tied to glycemic control (cases include patients with A1c as low as 6.2%). Patients report depression, impotence and postural hypotension, polyuria, polydipsia and gastrointestinal symptoms related to impaired peristaltic activity: nausea, vomiting, early satiety and constipation. DNC is more common in males and most patients do not experience a recurrence after treatment.

CONCLUSION: - DNC is a rare and poorly- understood diabetic complication with neuropathic and autonomic symptoms

- Management includes nutrition, improved glucose control and topical capsaicin

- Familiarity with DNC will enable internists to rapidly diagnose and treat this apparently reversible condition

WEIGHT LOSS SURGERY AND ITS' POTENTIAL RISK OF CANCER

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LEARNING OBJECTIVE #1: Recognize the need to screen for gastric cancers in patients who have undergone bariatric surgery

CASE: We present a case of a 66 year old woman with a BMI of 29 status post gastric sleeve surgery 9 years prior who presented with worsening dysphagia and weight loss. Over the last year, she reported nausea and vomiting associated with progressive dysphagia. At presentation, she was unable to tolerate any oral intake. During the two months prior to presenting, she had a 55 pound unintentional weight loss. The patient's primary care provider ordered a barium swallow study, which showed evidence of acid reflux. She was treated with a proton pump inhibitor (PPI) and referred to gastroenterology (GI). An esophagogastroduodenoscopy (EGD) revealed an anastomotic ulcer. Biopsies taken from the patient's EGD revealed gastric adenocarcinoma. Endoscopic ultrasound (EUS) was performed for staging: it was limited as the scope was not able to transverse the mass; however, staging was identified as T3N2Mx. A diagnostic laparoscopy was planned for further staging and a jejunostomy tube (J-tube) for nutrition. Unfortunately, prior to surgery the patient left the hospital against medical advice.

IMPACT/DISCUSSION: This is the sixth documented case of gastric or esophageal adenocarcinoma arising after sleeve gastrectomy [1-5]. This correlation is rare, but has been increasingly noted in the literature. A study of 17 patients found that cancer was often diagnosed at a mean of 8.6 years after bariatric surgery with adenocarcinoma being the most common form [6]. Unfortunately, most of the cancers are diagnosed late because they are often asymptomatic or present with non-specific symptoms such as nausea, vomiting, and dysphagia [5].

Diagnosis is difficult and delayed due to the lack of screening guidelines. Currently, different recommendations exist. Some studies recommend initiating pre-operative EGD screening for bariatric surgeries as obesity itself is known to increase the likelihood of adenocarcinomas [3,7]. Others recommended early and consistent EGD screening post-operatively; whereas, other experts recommend EGD screening only in symptomatic post-operative patients [1,2,4]. Currently, post-operative management of bariatric surgery focuses on nutritional status and lifestyle changes with scant recommendations on cancer screening. This highlights the lack of symptomatic monitoring and cancer screening in the post-bariatric surgery patient population. The absence of more standardized recommendations for such screening puts these patients at risk for late diagnoses of these cancers. Although rare, the occurrence of gastro-esophageal carcinomas post bariatric surgery is concerning and merits a more standardized management protocol.

CONCLUSION: -Lack of official cancer screening in post-bariatric surgery patients who have increased risk of developing cancer due to a history of obesity and the surgery itself

-Providers should be able to recognize the need for cancer screening in post-bariatric surgery patients

WERNICKE'S ENCEPHALOPATHY PRESENTING AS CONFUSION IN A PATIENT WITH NASOPHARYNGEAL CARCINOMA

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LEARNING OBJECTIVE #1: Recognize the clinical features of Wernicke's encephalopathy in a cancer patient

CASE: A 53-year-old man with locally advanced nasopharyngeal carcinoma presented with one week of confusion, short-term memory loss, diplopia, and gait instability in the setting of one month of nausea, vomiting, and anorexia. He underwent a course of concurrent chemoradiation with cisplatin three months prior to presentation, followed by one cycle of cisplatin and 5-fluorouracil one month prior. His past medical history included hypertension, hyperlipidemia, and diabetes. He had no significant surgical history and denied alcohol use for over one year. Exam was remarkable for poor recall, bilateral cranial nerve VI palsies, horizontal nystagmus, and truncal ataxia. Diagnostic work-up included normal TSH and vitamin B12, as well as MRIs of the brain and spine, EEG, and lumbar puncture, all of which were unremarkable. Following one week of hospitalization and a change in providers, empiric IV thiamine at 500mg three times daily was initiated, and the patient's cranial nerve palsies resolved within 24 hours. He was continued at this dose for two more days, followed by 250mg IV for five days, and then 100mg orally daily thereafter. His cognitive dysfunction, ataxia, and nystagmus improved over weeks.

IMPACT/DISCUSSION: Internists increasingly care for patients with advanced malignancy. Confusion is a common complaint in this population and entails a broad differential. Wernicke's encephalopathy (WE) is a neurologic complication of thiamine deficiency associated with malnutrition. While most often associated with chronic alcoholism, this syndrome is likely underdiagnosed in cancer patients. The classic clinical manifestations include encephalopathy, oculomotor dysfunction (including nystagmus and bilateral lateral rectus palsy), and gait ataxia, although studies suggest that less than one third of patients present with all three. WE is a clinical diagnosis; no laboratory tests or imaging studies are diagnostic. Ocular abnormalities typically improve over hours to days with thiamine therapy, and confusion and ataxia improve over days to weeks; however, a majority of patients experience residual deficits. Early recognition and treatment can avoid life-threatening complications and reduce the risk of long-term neurologic sequelae. Studies in oncology patients are lacking and limited to case reports and small series. Clinicians must be aware of this association and have a low threshold to institute thiamine therapy in a cancer patient presenting with suggestive symptoms.

CONCLUSION: Wernicke's encephalopathy is a clinical diagnosis and should be considered in patients with advanced malignancy presenting with confusion.

IV thiamine therapy should be instituted rapidly if the diagnosis is suspected.

Transitions of care can provide important opportunities to reassess differential diagnosis.

WET, WOBBLY, AND A WEIRD DIAGNOSIS

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LEARNING OBJECTIVE #1: Recognize the clinical features of chronic obstructive hydrocephalus in adults

LEARNING OBJECTIVE #2: Understand the importance of following asymptomatic hydrocephalus

CASE: Mr. L is a 48 year old male with intellectual disability, narcolepsy, movement disorder complicated by rheumatoid arthritis, sarcoidosis, bipolar disorder, depression, seizures who presented to clinic after several years. He was referred from a low-income clinic for a high PSA, but had notable gait instability with increasing falls and had required a walker over the past two years. He also had increasing visual blurriness, increased urinary frequency and dysuria in the same time period. His mother reported progressive functional decline since his 30's, and a history of congenital hydrocephalus without prior interventions.

Exam: Vitals: 98.5 F, HR 58, RR 15. Gen: Middle aged male, NAD. HEENT: PERRL, EOMI, no cervical lymphadenopathy. Ophthalmic exam deferred. Pulm: Clear to auscultation bilaterally. Cardiac: regular rhythm, no murmurs. Neuro: Cranial nerves and sensation intact. Decreased muscle mass. 4/5 strength in upper extremities bilaterally. No cogwheel rigidity or tremor. 3/5 strength in right hip and knee, and 4/5 on left. Unsteady, wide-based gait with multistep turns requiring stationary objects for stability. Abnormal finger-to-nose, disdiadochokinesia.

Lab: Clinic PSA elevated to 9.6 ng/mL. Other labs within normal limits.

Differential for ataxia included malignancy, cerebellar infarction, trauma/hemorrhage, obstructive hydrocephalus, neurosarcoidosis, CNS infection, nutritional deficiency or environmental exposures.

Clinical course: Initial MRI revealed chronic severe hydrocephalus, grossly unchanged compared to prior CT, with massive enlargement of third and lateral ventricles, normal sized fourth ventricle and probable focal obstruction of the inferior aqueduct of Sylvius. Mr. L was referred for endoscopic third ventriculostomy, but due to his anatomy and degree of hydrocephalus, is awaiting placement of a ventriculoperitoneal (VP) shunt.

IMPACT/DISCUSSION: Obstructive hydrocephalus classically presents with urinary incontinence, cognitive decline, personality changes, seizures, or gait deviations; aqueductal stenosis is a common congenital cause, although it can be acquired. Diagnosis is challenging in patients with compound neuropsychiatric and/or urologic diagnoses due to slow progression of symptoms over year and is easily missed. Cognitive decline often occurs in parallel with motor deficits and can progress to dementia with irreversible ischemic injury, particularly to white matter. Treatment is almost always surgical with VP shunts in childhood. Patients may require multiple revisions due to infections or shunt malfunctions. Endoscopic third ventriculostomy can be another effective mode of treatment.

CONCLUSION: While most cases are treated during childhood, this case highlights the importance of consistent follow up and transitions of care from pediatrics to adulthood especially given its prolonged course

WHAT YOU CAN'T SEE IS WHAT YOU GET

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LEARNING OBJECTIVE #1: Describe the inpatient workup of cholestatic liver disease

LEARNING OBJECTIVE #2: Recognize the importance of liver biopsy in the workup of unexplained cholestatic liver disease

CASE: A 70-year-old man presented with "itching all over" for several months. Hydroxyzine did not provide any relief. No pain, fevers, chills, sweats or recent medication changes were reported. He has a history of type 2 diabetes mellitus and an alcohol use disorder.

Scleral icterus and diffuse skin excoriations were present on exam.

Total Bilirubin level was 16.2 mg/dL with a direct bilirubin of 9.4 mg/dL, Alkaline phosphatase was 1382 IU/L, AST of 160 IU/L, and ALT of 125 IU/L. Gamma-Glutamyl Transferase (GGT) was elevated at 1622 IU/L. AMA, ASMA, ANA, Acute Hepatitis Panel, EBV, CMV, and HIV all returned negative. A right upper quadrant (RUQ) ultrasound was unrevealing.

He subsequently underwent ERCP and EUS, which were also unremarkable. A liver biopsy was obtained at the time of EUS, demonstrating severe portal bridging fibrosis with cholestasis, bile ductopenia, and no features suggestive of PBC or PSC.

Given his cholestatic liver injury and bile ductopenia, he was diagnosed with vanishing bile duct syndrome (VBS). He was treated with cholestyramine and ursodiol. At a follow-up he reported resolution of pruritis.

IMPACT/DISCUSSION: Cholestasis can occur through either extrahepatic and intrahepatic biliary obstruction. A right upper quadrant ultrasound evaluates for extrahepatic causes (i.e. related to a stone or malignancy) followed by an ERCP to confirm the diagnosis. If the ultrasound is not consistent with extrahepatic cause of cholestatic liver disease, intrahepatic causes must be considered and can include drug toxicity, PBC, PSC, and viral hepatitis. Investigation with a detailed medication history and specific labs (AMA, ASMA, ANA, Acute Hepatitis Panel, EBV, and CMV). In the case of PSC or PBC, ERCP or MRCP is often completed to confirm the diagnosis.

In the vast majority of cases, ERCP provides the etiology of cholestatic liver injury. However, when all of these tests are unrevealing, liver biopsy is indicated to investigate rarer causes of liver injury such as infiltrative diseases (amyloidosis, sarcoidosis, lymphoma) and VBS.

VBS is a rare manifestation of cholestatic liver injury. It is a pathological diagnosis characterized by a scarcity of intralobular bile ducts on liver biopsy and persistent elevations in serum alkaline phosphatase and bilirubin for at least 6 months. It is typically caused by drug-induced liver injury, most commonly penicillin, fluoroquinolones, macrolides, and anticonvulsants. Our patient did not take any of these medications – as such, the cause remains unclear. For treatment, ursodiol has been cited to have a positive effect in some case while others have documented gradual improvement without any specific intervention.

CONCLUSION: If ultrasound and ERCP are unrevealing for an etiology of cholestatic liver injury, internists may need to consider liver biopsy to achieve the correct diagnosis.

WHAT'S IN A NAME?

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LEARNING OBJECTIVE #1: Recognizing how word selection can have significant impact on the patient's care.

LEARNING OBJECTIVE #2: Preparing a script to talk to patients about new, serious diagnoses can lead to improved patient outcomes.

CASE: A 64 year-old woman with a history of lung cancer s/p resection, bipolar disorder, PKD on HD, and homelessness presents for follow up of an ED visit. A new lung nodule was found but the patient was not aware of the finding. Her resection for lung cancer had been 4 months ago. Knowing that this might be a sensitive topic, the PCP decided to use the word spot instead of nodule. She did not recognize the significance of the word spot and scheduled the repeat CT without further questions.

Months later, the PCP received a page from a case manager. The case manager shared that the word nodule was used to remind the patient about her CT. The patient was very distressed and informed the case manager that this was the first time she had heard the word nodule.

At subsequent visits the patient continued to be distressed. It resulted a damaged doctor-patient relationship due to loss of trust. Even at a visit for new cardiomyopathy, she was unable to discuss anything other than the decision to use the word spot over nodule. It became evident that the therapeutic relationship had been irreparably harmed. The PCP felt unable to provide the necessary care during repeat visits. The hospital's patient advocacy and legal department were engaged to draft a letter of termination as it was felt that it was in the patient's best interest to find a new PCP she could trust to provide ongoing care for her. After a year of many phone calls, visits, and conversations with subspecialty providers, the patient forgave the PCP and re- establish a therapeutic relationship.

IMPACT/DISCUSSION: Providers will relate to the temptation to convey difficult information in a simplistic way. On surface to save the patient from worry/anxiety, but perhaps more honestly to save time in a lengthy day. It was a split-second decision to use the word spot instead of nodule. Preparation prior to the visit, and using established scripts, could have prevented a poor choice in the moment. There is a growing realization of this and scripts have been developed for hospitalists to have difficult conversations with patients and for PCPs for end of life care. There has also been research done on how to talk to patients about pulmonary nodules. These already researched and prepared scripts are not widely known and are underutilized.

CONCLUSION: Word choice is an important part of our lives as physicians. In this commonly applicable case on lung nodules, we demonstrate that a momentary decision to choose one word over another can have a long-lasting impact on the patient's care. Physicians' discomfort with relaying difficult news can lead them to choose minimizing language that can mislead the patient. Familiarity with difficult conversation scripts can help physicians use appropriate language to educate and guide patients towards improved understanding.

WHEN A CHRONIC CO-MORBIDITY TRANSFORMS INTO A RAPID KILLER

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LEARNING OBJECTIVE #1: Recognize the rare complication of acute pulmonary failure due to AML crisis.

CASE: 58 year-old female with history of myelodysplastic syndrome admitted for dyspnea, with initial CT imaging demonstrating multifocal opacities read as scattered areas of nodular consolidation, consistent with multifocal pneumonia. She was started on broad spectrum antibiotics and transitioned to oral levofloxacin after cultures remained negative at 48 hours. Unable to be weaned off nasal cannula oxygen, she remained inpatient status through a 7-day treatment course. During this time, her CBC differential varied widely, with 7-25% blasts and 20-40% monocytes. Without significant improvement of dyspnea, but no further objective evidence of infection, a CT scan of her chest was repeated with a read of worsening diffuse pulmonary edema. Although no evidence of systolic or diastolic dysfunction on transthoracic echocardiogram, she did have elevated RVSP of 75mmHg. Aggressive diuresis was performed over several days until volume contracted. At this point, her respiratory status had worsened to needing ventimask for oxygen delivery. She was transferred to ICU where a bronchiolar lavage revealed 25% monocytes. She rapidly decompensated post-bronchoscopy and was intubated and started on vasopressors. The monocytic predominance was recognized as pulmonary manifestation of MDS progression to an acute leukemia. She was started on high intensity steroids and chemotherapy. The following day she passed away.

IMPACT/DISCUSSION: Myelodysplastic Syndrome (MDS) is a broad group of malignant hematopoietic stem cell disorders characterized by dysplastic production of any cell or platelet precursor. MDS can follow an indolent, course treated with supportive care and transfusions, or it can even evolve into an acute leukemia. In such cases, one may expect to find progressive symptomatic anemia, bruising or bleeding due to thrombocytopenia, or even evidence of leukostasis from high numbers of peripheral blasts. On CBC, increasing blast count can indicate progression of an MDS into AML. However, blasts may easily be mistaken for monocytes on a manual differential. In the case presented, the primary manifestation of her AML was monocyte flooding of the alveoli causing progressive respiratory failure.

CONCLUSION: Although AML is a known complication of MDS, the variability of its presentation can be difficult to recognize even when continuously monitored in an inpatient setting. Awareness of these complications may expedite appropriate chemotherapy, even in setting of atypical radiologic findings.

WHEN A LOW ADAMST13 IS NOT TTP: A CASE OF ATYPICAL HUS

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LEARNING OBJECTIVE #1: Distinguish atypical hemolytic uremic syndrome (aHUS) from thrombotic thrombocytopenic purpura (TTP)

CASE: The patient is a 72 year-old woman who initially presented for shortness of breath and nausea. She has a history of primary biliary cirrhosis, HFpEF, PRES, and anemia. At the time of presentation, she

reported a month of nausea as well as increasing swelling in her legs and abdomen. On admission, she had normal vitals and exam showed diffuse anasarca. Labs were notable for hemoglobin 9.6 (around recent baseline), platelets 47,000 (had been ~70,000 in the months prior), creatinine 2.66 (from 1 a few weeks prior), and urinalysis with mild proteinuria. She underwent an extensive negative diagnostic work-up that included lymph node biopsy, full body FDG scan, and bone marrow biopsy (normal except a rare granuloma). Her acute kidney injury progressed and she was started on dialysis.

Several days into her admission, her ADAMTS13 level resulted <5% with inhibitor level of 36% consistent with severe acquired TTP. She was started on plasmapheresis and steroids, which she received regularly for 2 weeks without any improvement in her platelet count or ADAMTS13 level, which called the diagnosis into question. Although initial work-up was without evidence of hemolysis, her blood smear was reviewed again and showed 3 schistocytes per HPF. Given this finding along with her renal failure and poor response to plasmapheresis, it was thought that her diagnosis was actually atypical HUS. Of note, ADAMTS13 can be low in cirrhosis, which likely explains her persistently low values. She received rituximab infusions, at which point her platelet count finally started to rise. She ultimately had recovery of her renal function and a sustained improvement in her thrombocytopenia prior to discharge. Because she responded to rituximab, she did not receive eculizumab.

IMPACT/DISCUSSION: TTP and aHUS share several features including thrombocytopenia, microangiopathic hemolytic anemia, and renal impairment. In the past, the exact diagnosis was less important given both were treated with plasmapheresis. With the finding of prompt response to eculizumab (monoclonal antibody against C5) and potential for renal recovery in aHUS, though, getting the correct diagnosis has clear implications. Findings that are more supportive of TTP include lower platelet counts, less severe renal impairment, and severe ADAMTS13 deficiency (<5-10%) whereas more severe renal disease, including need for hemodialysis is more consistent with atypical HUS. The response to plasmapheresis is also another clue as typically platelet count and renal function improve within 4-5 days of plasmapheresis in TTP. If there is not a response to plasmapheresis, the diagnosis of atypical HUS should be considered.

CONCLUSION: Correctly diagnosing TTP versus aHUS has implications for treatment management.

Lack of responsive to plasmapheresis for presumed TTP should raise question of alternative diagnosis.

WHEN IT DOESN'T ALL PAN OUT – REMEMBER SAM

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LEARNING OBJECTIVE #1: Recognize causes of microaneurysms in abdominal vasculature

LEARNING OBJECTIVE #2: Distinguish between segmental arterial mediolysis (SAM) and polyarteritis nodosa (PAN)

CASE: A previously healthy 56yo white woman presented with sudden abdominal pain radiating to her back with nausea but no fever, chills, vomiting, diarrhea, urinary symptoms, headache, jaw claudication or history of trauma. PMH: no DM, HTN, or arthritis. Meds: oxybutynin; Surgery: cholecystectomy; Family Hx: neg for autoimmune disease; P/S: no smoking, ETOH or drugs. PE: alert woman in pain, BP 110/65, P 89, R 17, lungs clear; heart RRR without murmurs; abdomen: soft but exquisitely tender to palpation; neuro was normal and skin without subq nodules or livido. Normal body habitus and no unusual joint laxity. Labs: WBC 12.9k, Hgb 13, MCV 87, platelets 200k, BUN 16, Cr .8. Images: Contrast abdominal CT: hemoperitoneum and luminal irregularities suspicious for multiple aneurysms involving the SMA but no signs of bowel ischemia. Diagnostic laparoscopy revealed 1500cc of blood and clots; however, her entire small bowel and colon were well-perfused. Extensive rheum/autoimmune workup was negative including rheumatoid factor, ANA, PR3-ANCA, MPO-ANCA, anti-CCP, dsDNA as well as hepatitis B and C. CT angiogram of the abdomen showed 5 splenic artery aneurysms (9mm), a right renal artery aneurysm and various small aneurysms throughout the splanchnic mesentery. CTA of the head was largely unremarkable. High dose steroids were used initially but were stopped once the diagnosis of SAM was made. A splenectomy was recommended for definitive diagnosis and due to the risk of bleeding but that is pending the healing of her intestinal lesions.

IMPACT/DISCUSSION: Systemic arterial mediolysis is a rare, noninflammatory, vascular condition that affects medium to large abdominal arteries. SAM is characterized by lysis of smooth muscle in the medial arterial layer. The differential for SAM includes polyarteritis nodosa, fibromuscular dysplasia, and various connective tissue diseases. This case shows the importance of early differentiation between PAN and SAM. SAM is a self-limited disease process requiring supportive care whereas PAN has a poorer prognosis and requires strong immunosuppressant therapy which can be toxic. Both conditions affect middle-aged and older people. SAM affects both sexes equally while PAN has a slight propensity towards men. SAM tends to be relatively sudden in onset while PAN presents indolently with preceding systemic, inflammatory symptoms. SAM does not typically present with anemia, ESR elevation or an association with hepatitis B as is seen with PAN. A definitive diagnosis of SAM requires tissue evaluation but is often not pursued given sites involved.

CONCLUSION: Physicians need to include SAM in the differential diagnosis of patients with severe abdominal pain and vasculitic appearing lesions on angiography since misdiagnosis of PAN will lead to unnecessary immunosuppressant treatment with its associated serious side effects.

WHEN KIDNEYS EXPLODE: A CASE OF XANTHOGRANULOMATOUS PYELONEPHRITIS (XGP)

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LEARNING OBJECTIVE #1: Name the associated pathogens and clinical course of xanthogranulomatous pyelonephritis (XGP)

LEARNING OBJECTIVE #2: Recognized the CT appearance of XGP

CASE: A 69 man with a history of urothelial carcinoma of the bladder status-post cystoprostatectomy with ileal conduit presented with fatigue, tachycardia, night sweats, and foul-smelling urine. He had recently been diagnosed with a new 11cm right renal mass with apparent diaphragmatic invasion at an outside hospital. On exam, he was a pale, chronically-ill appearing man with rigors and but no abdominal tenderness; heart rate was 120 but other vital signs were normal.

The patient was started on antibiotics for presumed bacterial superinfection of a renal malignancy. Percutaneous nephrostomy tube placement drained frank pus, which grew *S. anginosus* but was negative for cancer cells. A week into admission, the patient developed abdominal pain and was found to have a new large perinephric fluid collection on computed tomography. A drain placed in this area evacuated a significant amount of purulent fluid. Eight weeks later, after finishing a course of intravenous antibiotics, the patient underwent a radical right nephrectomy. Pathology of the removed kidney showed xanthogranulomatous inflammation without malignancy, confirming a diagnosis of xanthogranulomatous pyelonephritis (XGP).

IMPACT/DISCUSSION: XGP is a rare, destructive chronic inflammatory disorder of the kidney.[1] A kidney affected by XGP has an enlarged, multiloculated appearance. Chronic infection and obstruction predispose

to this condition. The most common pathogens associated with XGP are Proteus and *Escherichia coli*; a review of the literature did not find any reported cases caused by *S. anginosus*, which was isolated in two fluid samples from this patient. However, *S. anginosus* is a virulent pathogen known for pyogenic infections and can be found in the normal intestinal flora.[2]

Given this patient's cancer history, the heterogenous renal mass seen on imaging was presumed to be a recurrence of urothelial carcinoma. Although he had clear infectious signs and symptoms, anchoring on his past malignancy caused the infection to be missed and delayed drainage of the fluid collections seen on CT, which were thought to be necrotic tumor.

This case also highlights the cognitive bias that can arise when an unusual imaging finding distracts from the clinical presentation. Prior to admission, this patient had presented to several emergency rooms with complaints of weight loss, night sweats, and cough. When CT showed a large renal mass, his infectious symptoms were not worked up further; instead, he was referred for oncologic treatment. As this case demonstrates, imaging results should be viewed as a supplement to the clinical presentation.

[1] https://www.ncbi.nlm.nih.gov/pubmed/21526966

[2] https://www.ncbi.nlm.nih.gov/pubmed/3060239

CONCLUSION: - In patients with a history of malignancy, maintain a broad differential for systemic symptoms

- Consider XGP in patients with destructive renal masses on imaging

WHEN SEX IS A HEADACHE

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LEARNING OBJECTIVE #1: Evaluate a patient with headache associated with sexual activity, recognizing that neuroimaging is required to exclude secondary causes

LEARNING OBJECTIVE #2: Diagnose and treat primary headache associated with sexual activity

CASE: A 35-year-old man presented to primary care clinic with a new headache occurring during sexual activity. He reported 2 weeks of a throbbing bifrontal headache during intercourse and masturbation, with explosive, severe pain at the time of orgasm. These heachaches subsided within 5 minutes, and did not occur with other activities. There was no associated nausea, dizziness, visual, motor or sensory changes. History was notable for twice yearly ocular migraines. He took no medications and had no history of tobacco or drug use. Physical examination, including vital signs, neurologic and fundoscopic exams were normal. Brain MRI and MR angiography were normal. Given his negative imaging, he was diagnosed with primary headache associated with sexual activity (PHASA), and was started on propranolol with resolution of his symptoms.

IMPACT/DISCUSSION:

While headaches associated with sexual activity can occur as a benign primary headache disorder, studies have found a large proportion of sex-related headaches were due to secondary vascular causes and lacked distinugishing clinical features. Neuroimaging such as CT or MRI with angiography is required at first presentation of orgasmic headaches to exclude structural causes such as intracranial bleed, arterial dissection, reversible cerebral vasoconstriction syndromes, and cerebral venous thrombosis. The possibility of subarachnoid hemorrhage (SAH) is particularly concerning, given that intercouse is cited as the precipitating event in 4-12% of patients with SAH.

After exclusion of other causes with neuroimaging, PHASA can be diagnosed when a patient has at least 2 headaches brought on by and occurring only during sexual activity, with pain lasting no more than 24 hours. These headaches can have increasing intensity with mounting sexual excitement or an explosive onset occurring at orgasm, as seen in our patient. These headaches are not typically accompanied by autonomic or vegetative symptoms.

Epidemiologic studies of PHASA have shown a lifetime prevalence of approximately 1%, a mean age of onset between 35 to 40 years old, a 2.9:1 male to female ratio, and high comorbidity with migraine headaches. Up to 40% of all cases run a chronic course over more than a year, but also respond well to treatment. Preventative treatments include Indomethacin 30 to 60 minutes before sexual activity, or daily propranolol in patients with comorbid migraines. Given our patient's unexpected timing of sex and occular migraines, he was started on daily propranolol with good response.

CONCLUSION: - Headache associated with sexual activity is rare, and may be due to a primary headache disorder or dangerous structural cause

- Neuroimaging is required in the work up of headache with sexual activity

- PHASA can be prophylactically treated with indomethacin or propranolol

WHEN SLE IS COMBINED WITH LYME DISEASE

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LEARNING OBJECTIVE #1: Although rare, muscle weakness along with dysphagia and myositis can be the initial manifestations of SLE.

LEARNING OBJECTIVE #2: Lyme disease can present with myopathy.

CASE: A 24-year-old lady recent immigrant from Honduras presented with generalized weakness more pronounced proximally for the past three weeks which progressed until she was unable to get out of bed.

Associated symptoms included fever, chills, sore throat, choking sensation, chest tightness and dry cough. She denied bowel or bladder incontinence, diarrhea, joint pain, or swelling. Two months ago she was diagnosed with depression and started on treatment without improvement. She has no history of drug or alcohol abuse. Blood pressure was 119/81, temperature 39.4 C, Heart rate 153, and SpO2 96% on room air. Muscle strength was 2/5 in lower limbs and 4/5 in upper limbs with intact sensation and absent patellar reflexes. Kernig's sign, Brudzinski's sign, and neck stiffness were absent. Lab revealed a hemoglobin of 10.9, WBC 3.1, MCV 84, Platelets 153, Alb 1.7, Total protein 5.5, Alkaline phosphatase 322, AST 183, and ALT 69. The patient was started on Vancomycin, Piperacillin-Tazobactam, and Acyclovir. MRI brain and CT Chest/Abdomen/Pelvis were all unremarkable. MRI of the spine showed paraspinous musculature enhancement suggestive of myopathy. Swallowing study showed severe aspiration. Urine and blood cultures as well as CSF analysis were negative. Antibiotics were de-escalated to doxycycline for empiric treatment of Rickettsial disease. Anti Jo1, Anti-myeloperioxidase, Anti-protease, Anti RNP, CK, aldolase, serology for Mosquito borne diseases and rickettsia disease were all negative. Therefore, Doxycycline was discontinued. ANA was 1:1280 and double-stranded DNA>300. She was started on pulse dose steroid therapy for 5 days followed by 60 mg prednisone daily and hydroxychloroquine with modest improvement. Muscle biopsy showed no evidence of myositis. Further tests were negative for syphilis and positive for Lyme IgG and IgM. She was started on IV Ceftriaxone 2 g daily. She had complete recovery within two weeks and was discharged on a prednisone and hydroxychloroquine taper.

IMPACT/DISCUSSION: SLE treatment alone with steroids and hydroxychloroquine resulted in a modest response and significant

improvement was achieved by adding a two week course of IV Ceftriaxone. Although SLE patients with myositis associated with weakness rather than myalgia have been reported, no cases have been reported with associated dysphagia. Some reports have described myositis or peripheral neuropathy in Lyme disease; most of these cases describe muscle weakness with localized pain and swelling along with moderate elevations in CK however this is the first case with seronegative myositis and dysphagia.

CONCLUSION: The initial presentation of SLE with severe muscle weakness and neuropsychiatric manifestations are relatively uncommon. Lyme disease rarely manifests as muscle weakness.

WHEN TACROLIMUS HITS CLOSER THAN YOU THINK: PROXIMAL RENAL TUBULAR ACIDOSIS IN A LIVER TRANSPLANT PATIENT

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LEARNING OBJECTIVE #1: Highlight a case of tacrolimus induced proximal renal tubular acidosis.

LEARNING OBJECTIVE #2: Discuss the clinical decision making to diagnose proximal renal tubular acidosis.

CASE: A 51-year-old male with CKD III, history of PSC and liver transplant presented to the hospital for acute kidney injury. He was asymptomatic but found to have serum creatinine of 5.3 (baseline 1.8). The patient's immunosuppressive medications are tacrolimus, everolimus, prednisone and mycophenolate. Of note his tacrolimus dose had been increased prior to admission.

Initial labs were notable for creatinine of 5.3, Sodium 141, Potassium 3.8, Chloride 115, and Bicarbonate of 14, and serum creatinine of 5.3 Glu 133. On ABG, pH 7.43, CO2 30 mmHg, O2 100 mmHg

Tacrolimus was held in the setting of AKI; however, his additional immunosuppression regimen was continued. Creatinine improved over the course of hospitalization with limited IV fluid resuscitation. He had persistent non anion gap metabolic acidosis. Urine electrolytes were collected with a positive urine anion gap (15). Urinalysis with pH of 5.0, normal potassium, and glucosuria was consistent with renal tubular acidosis (RTA) Type II.

Patient responded to Shohl's solution and bicarbonate level increased to 20 prior to discharge.

IMPACT/DISCUSSION: Type II RTA, also known as proximal renal tubular acidosis, is caused by inability of the proximal tubule to facilitate reuptake of bicarbonate. This results in bicarbonate wasting- clinically these patients tend to present with bicarb in the range of 12-20.

More commonly drugs such as tenofovir and ifosfamide are known to cause Type 2 RTA, however in this case we believe that the RTA was secondary to tacrolimus given the increase in dosage prior to admission.

The patient presented with a normal anion gap and a bicarbonate of 14- consistent with non anion gap metabolic acidosis. A urine anion gap of 15- indicated that there was low urinary NH4+ and is consistent with renal tubular acidosis. His urine pH of 5.0, glucosuria with normal blood glucose and absence of hyperkalemia led to the diagnosis of a medication induced Type 2 RTA.

Tacrolimus has been associated with Type 4 RTA in liver transplant patients, however, is a fairly rare entity.[1]

While the impact that tacrolimus has on the Na/K ATPase and Na/K/Cl cotransporters in the distal convoluted tubule has been studied extensively, there is limited research on the impact of tacrolimus on the proximal tubule. Further research in this area will be beneficial for transplant patients.

CONCLUSION: Patients on immunosuppressive therapy are at risk of renal toxicity in a multitude of ways.

Tacrolimus, while commonly associated with causing pre-renal AKI, can also cause other electrolyte abnormalities. In liver transplant patients that have a non-anion gap metabolic acidosis- immunosuppressive medications, such as tacrolimus, must be considered as a potential culprit.

WHEN THE FEVER BROKE- A CURIOUS CASE OF PERIODIC FEVER SYNDROME

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LEARNING OBJECTIVE #1: Diagnosis and managament of Periodic Fever Syndrome

CASE: A 39-year-old male of Italian descent with no past medical history was referred to Rheumatology by an Infectious Diseases physician for evaluation of 3 weeks of unexplained fevers. He reported daily fevers, with shaking chills, drenching sweats and an 8lb weight loss. He denied any joint pain, swelling, rashes, hearing loss, episodes of uveitis or myalgias. He had an extensive negative infectious work up, labs showed transaminitis, positive ANA, double-stranded DNA, smooth muscle antibody with elevated ESR/CRP. He reported two prior similar episodes of fevers- 7 years ago with similar transaminitis, elevated ESR/CRP, but a positive Rhematoid Factor which responded to steroids. 5 years ago, he had a similar presentation, imaging revealed hepatomegaly and retroperitoneal lymph nodes; bone marrow biopsy was negative for malignancy, however his symptoms and lab abnormalities self-resolved without steroids. During his current episode, AVISE test was done which showed low probability for lupus. He responded to 20mg of Prednisone a day, however could not be tapered below 15mg. We considered a diagnosis of Adult onset Still's Disease, however he had no rash, arthralgias, leukocytosis or high Ferritin. He tested negative for Familial Mediterranean Fever, however were unable to test for other Periodic Fever syndromes due to insurance limitations. He was, nonetheless, diagnosed with a Periodic Fever Syndrome and was started on Canakinumab. He responded well clinically to the first dose of Canakinumab with his ESR and CRP normalizing in just two weeks.

IMPACT/DISCUSSION: Periodic Fever Syndromes are a form of autoinflammatory disorders caused by exaggerated activation of the innate immune system, in the absence of high-titer auto-antibodies or antigen-specific T-cells. They are characterized by inflammatory flares causing fever, rash, serositis, arthritis, meningitis, uveitis, lymphadenopathy associated with elevated inflammatory markers, separated by intervals of general well-being. These are usually diagnoses of exclusion after ruling out infection or malignancy. They usually respond to empiric trial of steroids, colchicine or IL-1 blockers. Diagnosis is extremely challenging with a recent study in Germany revealing median time to diagnosis of 2 years (1-5 years). New evidence based classification criteria were recently developed for Hereditary Recurrent Fevers combining international expert consensus, statistical evaluation of real patients from a large data set of patients in the Eurofever Registry. The new classification criteria combine for the first time clinical manifestations with genotype. Use is recommended for inclusion of patients in translational and clinical studies, but they cannot be used as diagnostic criteria.

CONCLUSION: Diagnosis of Periodic Fever Syndromes remains to be evasive, however with genetic testing we have access to an important tool to help us reach a diagnosis to guide management.

WHEN TO DRAW THE LINE? BALANCING DIAGNOSTIC WORK-UP FOR INCIDENTAL FINDINGS IN A NONVERBAL PATIENT

Erica I. Anunwah, Yunsan Huang. UCSD School of Medicine, San Diego, CA. (Control ID #3392241)

LEARNING OBJECTIVE #1: Explore the extent to which diagnostic workup should be pursued for incidental transaminitis

LEARNING OBJECTIVE #2: Navigate the ethical complexity when the patient is nonverbal and fully dependent

CASE: A 16 year old nonverbal girl with cerebral palsy and severe intellectual disability was admitted from the GI clinic for work-up of incidental transaminitis and abdominal discomfort. Her AST and ALT were 263 and 551 respectively. Her physical exam showed no abdominal tenderness, ascites, masses, or jaundice. Visually, the patient appeared to be at her baseline besides occasional expressions of discomfort. The initial hospital workup included an autoimmune panel, inflammatory markers, and ultrasound imaging, all of which were normal. Her transaminases continued to climb, with AST and ALT peaking at 420 and 730 respectively. The workup then expanded to include a viral panel, hepatitis panel, acetaminophen level, pregnancy test, ceruloplasmin level, and a peripheral smear. None of these labs yielded significant values. Testing was again broadened to include urine drug screen, alpha-1-antitrypsin, and copper levels – which again were unrevealing. A liver biopsy was then performed, which turned out normal. After the parents of the patient expressed frustration with the number of tests yielding no results, the team decided to involve PM&R and pulmonology to investigate other potential causes of patient's discomfort. Ultimately, adjustments were made to the patient's baclofen pump and ventilator settings. Her episodes of discomfort decreased and her liver transaminases began to fall, allowing her to be discharged home after a 7-day admission.

IMPACT/DISCUSSION: This case highlights a common theme seen in academic medicine, where motivation to have all the answers may drive a patient's clinical course. In this case, the patient's inability to verbalize symptoms may have complicated the work-up approach, making trending transaminases the focus instead of patient's symptoms or clinical context. It is also important to consider that an invasive procedure such as a liver biopsy carries significant risk, especially in a special needs patient with severe comorbidities. Many diagnostic methods were added without being guided by any new historical or diagnostic findings. By the time the liver biopsy was ordered, there was already a host of negative panels to suggest the biopsy would likely not yield significant results. In the end, all diagnostic studies did not play a significant role in finally absolving the patient's abdominal discomfort and transaminitis.

CONCLUSION: As tempting as it can be to chase an unknown etiology, it is important to consider the big clinical picture. This is not only with respect to medical cost and waste, but in management of the patient's comfort, safety, and parental concerns. An unintentional consequence of trending lab values is that the focus can become treating the numbers rather than treating the patient.

WHEN ZEBRAS HAVE SPOTS: DIFFERENTIAL DIAGNOSES FOR FEVER AND RASH

Eugenia Uche-Anya, Sharon Wardlaw. Medicine, Columbia University Medical Center, New York, NY. (Control ID #3392207)

LEARNING OBJECTIVE #1: Assess patients presenting with fever and rash

LEARNING OBJECTIVE #2: Recognize vector-borne infections as a cause of unspecified febrile illness

CASE: A 35-year-old man from NY with history of a motor vehicle accident requiring splenectomy presented to the ED in the summer with four days of fevers, body aches, sore throat and mild cough. He initially presented to his PMD who prescribed amoxicillin-clavulanate. He then developed GI upset and a non-pruritic rash prompting self-discontinuation of the antibiotic. He had no sick contacts but recently traveled to Connecticut. He denied outdoor activities or insect bites during this trip. He denied high risk sexual behavior, weight loss and night sweats. He had received MMR, pneumococcal, meningococcal and HiB vaccines.

In the ED, he was febrile (103F) and tachycardic without hypotension. He had mild pharyngeal erythema, a supple neck and a pink blanching maculopapular rash across his abdomen, forearms and legs. The rash spared his palms and soles. Labs were notable for WBC 5, 17% bands, 6% atypical lymphocytes, no eosinophilia, normal creatinine, elevated transaminases and thrombocytopenia. A blood smear was suggestive of an infectious process with low suspicion for malignancy. Cultures and respiratory viral/atypical bacterial swab were negative. Chest radiograph revealed hazy reticular opacities. He tested negative for acute HIV, hepatitis, EBV, CMV, RPR and GCCT. Antibody titers were sent to confirm vaccinations. He was dosed ceftriaxone for CAP and doxycycline given travel history and concern for underlying tick-borne illness. DRESS syndrome was felt to be less likely given absence of eosinophilia. He tested negative for Lyme, babesia and ehrlichiosis. Serum PCR for *Anaplasma phagocytophilum* came back positive.

IMPACT/DISCUSSION: The differential for patients presenting with fever and rash is very broad. A thorough history for risk factors and exposures can be helpful in narrowing the differential. It is important to obtain details about the patient's age, location, travel and sexual history, season, medications, insect/animal exposure, vaccinations and immunocompetency. Etiologies to consider include viral [EBV, CMV, HIV, hepatitis, measles, rubella], bacterial [mycoplasma, meningococcal, endocarditis, toxic shock, STIs], vector- borne [Lyme, babesia, anaplasmosis, ehrlichiosis, RMSF] and non-infectious causes [DRESS, malignancy, vasculitis]. Vector-borne infections in particular are on the rise[1] and warrant significant consideration in endemic areas.

Anaplasmosis typically presents with fever and nonspecific symptoms. However, a proportion of patients develop rash and systemic involvement including leukopenia, thrombocytopenia and abnormal liver tests. This patient was ultimately discharged on a 10-day course of doxycycline with improvement.

CONCLUSION: The differential for patients presenting with fever and rash is very broad. A detailed history and physical exam can be valuable for establishing a diagnosis.

1. MMWR Morb Mortal Wkly Rep 2018;67:496-501.

WHERE DO BROKEN HEARTS GO? MANAGING UNCERTAINTY IN ADVANCED TRANSTHYRETIN-ASSOCIATED CARDIAC AMYLOIDOSIS

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LEARNING OBJECTIVE #1: Recognize the clinical course and prognosis of transthyretin-associated (ATTR) cardiac amyloidosis.

LEARNING OBJECTIVE #2: Identify interdisciplinary needs specific to patients with advanced cardiac amyloidosis.

CASE: WF, an 88-year-old man with advanced, wild-type ATTR cardiac amyloidosis (on tafamidis) complicated by distal conduction disease and heart failure with preserved ejection fraction, presented with syncope and was admitted to the cardiac critical care unit for symptomatic, bradycardic

atrial fibrillation. A continuous dopamine infusion was started with resolution of symptoms and improvement in heart rate. However, attempts to wean from dopamine with midodrine and methylphenidate were unsuccessful.

Palliative care was consulted for support of goals of care. WF expressed a clear preference to prioritize his independence and declined life-prolonging therapies that could adversely affect his quality of life. In the absence of facilities or home services able to provide continuous infusions of palliative dopamine, the option of pacemaker placement was revisited. While WF had previously declined pacemaker placement for the purpose of life prolongation, he expressed a willingness to undergo the procedure if it could allow him to return home with the possibility of fewer hospitalizations, despite uncertainty regarding its potential impact on his functional status and quality of life.

On hospital day six, WF experienced worsening delirium and no longer demonstrated capacity to consent for pacemaker placement. His niece/health care proxy arrived from out of town to formulate a new plan of care informed by knowledge of his values, which he had previously communicated to the primary and palliative interdisciplinary teams. Based on his preferences for independence and comfort over prolongation of life, a shared decision was made to transfer WF to the inpatient palliative care unit. WF was eventually weaned from dopamine, but did not return to his baseline mental status, and was later discharged to an outpatient hospice facility in alignment with his expressed goals.

IMPACT/DISCUSSION: Despite novel gene-silencing therapies and improved diagnostic techniques, advanced cardiac amyloidosis is associated with poor prognosis, with limited research characterizing the quality of life associated with different treatment plans. This case demonstrates the importance of a proactive approach to advance care planning for patients with ATTR cardiac amyloidosis. This requires interdisciplinary teamwork and should address a wide range of clinical scenarios, including the role of pacemaker/ICD placement, the use of inotropes (which may impact care settings), and the possibility of progressive functional loss with frequent hospitalizations.

CONCLUSION: In the absence of evidence-based approaches to advance care planning for patients with advanced ATTR cardiac amyloidosis, palliative care consultation can help to support the development of goal-concordant care plans despite clinical uncertainty.

WHEREFORE ART THOU NEUTROPHILS?: FIGHTING OFF INFECTION IN THE SETTING OF NEUTROPENIA

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LEARNING OBJECTIVE #1: Recognize challenges in treating and preventing bacterial infections in immunocompromised patients

LEARNING OBJECTIVE #2: Explore the utility of prophylactic antibiotics in patients with neutropenia secondary to malignancy

CASE: A 68-year-old man with a known history myelodysplastic syndrome (MDS) was admitted for lower extremity cellulitis. He had recently been admitted for cellulitis and pseudomonas bacteremia which was treated with vancomycin and piperacillin/tazobactam and later transitioned to ciprofloxacin. He was scheduled to begin chemotherapy with decitibine, but treatment was delayed due to infection.

This presentation, he was afebrile and vital signs were within normal limits. Edema and erythema of the right lower extremity were appreciated. There were 2 areas of induration on the RLE concerning for early abscess formation. Absolute neutrophil count was < 500/mm3, as in the previous admission.

He was treated with vancomycin and ciprofloxacin. No drainable fluid collection was noted on serial bedside ultrasounds. Repeat blood cultures remained negative, and he was discharged to complete a two-week course of doxycycline and ciprofloxacin.

A week following completion of antibiotic therapy, the patient was readmitted to the intensive care unit for pseudomonal septicemia.

IMPACT/DISCUSSION: Although uncomplicated cellulitis can be treated outpatient, cases complicated by neutropenia can become quite serious and require broad antibiotic coverage in an inpatient setting. For neutropenic patients, prevention of these infections with prophylactic antibiotic coverage should be considered.

Currently there are no guidelines for infection prophylaxis in patients with neutropenia due to malignancy. The focus is treatment of the underlying disorder. However, patients can be neutropenic for an unknown amount of time before diagnosis, and their risk of having an early infection that delays treatment cannot be quantified.

Research has focused on antibiotic prophylaxis in patients with neutropenia due to chemotherapy, with favorable outcomes. UK guidelines support fluoroquinolone prophylaxis in adults who are expected to see an ANC <500/mm3 due to chemotherapy, though only during the expected period of neutropenia.

Antimicrobial prophylaxis has been shown to decrease febrile episodes in high risk MDS patients taking decitabine. MDS patients can meet neutropenic criteria before beginning chemotherapy, and may benefit from antimicrobial antibiotics even before receiving treatment.

Antibiotic resistance is an important consideration in these cases. Resistance to fluoroquinolones has been shown to increase with use in prophylaxis in hematologic cancer patients. Therefore, only high-risk individuals should be considered (those with significant comorbidities who are expected to have an ANC <500/mm3 for at least 7 days).

CONCLUSION: Prophylactic antibiotics are often life saving in neutropenic individuals with cancer but decisions to initiate treatment can be difficult given lack of specific guidelines on the topic.

WHERE'S THE SOURCE: NORMAL BRAIN IMAGING IN CUSHING'S DISEASE

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LEARNING OBJECTIVE #1: Understand the diagnostic approach to determine the etiology of hypercortisolism

CASE: A 70-year-old man with a history of type 2 diabetes mellitus, hypertension, and heavy alcohol use presented to the ED with subacute, progressive weakness. He was independent in activities of daily living until three months prior to admission. He developed gradual weakness of all extremities, eventually requiring assistance with all activities. Associated symptoms included exertional dyspnea and diffuse swelling. His examination was remarkable for an irregular heart rhythm with tachycardia to 140 beats per minute, blood pressure of 185/110, elevated jugular venous pressure, bibasilar crackles, anasarca, and diffuse weakness with 3/5 strength in upper extremities and 2/5 strength in the lower extremities.

Pertinent labs included serum sodium 142 mEq/L, potassium 2.9 mEq/L, bicarbonate 41 mEq/L, BUN 25 mg/dL, creatinine 0.5 mg/dL, glucose 221 mg/dL, and albumin 2.3 gm/dL. Thyroid-stimulating hormone was undetectable with normal free T3 and free T4. Random serum cortisol was 80.4 mcg/dL with serum ACTH 626 pg/mL. MRI brain revealed no intracranial abnormality. A Dotatate PET revealed no radiotracer avid neuroendocrine tumor. Inferior petrosal sinus sampling demonstrated right petrosal sinus ACTH level of 2457 pg/mL with peripheral ACTH level of 682 pg/mL, confirming a probable pituitary source. He was placed on biochemical suppression with metyrapone, and surgical intervention was deferred pending rehabilitation.

IMPACT/DISCUSSION: Cushing's syndrome encompasses a constellation of findings that result from chronic exposure to excess glucocorticoids. The clinical manifestations of Cushing's syndrome vary with the source, degree and duration of hypercortisolism and can include reproductive, metabolic, cardiovascular, musculoskeletal, dermatologic, and neuropsychiatric derangements. The diagnosis is suggested by an abnormal first-line test (i.e., low-dose dexamethasone suppression test, nighttime salivary cortisol, or 24- hour urinary free cortisol).

Measurement of ACTH is essential to localize the source of excess cortisol. Elevated ACTH suggests a central or ectopic source, whereas suppressed ACTH suggests an adrenal source. A pituitary MRI is indicated in patients with elevated ACTH, however, non-diagnostic imaging is insufficient evidence to rule out a pituitary source. Thus, patients with indeterminate findings should undergo inferior petrosal sinus sampling to measure the ratio of ACTH secretion from the pituitary and the periphery. A ratio > 3 is highly suggestive of a pituitary source. For patients with suppressed ACTH, adrenal imaging is indicated. Further management is directed by the underlying cause of Cushing syndrome.

CONCLUSION: - A normal MRI brain does not exclude a pituitary source of hypercortisolism.

- Inferior petrosal sinus sampling identifies Cushing's disease with > 90% sensitivity and specificity.

WHIPPIT GOOD: A CASE OF NITROUS OXIDE INDUCED MYELOPATHY

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LEARNING OBJECTIVE #1: Recognize that recreational use of inhaled nitrous oxide (NO2) can induce vitamin B12 deficiency.

LEARNING OBJECTIVE #2: Recognize the neurological symptoms associated with vitamin B12 deficiency.

CASE: A 24-year-old female with depression presented with 2 days of burning, tingling and numbness in bilateral feet making it difficult to ambulate. She sprained her right ankle 3 weeks prior to presentation but denied experiencing similar symptoms in the past. She endorsed routine recreational use of inhaled NO2 "whippits" for the past 4 months. Physical exam was remarkable for 4/5 strength in bilateral lower extremities. She exhibited decreased proprioception, pinprick and vibratory sensation bilaterally in a stocking distribution to mid-shin. Romberg was positive and her gait was noted to be antalgic. Laboratory findings included macrocytic anemia with hemoglobin 12.6 g/dL, MCV 107.0 fL, undetectable serum B12 (< 150 pg/mL), and markedly elevated methylmalonic acid 68.09 umol/L. MRI of the cervical, thoracic and lumbar spine revealed signal changes on T2-weighted images along the midline posterior aspect of the cervical cord consistent with subacute combined degeneration. She was counseled on cessation of inhaled NO2 and discharged with oral vitamin B12 1000 mcg daily. At the follow-up 2 months post-discharge, strength had improved to 5/5 in the bilateral lower extremities along with resolution of prior proprioception, pinprick and vibratory sensation abnormalities. Repeat serum B12 was 1,497 (232 – 1,245pg/mL).

IMPACT/DISCUSSION: NO2 is a widely used analgesic for short-term pain relief as it acts as a partial agonist at the opioid receptor. When inhaled, it can cause euphoria and hallucinations making it a popular recreational drug. It is also known to exert its effects on the central nervous system through oxidation and subsequent inactivation of vitamin B12, a coenzyme required for the function of methionine synthase. This enzyme is integral in a cell's ability to produce the methyl groups required to synthesize DNA, RNA and myelin. As a result, even brief exposure to NO2 can lead to a constellation of neurological symptoms, usually starting with sensory impairment presenting as distal and symmetrical paresthesia of the lower extremities. Almost all patients demonstrate loss of vibratory sensation, often associated with diminished proprioception and a positive Romberg sign.

CONCLUSION: Our patient's clinical presentation with undetectable vitamin B12 level, elevated MMA, and MRI findings are consistent with the diagnosis of nitrous oxide induced vitamin B12 deficiency resulting in subacute combined degeneration. When assessing non-specific neurologic symptoms, physicians should be sure to carefully review the patients' laboratory tests for signs of anemia and obtain a comprehensive social history including the use of recreational drugs. Failure to identify this presentation may delay appropriate treatment and adversely affect patient outcomes.

WHO IS RESPONSIBLE FOR THE DIALYSIS BILL?

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LEARNING OBJECTIVE #1: Recognize vulnerable diabetic populations and provide an affordable treatment plan

LEARNING OBJECTIVE #2: Integrate insulin affordability awareness among our clinical practice

CASE: ET is a 46-year-old woman, with poorly controlled type 1 diabetes diagnosed at the age of 9 who had previously been on an insulin pump. Other co-morbidities included CKD IV, HTN and hypothyroidism. She presented with hyperglycemia of 400 mg/dl and fluid retention. Her GFR had decreased to 13 mL/min/1.73 $m^{2.}$ Her physical exam was notable for respiratory distress and anasarca. She failed to respond to aggressive IV diuresis and urgent hemodialysis was initiated.

The patient had been lost to outpatient follow up for a year. She had been co-managed by an endocrinologist and a primary care physician (PCP) but had stopped going to her endocrinologist over a year ago due to inability to afford the co-pays. She subsequently lost her insurance and had to pay out of pocket for her insulin; at this point she decided to stop seeing her PCP and began to ration her insulin. Due to social stigma, she did not mention her financial issues to her healthcare providers.

After identifying these challenges we decided to start her on a more affordable regimen of NPH insulin. Through social work assistance we were able to obtain a charity hemodialysis chair and discharge her home.

IMPACT/DISCUSSION: Healthcare expenditure with regards to diabetes rose to $327 billion from $245 billion in 2012. The costs can be divided into hospitalizations, prescriptions and physician visits. The majority of the cost of diabetes, is covered by government insurance. However, patients are still responsible for a significant portion of the costs. Furthermore, the cost of insulin has increased dramatically in the past 5-10 years. A vial of Humalog cost $35 in 2001 and $275 in 2017.

The price of insulin has continued to increase even after the drug's patent has expired due to the combination of FDA requirements, a monopoly in the insulin market, the lack of federal price controls and Pharmacy Benefits Managers. For patients without insurance or with some high deductible plans, they are expected to pay full price for insulin. The current insulin market is monopolized by pharmaceutical giants.

CONCLUSION: The high out of pocket costs for insulin has led to many instances of insulin rationing amongst both uninsured and insured. This has lead to death in some cases as well as poorly controlled diabetes with increased complications and mortality as in our case.

The cost of insulin is complicated due to a heterogeneous interaction between insurers, pharmacy benefits managers and manufacturers. As

physicians our role is multi-pronged; we can begin by identifying vulnerable populations and offer financial assistance or less expensive alternatives. Although there is a great deal of social media coverage regarding the subject, we also need medical professionals to create awareness and actively participate in the debate over legislation that would curb insulin prices.

WHY IS HE STILL DIZZY?

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LEARNING OBJECTIVE #1: Distinguish a focal inflammation involving only cranial nerves VII and VIII from other causes of dizziness.

CASE: 79-year-old white male with a history of chronic lymphocytic leukemia not on therapy, type 2 diabetes mellitus, and a history of Lyme disease presented to the emergency department for worsening dizziness and headaches. He was recently evaluated for a right facial droop complicated by the inability to close his right eye; he was diagnosed with Bell's palsy then given a week long course of prednisone and meclizine. The facial palsy persisted and he developed worsening frontal headaches, nausea, dizziness, emesis, and chills. He denied fevers, loss of balance, rashes, diaphoresis, cardiopulmonary symptoms, or changes in bowel habits. Only laying prone improved his symptoms.

On presentation, vital signs were stable. Neurologic exam showed intact facial sensation, right facial droop, inability to close right eye or raise right eyebrow. No vesicular lesions were seen in either ear canal. No change in symptoms on passive and active cervical range of motion. Labs showed hyperkalemia, a mild hyperglycemia, leukocytosis of 93,000. MRI brain and MRA head and neck showed no abnormalities.

Overnight he required acetaminophen, dexamethasone, meclizine, diphenhydramine, and prochlorperazine for symptom control. Otolaryngology was consulted who had no concern for inner ear pathology. He underwent X-ray guided lumbar puncture (LP) which showed 125 nucleated cells/uL, 98% lymphocytes, 1493 red blood cells, glucose of 77 and a protein of 83. PCR showed varicella zoster virus and the patient was diagnosed with Ramsay Hunt syndrome. He started on a 10 day course of IV acyclovir and prednisone.

IMPACT/DISCUSSION: Prolonged dizziness due to a viral etiology should be considered when other common causes have been ruled out. The more common causes include benign positional vertigo (BPPV) and Meniere's disease, each a disease of the inner ear. In this case, there was little concern for either of these, therefore less a common differential was considered. Although vesicular lesions were absent, there was enough clinical suspicion to warrant therapy for Ramsay Hunt syndrome with antivirals and steroids. It is prudent to know that the pathophysiology of this syndrome can include the spread of infection to the geniculate ganglion thereby causing cranial nerve VIII inflammation which results in dizziness.

CONCLUSION: Prolonged dizziness can be due to cranial nerve VII inflammation due to geniculate ganglion VZV infection, which is a rare presentation of Ramsay hunt syndrome. The differential for prolonged dizziness includes BPPV, Meniere's disease or chronic persistent dizziness. Focal inflammation of cranial nerves is a less common diagnosis, however important to consider. Vertigo in the setting of Ramsay hunt syndrome is a sign of severe infection and warrants IV antivirals with steroids for 10-14 days.

WORK PRESSURE AND SMOKING PROBLEMS IN JAPAN.

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LEARNING OBJECTIVE #1: Recognize the extreme work culture within Japan and potential detrimental effects on patients.

LEARNING OBJECTIVE #2: Recognize cultural differences in Japan about smoking cessation, and how this can be managed for hospitalized patients.

CASE: HPI

Severe epigastric pain suddenly started while drinking beer on the sofa. The pain got progressively worse and radiated to the back, and one hour later he was transported via ambulance to our hospital.

He reported shortness of breath, but there was no nausea, vomiting, diarrhea or fever. He smoked 30 cigarettes per day and drank 3 cups of Japanese vodka (*Shochu*) per day. He was otherwise well, taking no regular medications.

On, physical examination, he was hypertensive but otherwise stable. Cardiorespiratory exam was unremarkable. Abdominal exam elicited epigastric tenderness with guarding.

Contrast enhanced computed tomography showed a type IIIb abdominal aortic dissection with ulcer like projection.

Clinical course

The patient insisted that he return to work as his job was highly time dependent.

At one point, he even removed his own IV line and absconded temporarily from the hospital, only to be brought back by his ex-wife.

Once these issues were settled, he did comply with the treatment plan.

IMPACT/DISCUSSION: 1. Work pressure in Japan and its impact on treatment plans.

He repeatedly emphasized how important it is to go back to work. In fact, we contacted his employer who was happy for him to take time out. Surprisingly this actually had a negative effect on the mood of the patient. In Japan, work is taken very seriously, and many people have a high degree of pride of their necessity in their workplace.

2. Smoking problems in hospitals in Japan.

Compounding the problem mentioned above was significant nicotine withdrawals, which were difficult to manage. Our hospital has NO designated smoking area, and there is NO supply of NRT, or support for cessation. Moreover, Japan's Guideline for Smoking Cessation says "nicotine replacement therapy should not be used" for patients with cardiovascular diseases; it just encourages the patients to quit. On the other hand 30% of Japanese men smoke and many restaurants and bars in Japan still allow smoking. Also, smoking is ingrained in workplace culture, especially in construction.

3. Why he returned.

At first this is related to the power balance between husband and wife. Japanese women are thought to be submissive, but in the real world many wives have considerable power over the family. In this case, even though they were divorced, the power balance still remained, and she was the only person who could persuade him to return for treatment.

CONCLUSION: 1. Work pressure in Japan is tough and can interfere with adequate patient treatment.

2. Japan's society has a smoking dichotomy; many people smoke outside the hospitals but it is strictly prohibited inside with poor support for cessation.

WORKUP AND MANAGEMENT OF INCIDENTAL EOSINOPHILIA

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LEARNING OBJECTIVE #1: Discuss the initial workup and management of incidental eosinophilia

CASE: A 77 year old male with a history of stroke and hypertension presented with atrial fibrillation with rapid ventricular response. Physical exam was notable for right-sided hemiparesis, expressive aphasia and slurred speech, which were at baseline and a diffuse, blanchable papular rash across the patient's body. Lab work revealed a hemoglobin of 8.4 gm/dL, leukocyte count of 15,000/mL, absolute eosinophil count of 13,770/mL and platelet count of 115,000/mL. Creatinine was 3.8 mg/dL with a baseline of 1.4 mg/dL. His atrial fibrillation resolved. Due to thrombocytopenia, anemia, renal failure and papular rash, a workup for incidental eosinophilia was done. Blood and urine cultures were negative. UPEP had free lambda light chains. SPEP showed free kappa of 194 mg/L, free lambda of 2,318 mg/L and kappa to lambda ratio of 0.08. Other labs include ANCA 1:80, IgE > 2,000 IU/mL, tryptase 7.2 mcg/L, RF 76 IU/mL, LDH 232 units/L, CRP 87 mg/L, C3 of 45 mg/dL and C4 of 6 mg/dL. CT chest showed mediastinal adenopathy and multifocal airspace disease. Urine microscopy had muddy brown casts. Skin biopsy was negative for vasculitis. Bone marrow biopsy showed hypercellular marrow with lambda monotypic plasma cell neoplasm. Flow cytometry revealed a 4% population of primarily lambda monotypic plasma cells. FISH analysis was negative for genetic abnormalities indicative of myeloid neoplasia.

IMPACT/DISCUSSION: Eosinophilia is often incidentally discovered. It may be due to an allergic, inflammatory, neoplastic or infectious process. Diagnostic workup depends upon evidence of end organ damage, patient stability and clues from history and physical exam. History should focus on constitutional, cardiac, pulmonary, gastrointestinal, skin and neurologic systems. Medication changes, exposures to undercooked food, travel and activities with risk of encountering parasites should be reviewed. Physical examination evaluates for lymphadenopathy, organomegaly, rash, cardiopulmonary abnormalities and neurologic findings. Lab work to confirm eosinophilia and evaluate for electrolyte abnormalities and liver function impairment should be sent. Peripheral smear can assess eosinophil morphology and for other hematologic abnormalities. Testing for autoimmune diseases or vasculitis should be considered. Hypereosinophilia (absolute eosinophil count > 1500 cells/mL) and thrombocytopenia warrant further workup with dedicated chest imaging, vitamin B12, tryptase, complement levels and inflammatory markers with concern for underlying hematological disorder. Genetic testing for PDGFRA, PDGFRB and FGFR1 can evaluate for a primary myeloproliferative neoplasm that may respond to tyrosine kinase inhibitors. Bone marrow biopsy is recommended when other abnormalities are found.

CONCLUSION: Incidental eosinophilia often requires further workup. History and physical exam are paramount in helping guide a clinician's workup given the broad differential of eosinophilia.

WORRISOME VARICES: A RARE CASE OF UMBILICAL VEIN VARICES

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LEARNING OBJECTIVE #1: To recognize ectopic sources of bleeding in portal hypertension.

LEARNING OBJECTIVE #2: To understand the pathophysiology of portal hypertension and variceal bleeding.

CASE: Our patient is a 58-year-old male with decompensated alcoholic cirrhosis, was bought to the hospital by his wife for altered mental status. She reported that the patient was lethargic and has been complaining of diffuse abdominal pain for a day. He was admitted to the hospital for possible hepatic encephalopathy. Labs were notable for hemoglobin of 8g/dl, platelet count of 90,000/mm3, elevated INR 2.7, and ammonia 268umol/L. Computerized tomography(CT) of the abdomen revealed a soft tissue density below the rectus sheath, suggestive of a hematoma. No surgical intervention was planned at that time. However, the patient continued to decline clinically, requiring multiple transfusions. CTA demonstrated an increase in the size of the hematoma, and a large recanalized umbilical vein with extensive varices around the hematoma, and the abdominal wall. He underwent paracentesis with frank hemoperitoneum, indicating that the umbilical vein is bleeding into the peritoneal cavity. He underwent endovascular coiling of the vein, however, it was complicated with significant bleeding in the peritoneum and puncture sites, consistent with disseminated intravascular coagulation. The family decided to withdraw care due to poor prognosis in the setting of multiorgan failure.

IMPACT/DISCUSSION: Portal hypertension in cirrhosis develops due to progressive fibrosis and regenerating nodules obstructing the portal circulation, leading to the formation of portosystemic venous connections. Ectopic varices are portosystemic collaterals in locations other than the gastroesophageal region such as the duodenum, gall bladder, and umbilicus. The umbilical vein is usually obliterated in early life and maybe recanalized in the setting of portal hypertension. This is rare, accounting for less than 5% of all variceal bleeds, however, has high mortality due to fatal hemoperitoneum. They develop due to a communication between the recanalized umbilical vein and paraumbilical vein of the abdominal wall. Majority of these cases present with abdominal pain and hypotension. Diagnosis can be established by paracentesis, ultrasound Doppler and CT imaging. Although no specific guidelines exist, it is treated with sclerotherapy, trans-jugular intrahepatic portosystemic shunt, ligation of umbilical vein with standard resuscitation. The condition seems to be underestimated because most of the patients present with tense ascites in the setting of cirrhosis in a terminal state rapidly leading to death. Hence physicians must have a high degree of suspicion to diagnose and appropriately manage this condition.

CONCLUSION: Variceal bleeding from ectopic sources is relatively rare. It is crucial to recognize the source early, because of high mortality, if unrecognized. It is also important to differentiate intraperitoneal bleeding from spontaneous bacterial peritonitis.

WORTH A SECOND LOOK: WHEN THE HISTORY DOESN'T MATCH THE HISTOLYTICA

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LEARNING OBJECTIVE #1: Identify risk factors, typical presentation and complications of amebic colitis

LEARNING OBJECTIVE #2: Recognize the role of multispecialty collaboration in complex cases with diagnostic uncertainty

CASE: A 68 year-old woman with history of atrial fibrillation, CAD and DVT presented with 8 months of diarrhea and intermittent hematochezia. She was from the United States with no recent foreign travel, but had been diagnosed with *Entamoeba histolytica* colitis 5 months prior at an outside hospital and treated with metronidazole and paromomycin.

Stool PCR and O&P were negative. Flexible sigmoidoscopy revealed a colonic stricture and ulcerations. Biopsies demonstrated healing injury

without any microorganisms, cryptitis or granulomas. Weighing the low pre-test probability of amebic colitis in a patient without travel to an endemic area, this patient's vascular risk factors, and endoscopic findings, ischemic colitis was strongly considered as an alternative diagnosis.

Surgery, gastroenterology and infectious disease were consulted and confirmation of her initial infection was recommended. Pathology slides from the outside hospital were reviewed, with identification of *E. histolytica* organisms. Serum *E. histolytica* IgG was positive. Further history revealed travel to Texas near the Mexico border 5 months prior to the onset of symptoms, where the parasite is present but remains a rare cause of diarrhea. Investigation for immunodeficiency was unrevealing.

On direct comparison, the colonic biopsy 3 months after treatment for amebic colitis demonstrated interval healing. Surgical intervention was felt safe to defer per patient preference. Ultimately, the patient had recurrent bleeding and underwent total colectomy for chronic ischemic colitis with stricture 6 months later that was felt to be a sequela of her *E. histolytica* infection.

IMPACT/DISCUSSION: Amebic colitis is common worldwide but rare in the US, typically seen in patients with recent travel to or immigration from an endemic area.

Infection with *E. histolytica* is often asymptomatic, but 10% of patients manifest symptoms including watery or bloody diarrhea, weight loss, fever and abdominal colic. Presentation may be difficult to distinguish from other infections including tuberculosis and non-infectious diseases, including IBD and ischemic colitis.

Rare and more serious complications include fulminant colitis, perforation, hemorrhage and obstruction. Strictures can occur due to amebic invasion into the bowel wall arteries with resultant small vessel thrombosis and bowel necrosis. Ulcerations and strictures often resolve with antibiotics but persistent strictures may require surgical intervention.

CONCLUSION: *E. histolytica* is an uncommon, but important cause of severe gastrointestinal disease which may mimic conditions such as IBD, TB or ischemic colitis, and may require surgical intervention.

Multispecialty collaboration and confirmation of unexpected findings is critical when caring for patients with rare diseases.

"ORIENT YOURSELF": THE IMPORTANCE OF HISTORY AND EXAM IN A CASE OF ACUTE DIZZINESS

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LEARNING OBJECTIVE #1: Identify brain tumors as a possible cause of acute dizziness, especially in patients with a previous history of malignancy.

LEARNING OBJECTIVE #2: Recognize which patients with dizziness will require advanced imaging.

CASE: A 52-year-old female with history of breast carcinoma in 2014 status post radical mastectomy and chemoradiation presented to the internal medicine clinic with dizziness, frontal headaches and worsened balance for 1 week. Symptoms were constant and worsened when she stood up. She was taking daily Anastrozole. Labs 6 months prior were unremarkable. CT chest, abdomen, and pelvis in 2015 were negative for metastasis and a mammography one year before revealed BIRADS 2. She was hemodynamically stable with negative orthostatic vital signs. Exam was positive for unstable gait and horizontal nystagmus bilaterally that was not suppressed with eye fixation. Dix-Hallpike maneuver was negative. She had no focal neurological findings. Due to new-onset dizziness associated with headaches, exam suggestive of central vertigo, and cancer history, an emergent CT Head with and without contrast was ordered. The CT Head showed a 3.5x5x4 cm right cerebellar peripherally enhancing lesion crossing the midline with surrounding vasogenic edema and effacement of fourth ventricle, suggestive of metastatic disease. She was admitted with urgent neurosurgery consult. She was started on IV dexamethasone for vasogenic edema with partial improvement of her symptoms. MRI Head confirmed solitary brain metastasis. She was taken to neurosurgery and the solitary brain lesion was removed with pathology confirming metastatic breast cancer to the brain.

IMPACT/DISCUSSION: Traditionally, dizziness has been divided into vertigo, disequilibrium, presyncope or lightheadedness. Unfortunately, patients' descriptions do not reliably predict the cause of dizziness. A systematic approach based on timing, triggers, medications, and comorbidities is a more consistent, clear, and reliable tool to predict central vs. peripheral causes for dizziness. In the setting of continuous dizziness, a positive "HINTS" examination (head-impulse, bilateral nystagmus, or test of skew) suggests that the dizziness is from central cause. Such cases warrant auxiliary tests and imaging. Indications for brain imaging include exam consistent with central lesion, risk for stroke/hemorrhage, neurological signs, or new headache accompanying vertigo. MRI is best due to increased accuracy, but in the acute setting, CT may be preferred. In this case, the patient had vertigo associated with headaches and a history of malignancy. Both the history and the physical examination were independent predictors for a central cause of dizziness requiring imaging and helped us in diagnosing metastatic brain cancer.

CONCLUSION: -It is important to utilize a systematic approach and the right physical exam maneuvers to improve diagnostic accuracy of dizziness

-In patients with history of malignancy, brain metastasis should be on the differential for new-onset central dizziness.

"YOU DON'T UNDERSTAND, I CAN'T GO TO DETOX:" OUTPATIENT MANAGEMENT OF BENZODIAZEPINE WITHDRAWAL IN A YOUNG TRANSGENDER MAN

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LEARNING OBJECTIVE #1: Design a treatment plan for outpatient medically managed benzodiazepine withdrawal in a patient with coexisting opioid use disorder (OUD)

LEARNING OBJECTIVE #2: Describe the risks of hormone therapy interruption for transgender patients

CASE: A 23-year-old transgender man with benzodiazepine use disorder, OUD, and PTSD presented to a substance use disorder (SUD) bridge clinic to stop heroin/fentanyl and benzodiazepine use. His intranasal benzodiazepine use had increased to 10-12 mg clonazepam and 4 mg alprazolam per day in the setting of trying to stop heroin/fentanyl on his own and losing his testosterone prescriber, resulting in a return of menses and significant gender dysphoria.

On exam, he was tremulous. He reported no history of complicated benzodiazepine or alcohol withdrawal. He was started on buprenorphine/naloxone for OUD. He declined inpatient medically managed benzodiazepine withdrawal, citing trauma in group homes as a teenager. He agreed to a structured outpatient benzodiazepine taper with daily assessments by a clinic nurse manager: diazepam 10mg TID for day #1, 10mg BID for days #2-3, and then 10mg daily. He did well for the first two days (mean CIWA 11) then presented with uncontrolled symptoms on day #3 (CIWA 21). He was referred to an inpatient program but left shortly after intake. He was therefore transitioned to a symptom-triggered diazepam schedule with daily assessments. He required up to 60mg per day – with no signs of sedation – but was then able to taper. His daily visits were interrupted by transportation barriers, and he completed a taper on his own.

Soon after, he resumed weekly testosterone injections. He continues daily buprenorphine/naloxone and has now been in recovery with no benzodiazepine or non-prescribed opioid use for 9 months.

IMPACT/DISCUSSION: Benzodiazepine withdrawal, which can be life threatening, is typically managed in inpatient settings due to high monitoring needs. However, many patients experience barriers to accessing inpatient services or require extended tapers. In this case, the SUD bridge clinic model allowed comprehensive daily assessments and facilitated a successful outpatient taper. Addressing his OUD and resuming masculinizing hormone therapy were also stabilizing.

Testosterone is an FDA Scheduled III controlled substance. Given the theoretical risk of diversion, some providers discontinue testosterone for transgender men with active SUD. Significant dysphoria and distress can result from involuntary hormone cessation, and this case illustrates how continuing therapy despite non- prescribed substance use is often indicated.

CONCLUSION: - Outpatient medically managed benzodiazepine withdrawal is feasible for patients with no history of complicated withdrawal.

- Bridge clinics are low-barrier, rapid-access clinics for patients with SUD. This model can facilitate safe monitoring for patients on benzodiazepine tapers.

- Gender affirming hormone therapy is associated with numerous positive outcomes; involuntary discontinuation should be avoided when possible.

ACHIEVING CARE TRANSFORMATION (ACT) REPORT: USE OF AN ELECTRONIC MEDICAL RECORD (EMR)-BASED REPORT TO LEVERAGE IDEAS OF PROVIDERS TO REDUCE UNNECESSARY INPATIENT AND ED UTILIZATION IN AN OUTPATIENT SETTING.

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): UNC Healthcare is rapidly expanding value-care contracts, and our internal medicine practice has high total cost of care, admission rates, and emergency department (ED) visits.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Identify and implement strategies to reduce unnecessary ED visits and hospitalizations.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : We created an EMR-based report to allow faculty providers to review their panel's healthcare utilization in real- time with a process for referral to clinic resources including care management, palliative care, and hospital follow-up clinic. The ACT Report extracted patient panels with data on internal and external utilization of the hospital, ED, and primary care clinic, risk-stratification scores, eligibility for Chronic Care Management and advanced care planning (ACP). Report filters were built to easily identify subgroups of patients including those with an inpatient stay or ED visit in the past three months and high-risk patients without ACP.

Providers were asked to review their ACT report each month independently or during monthly scheduled faculty meetings and provide feedback on actions they took upon review and ideas for interventions to prevent unnecessary hospitalizations and ED visits.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Number of faculty completing report, type of follow-up recommended, number of change ideas recommended.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): From July to December 2019, on average 23 (75%) of faculty providers reviewed their ACT report each month. Each month, 46% of providers requested follow-up appointments with patients, 36% utilized embedded care management services, and 1-10% of providers referred patients to other clinic resources including social work, multidisciplinary hospital follow-up clinic, hotspotting program, and palliative care. Over 75 ideas of resources and interventions have been submitted and include access to specific specialty care services, improved communication to patients, efforts to direct patients to urgent cares, improved access to behavioral health programs, and development and implementation of action plans for acute exacerbations of chronic conditions. Subsequent work is underway with a multidisciplinary clinic team to review these ideas and plan rapid tests of change to implement these ideas. To further operationalize the use of the ACT Report based on common actions taken by providers, access to the report will be expanded to ancillary staff, including care managers to assist providers with identification of patients needing care management, and administrative staff to identify patients with lack of scheduled follow-up appointments after an ED visit and hospitalization.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The ACT Report has allowed for bottom-to-top innovation - individuals directly involved with patient care have helped to drive interventions and improvements developed clinic-wide. Providers are expected to complete these reports, which has yielded greater participation. Further evaluation is needed to determine the effectiveness of improvements and innovations on unnecessary healthcare utilization.

A COMPREHENSIVE QUALITY IMPROVEMENT INITIATIVE TO IMPROVE SERIOUS ILLNESS COMMUNICATION IN THE LONG TERM ACUTE CARE HOSPITAL SETTING

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Despite the complexity and acute needs of Long Term Acute Care Hospital (LTACH) patients their values and priorities are not systematically addressed and integrated into care planning.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Teach LTACH providers a structured approach to communication focusing on patients' values and priorities Standardize documentation of serious illness conversations in the electronic medical record

Document and monitor these conversations through use of a smart phrase in the electronic medical record

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The project included a 3-hour communication workshop led by palliative care providers which taught LTACH hospitalists to use the Serious Illness Conversation Guide, a structured approach to serious illness communication. A new workflow was created to initiate conversations soon after admission with social work support to set up family meetings as needed. Lastly, the electronic medical record (EMR) was adapted through creation of a new smart phrase in EPIC that was used to efficiently capture the conversations in Advance Care Planning Notes. This note type is easily

retrievable across settings. Use of the smart phrase was tracked monthly and monitored by project leads. Hospitalists received feedback in the form of bimonthly emails which highlighted overall progress as well as the individual providers who authored the most ACP notes.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The number of Advance Care Planning notes for counted.

The use of the smart phrase was counted. Provider feedback survey.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Implementation started January 28, 2019. The percentage of admitted patients with a documented ACP note increased from 46.4% to 100%. Of note 3 months had 100% completion rate. (Refer to Figure 1 and 2).

In the 6 months prior to initiating this program, there were 41 Advanced Care Planning (ACP) notes documented at the LTACH. In the same period of time following introduction of this program, there were 122 ACP entries, an increase of 297%.

In an email-administered survey of the trained LTACH hospitalists, a majority of providers (62.5%, n= 8) reported feeling slightly less to much less anxiety about having these conversations. A majority of providers (75%) also felt slightly increased to greatly increased satisfaction with their roles in their patient's care as a result of these discussions.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The Serious Illness Care Guide is an effective tool for initiating conversations about patient values and priorities in the LTACH setting.

Workflow and EMR changes were effective in increasing ACP conversations using this format. This quality improvement initiative provides promising and scalable tools to increase conversations in the complex LTACH population. Next steps are to maintain provider engagement in the initiative. The success of this quality improvement initiative serves as a model for other provider groups within our health system.

ADAPTING AND IMPLEMENTING A SHARED MEDICAL DECISION MAKING TOOL TO IMPROVE COLORECTAL CANCER SCREENING RATES IN INTERNAL MEDICINE RESIDENT CONTINUITY CLINIC

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): CRC screening is effective in reducing cancer-associated mortality, but screening rates in this urban internal medicine resident clinic remain low (67% in 2019 quarter 3) despite patient reminders and EHR-based resident feedback, with under utilization of stool-based strategies.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) Educate internal medicine residents on the indications/contraindications/ordering workflow for FIT and FIT-DNA screening tests

2) Increase utilization of stool-based CRC screening strategies

3) Improve CRC screening rates in this resident clinic to 72% (HEDIS top decile)

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Our intervention took place in an outpatient internal medicine resident continuity clinic in a large, urban, academic medical center. This primary care clinic includes 92 residents and 22 attending physicians with about 40,000 patient visits per year. We adapted a shared-medical-decision-making tool from the Amerian Cancer Society to reflect the available screening strategies. The tool was distributed to 20 residents in two weekly clinic sessions. The residents concurrently received a brief presentation on indications, contraindications, and ordering procedures for FIT, FIT-DNA, and direct visualization strategies.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We collected data on individual resident CRC screening rates via EHR dashboards pre- and post-intervention. Residents completed a survey with Likert-type items eliciting resident comfort with indications/contraindications/ordering stool- based strategies before and after the intervention. We also plan to compare monthly total orders (FIT, FIT- DNA, colonoscopy) pre- and post-intervention.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Prior to intervention, the mean screening rate of the 20 residents YTD was 61.8% (range 33-73%) which increased to 63.4% (range 50-75%) post-intervention. Overall, the clinic's 2019 screening rate including resident and attending physicians was 68.9%.

Response rate to the survey was 50% pre and post intervention. Prior to intervention, 1 respondant rated their confidence in their knowledge of the indications/contraindications for FIT or FIT-DNA as above neutral (5 "neutral," 2 "low," 2 "not at all"). After intervention, 6 of 10 were "somewhat confident" in indications for FIT (3 "neutral," 1 "low") and all respondents responded that they were "somewhat" or "very" confident about the indications/contraindications for FIT-DNA.

Prior to intervention, 7 of 10 rated their confidence in ordering FIT as "low" or "not at all." 8 of 10 rated their confidence in ordering FIT-DNA as "Low" or "Not at all." After intervention, 5 of 10 were "confident" or "very confident" in ordering FIT, and 6 of 10 were "confident" or "very confident" in ordering FIT-DNA.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): We demonstrated that brief resident education and provision of a shared medical decision making tool improves resident confidence in utilizing stool-based CRC screening strategies and can confer modest improvement in overall CRC screening rates in an internal medicine resident continuity clinic.

ADDICTON TREATMENT FOR HOSPITALIZED PATIENTS WITH LINKAGE TO CARE: A NOVEL INTERVENTION TO SCALE ADDICTION MEDICINE EXPERTISE TO HOSPITALISTS

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): People with opioid use disorder are increasing hospitalized, yet little is being done to engage patients in addiction treatment during hospitalization. Hospitalists are uniquely positioned to be trained to provide this life-saving care. **OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES):** In 2018, we obtained funding to build a hospitalist driven addiction consult service in partnership with an addiction medicine trained hospital medicine physician.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : In year one, eleven hospitalists were recruited from an academic hospital

who participated in a comprehensive addiction medicine training program which included: 1) a 13-part lecture series covering medications for opioid and alcohol use disorder, trauma and addiction, interpretation of drug testing, among others, 2) online addiction training modules with textbook, 3) American Society of Addiction Medicine membership, and 4) 10 - ½ day shadowing shifts with an addiction medicine physician. In year two, hospitalists will attend on a Monday through Friday addiction consult service. The program also supports a dedicated social worker and peer recovery coach. All participating hospitalists committed to taking the Addiction Medicine board exam by 2021.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): First year metrics are: 100% buprenorphine certification, 100% online module completion, and 100% completion of shadowing shifts, and to hire a dedicated addiction social worker and recovery coach. Year two metrics are: initiation of Monday through Friday hospitalist-supported addiction consult service with buprenorphine or methadone initiation and linkage to treatment with expansion of community partnerships. Year two quantitative measures include: monthly addiction consults completed; buprenorphine prescriptions initiated, naloxone prescriptions at discharge across all specialties, hospital-based methadone enrollment; billing for addiction services, and addiction medicine board certification.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): In year one, all hospitalists were buprenorphine waivered, completed the online training, and completed 85% of the shadow shifts. We hired a dedicated addiction social worker and peer recovery coach who visited six community treatment partners and three methadone clinics in year one and two. In year two, we began our Monday through Friday addiction consult service. From October to December 2019, we initaited and prescribed buprenorphine 15 times at discharge with linkage to treatment, enrolled 21 patients into a methadone program, and billed over $100,500 for addiction services provided. Across all hospital services, naloxone was prescribed 138 times at discharge. Hospitalists will take the Addiction Medicine board exam in 2021 through the practice pathway.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Program success requires 1) a motivated addiction medicine expert to support hospitalists, 2) hospital leadership support, and 3) hospital support for a dedicated addiction medicine social worker.

ADDRESSING FOOD INSECURITY THROUGH A PRIMARY CARE/CBO PARTNERSHIP

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Time and resource constraints in primary care settings create challenges in identifying and addressing food insecurity, a key social determinant of health contributing to poor health outcomes.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To develop a coordinated approach to food insecurity assessment and service referral in a municipal primary care clinic.

To connect patients reporting food insecurity in a primary care clinic to appropriate services.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Lincoln Hospital is a municipal hospital in the South Bronx, the NYC borough with the highest prevalence of food insecurity. Screening for social determinants of health was instituted at the Lincoln adult medicine outpatient clinic using a 10-item questionnaire that screens for a number of social needs including food insecurity. Volunteers at the clinic assist patients in navigating referrals for positive needs to resources provided both internally in the hospital and externally with partner CBOs.

Patients who screen positive for food insecurity are referred to Public Health Solutions, a non-profit organization providing on-site food navigators 5 days per week to further assess patients' needs and service eligibility. Food navigators offer a Food and Nutrition Services Bundle which provides a full range of food security resources available in the local community including emergency food resources, medically tailored home-delivered meals, SNAP and WIC enrollment. The bundle was powered by an electronic platform, Unite Us, that enabled network partners across multiple health and social service settings to share information and coordinate care.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Starting in March 2019, food navigators were able to systematically identify and track patients referred from positive food insecurity screening in clinic. We assessed the number of patients screening positive for food insecurity, and the proportion of those patients who completed their food navigator intake and were enrolled in a program. Data was shared between partners to determine resource utilization and identify areas for process improvement.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): From March 2019 – October 2019, 1568 patients were screened for social determinants of health needs, and 317 screened positive for food insecurity. Of those patients, 94 completed their Food and Nutrition Services Bundle intake, and 57 were enrolled in a service. The most common service referrals were food pantries and SNAP, with patients frequently being connected to multiple resources.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Adequately addressing food insecurity often involves a multitude of interventions for a single patient. Simplifying access to these interventions through a food navigator and physically locating navigators close to the clinic helped to streamline workflows and connect patients to appropriate resources.

Using an electronic platform to track external CBO referrals enabled us to track outcomes and identify areas of patient drop off. The most significant drop off was between positive screening and referral intake, which drove efforts to improve phone outreach to patients.

ADDRESSING SOCIAL DETERMINANTS OF HEALTH IN AN URBAN PUBLIC HEALTH SYSTEM: LESSONS FROM THE SAN FRANCISCO SDOH TASK FORCE

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Social determinants of health (SDoH) have a major impact on the health of patients, particularly in vulnerable populations; in fact, they exert a stronger influence than the influence of access to medical care (Schroeder et al., 2007). Although this relationship has been well evaluated, the mechanisms by which health systems can institute systems that result in impactful interventions remains elusive.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The Social Determinants of Health Task Force in the San Francisco Health Network was established to reach the following goals:

- Work with the Network's data governance committee to build standardized SDoH data infrastructure

- Drive continuous improvment work to integrate SDoH screening, data collection, and workflows into the electronic health record

- Break down silos and create collaborative relationships among participants (including representatives from community-based organizations, public health leaders, clinicians, and academicians.)

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The SDoH task force was created to bring together a diverse team of individuals working on SDoH screening and intervention for vulnerable patients in San Francisco. Participants include members of the Whole Person Care team, community behavioral health, primary care, hospital-based medicine, emergency services, and the San Francisco food bank. The group created consensus around universal screening questions for SDoH and is now creating standard workflows to connect at-risk patients with services when. Initially, the focus was on implementation of "behavioral health vital signs," which includes screening for tobacco use, depression, intimate partner violence, alcohol and drug use. Now the focus is on screening for additional SDoH, including housing instability, food insecurity, transportation and employment risk. Group members also use the task force to coordinate efforts around parallel sub-projects.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Number of individuals screened for behavioral health vital signs and additional SDoH challenges

Number of interventions offered to those deemed at-risk

Reduction in PHQ9 scores for individuals identified as at-risk

Housing obtained for homeless individuals (sub group)

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): To date, the network has increased its screening for behavioral health vital signs from 0% to 20% over a one-year period (12,000 individuals screened.) This was accomplished by using an integrated team of primary care clinicians and behavioral health staff.

The Whole Person Care team is tracking housing status and successful housing of homeless individuals for the most at-risk individuals

The task force also successfuly built data fields for additional SDoH questions into the new electronic health record.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Screening for SDoH can be implemented in a standardized fashion across a city-wide health network. Robust collaboration among a highly interdisciplinary group is necessary to make this work a success. Competing priorities (for funding, human bandwidth, and EHR build) will be ongoing challenges.

ADDRESSING SOCIAL DETERMINANTS OF HEALTH IN PRIMARY CARE: PERCEPTION AND PRACTICE

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Despite research indicating that adverse social determinants of health (SDOH) substantially impact burden of disease and health outcomes, evidence suggests SDOH are not adequately addressed in primary care settings.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) To characterize prevalence of adverse SDOH experienced by patients seen in resident primary care clinics at Grady Memorial Hospital, an urban safety net hospital

2) To compare the prevalence of SDOH as self-reported by patients to provider-reported perceptions

3) To assess provider screening practices and identify perceived barriers to SDOH screening

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : A pilot SDOH screening tool adapted from Health Leads Toolkit was given to patients attending primary care appointments within a 12 week period. Resident physicians in Grady Memorial Hospital's continuity clinics were separately surveyed to assess providers' perceptions of SDOH most commonly impacting patients and to assess current practices toward screening in clinic.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Descriptive statistics were utilized to quantify the percentage of patients succesfully screened and to determine the number of resources, including referrals, that were offered by providers following screening.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 1,061 (27.3%) surveys were completed. Patient surveys identified 10 SDOH categories with >15% respondents being impacted in last year. Although nearly 25% of respondees experienced at least one adverse SDOH over the past year, less than 5% were offered SDOH related handouts or ancillary service referrals by a resident physician. 87% of residents reported additional knowledge of patients' SDOH would change their clinical care, but only 22.3% of residents reported screening more than half of their patients. The most commonly cited reasons for not screening included lack of time, not having the resources to address barriers, and not knowing how to screen effectively. When comparing patient responses to physician perceptions, resident physicians correctly identified only 1 of the 3 most commonly cited adverse SDOH experienced by patients.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Disparate responses between provider perceptions and patient experiences of SDOH reveal resident physicians may be unaware of the SDOH most prevalent in their patient populations. Providers view SDOH-related information as valuable but institutional barriers prevent providers from screening effectively. Universal screening and enhanced clinic resources may improve patient health outcomes by allowing physicians to identify prevalent SDOH and offer targeted interventions.

ADDRESSING SOCIAL DETERMINANTS OF HEALTH THROUGH THE DUKE HOTSPOTTING INITIATIVE: A MEDICAL STUDENT-PATIENT PARTNERSHIP

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): The social determinants of health (SDH) are known contributors to poorer long-term health outcomes.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The Duke Hotspotting Initiative (DHSI) is a student-led program that pairs first-year medical students with patients who are identified by social workers as under-utilizers of primary

care with complex social and chronic health needs. The program's tripartite mission is to (1) benefit patients by providing consistent outpatient follow-up and improving health outcomes; (2) benefit medical students by providing opportunities to apply advanced motivational interviewing and health behavioral coaching; and (3) benefit the health system by adjusting these patients' healthcare utilization to be more cost-efficient and sustainable.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Throughout the academic year, students make contact with their patients weekly and attend outpatient medical appointments with patient consent. This program is one of several clinical experiences that fulfills a first-year student academic requirement.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): To evaluate DHSI's impact on patients, data on patient's healthcare utilization was recorded for the duration of the 2018-2019 patient cohort (10/17/18 to 5/21/19), as well as a time period of equal length prior to the start of the program. Data collected included number of emergency department (ED) visits, inpatient hospitalizations, and outpatient clinic no-show rates.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): There were 14 patients in the 2018-2019 patient cohort however two were excluded from analysis because they passed away during the program. All p-values were assessed using one-tailed paired T-tests. Overall, the average number of ED visits dropped from 3.66 to 3.08 (p=0.2804), the average number of outpatient no- show visits increased from 4.5 to 4.92 (p=0.3867) and the average number of inpatient hospitalizations decreased from 1.75 to 0.833 (p=0.0380). Separate analysis has shown that students who participate in DHSI show significant improvement in comfort with patient communication, advising patients and clinical skills. While preliminary analysis was limited due to a small sample size, planned analysis for the 2019-2020 cohort includes qualitative evaluation of patients' experiences with the program which may provide a richer understanding of this program's impacts on areas like influence on patient trust in the medical system, and would be included at this conference.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Overall, DHSI demonstrates the feasibility of this low-cost model to provide additional layers of support for medically and socially complex patients, while also educating medical students about SDH through experiential learning.

ADDRESSING SOCIAL ISOLATION IN AN URBAN SAFETY NET HOSPITAL

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Social Isolation (SI), a largely unrecognized social determinant of health, has been linked to various negative health outcomes including higher rates of depression, increased risk of cardiovascular disease, and higher healthcare costs, yet little is known about SI among hospitalized patients in safety net settings.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): I. Measure the prevalence of SI within our inpatient population at a large urban safety net hospital.

II. Quantify the degree and nature of SI using in-depth interviews and a validated screening tool.

III. Understand the factors that contribute to SI in order to create personalized interventions that address SI and meet the needs of a large urban safety net health system.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : From June 2019 through November 2019, we conducted a point prevalence study of SI and a series of focused interviews on adult patients hospitalized in the inpatient wards at LAC+USC Medical center, a 600-bed Level 1 trauma center serving 10 million residents of the greater Los Angeles area.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We assessed the point prevalence of SI, at two different time points, using a short two-question screen of all willing and able patients in the medical/surgical wards of LAC+USC. In addition, we conducted focused, in-depth surveys on patients that were identified by hospital nursing staff as having one or more psychosocial risk factors for SI. These surveys included: 1) a 2-question screen 2) an extended screening instrument adapted from the Berkman-Syme Social Network Index (BSNI), and 3) a series of open-ended questions investigating the underlying mechanisms for social isolation among hospitalized patients.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): To determine the prevalence of SI and loneliness, we screened a total of 149 patients in the medical/surgical units at LAC+USC Medical Center. 32 (21%) of these patients screened positive for SI and 8 (5%) screened positive for loneliness. To date, we have completed 60 patient surveys using the BSNI instrument.

Preliminary results from our surveys indicate that individual-level barriers were the most commonly reported, for those with the highest risks for SI. Furthermore, physical disability and behavioral health issues were the most frequently reported barriers to being socially connected.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): These results highlight the prevalence of SI within our urban safety net hospital system. Additionally, they reveal the need for a patient- centered intervention that addresses SI while serving the needs of our diverse community and goals of our health system. Throughout the next several months, we plan to continue screening and surveying patients to obtain a more comprehensive view of the barriers and resources available to address SI. In the near future, we hope to work with patients and community-based programs to develop and implement an intervention that would link patients with SI to existing community-based resources. Our goal is to improve individual patient health outcomes and strengthen the linkages within our safety net health system to address social isolation and end loneliness.

ADDRESSING THE SOCIAL INFLUENCERS OF HEALTH BY CONNECTING PRIMARY CARE CLINICS TO COMMUNITY RESOURCE NAVIGATION USING A TEAM-BASED CARE APPROACH

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Addressing social needs of patients could have a large impact on health; however, clinics are struggling with ways to consistently identify and address these needs.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Develop a scalable electronic linkage model between primary care clinics and community resource navigators to provide more patients with access to community resources for health improvement.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Patients cared for in one of 3 safety net clinics were included for referral if they were: 1) hypertensive adult patients with uncontrolled blood pressure (BP≥140/90 mmHg) at 1 clinic after 09/2018; or 2) children 2-17 years old with overweight/obesity (i.e., body mass index percentile ≥85th) or with diagnosed asthma at the 2 remaining clinics after 07/2019. Qualifying patients who consented (or, whose parent/legal guardian gave consent) were referred by their primary care team to United Way 2-1-1 (UW 2-1-1) via a referral order in the electronic medical record in real time. UW 2-1-1, a non-profit organization covering 2.5 million people in Ohio, called referred patients to assess and connect them to appropriate social, community or health improvement resources through a curated database of >20,000 local resources.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We describe: 1) the percent of patients referred, reached, and with a need addressed; and 2) the type of needs addressed. Longer term health outcomes are planned.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): At the 3 clinics, 903 patients were eligible for referral to UW 2-1-1 and 197 (22%) were referred, with a range in referral rates by clinic of 9.4% to 26.1%. Of the 197 referred, 89 patients (45%) were reached by a 2-1-1 navigation specialist and 76% of these (n=68) had either one need resolved or a resolution in progress. Reached patients reported 385 needs and were connected to 1,162 community resource referrals, with an average of 13.2 community resource referrals (SD 8.2) per patient. The average number of community resource referrals were higher for families with referred children (15.5; SD 7.2) compared with referred adults (10.9; SD 8.1). The percent of patients with specific needs fell into 15 of 16 distinct categories in the Alliance for Information and Referral Services taxonomy used by UW 2-1-1: recreation (73%); food/meals (73%); health care (57%); housing (17%); utility assistance (16%); clothing/personal/household needs (16%); individual, family, and community support (9%); transportation (8%); legal services (4%), and 3% or less for the remaining categories. When stratified by adults and children, the same ranking of categories were identified.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Electronically linking patients to community resources is feasible in busy primary care practices. Patients from safety net clinics have an extensive set of social and medical needs and there are many community resources available to address these needs. Addressing referral barriers, resolving needs completely (e.g., no further food insecurity), linking to health outcomes, and addressing gaps in community resources will be critical next steps for these interventions.

ADOPTING SCREENING FOR ADVERSE CHILDHOOD EXPERIENCES IN A GENERAL MEDICINE CLINIC

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Adverse childhood experiences (ACEs) impact the health and wellbeing of adults, increasing the risk of mood disorders, substance use disorders, and chronic disease. Despite their import, we do not routinely screen for them in adult primary care settings.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): (1) To incorporate a simple ACEs survey into all first primary care visits and (2) offer an introduction to, or consultation, with a social worker to all patients with an ACE score >2 or those asking for help after completing the survey.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The setting was a newly formed academic outpatient primary care internal medicine clinic. The team delivering the program consisted of a physician, nurse practitioner, licensed clinical social worker (LCSW), clinical pharmacist, and medical assistant (MA). The MA introduced the screen to each patient while waiting for the provider, asked them to complete the survey, and answered questions. The provider would ask about the survey, if not completed, and/or inquire about how they could help with any adverse experience noted. This included a brief explanation about how childhood experiences can impact adult mental and physical health. If the patient agreed to or requested help, they were offered a referral to the LCSW; if declined, then medication might have been offered. ACEs scores were recorded in the EMR provider note.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): (1) number of patients completing ACEs surveys, (2) number of those with positive ACE scores for whom the information provided insight and value to their care plan.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Team members were initially resistant to implementing the program, expressing concern that they did not know how to respond to the information. With education, experience, and support from the LCSW and a consulting psychiatrist, they became comfortable with the program within 6 weeks. Some patients were also resistant. Developing a consistent method for communication with the patient regarding the intention and purpose of the survey was critical to gaining patient trust. Approximately 90% of new patients completed the survey and we uncovered previously unknown alcohol use disorder, PTSD, depression, and anxiety resulting in treatment.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): An interprofessional team is imperative to the success of an ACEs screening program in an adult primary care clinic; support from behavioral health professionals increased the comfort of providers and staff and provides access to care for those with positive ACEs. Education of providers, staff, and patients, as to the value of this information to helping patients is also essential. This information needs to be incorporated into the EMR in a way that those at risk can be identified and followed over time. The most important lesson, however, was the value that the awareness and understanding of a patient's childhood trauma contributed to the clinician's ability to help the patient as a whole.

ADVANCE CARE PLANNING OCCURRING IN ADVANCE: GROUP VISITS FOR ADVANCE CARE PLANNING

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Advance directives directly help document preferences for medical care in the setting of decisional incapacity, however, up to 70% of Americans have not completed an advance directive

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Implement Advance Care Planning (ACP) Group Visits at a busy Internal Medicine Clinic 2. Increase ACP documentation among clinic patients

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Group visits can engage patients in ACP discussions in an efficient process that is integrated into primary care. As a quality improvement initiative, we adapted and implemented a published ACP group visit intervention, Engaging in Advance Care planning Talks (ENACT) Group Visits, based on our prior experience and an implementation manual. ENACT helps patients start or continue ACP conversations and advance directive documentation. The group visits aim to gather 6-10 patients for two 2-hour visits, one month apart. This was adapted to a single session due to poor retention and to access more patients. ENACT Group Visits are facilitated by a primary care physician and a social worker with experience in palliative care and advance directives. Each group visit discussion included the following topics: MDPOAs, living wills, CPR, and artificial nutrition and hydration. The discussion also included topics in response to patients' questions that occur organically during the visits. Setting and Context: Using an electronic health record- generated list, primary care patients 65 years and older at a busy Internal Medicine clinic in Colorado were recruited through phone outreach by social workers, medical assistants trained in the objectives of the group visits, and the physician. Implementation used existing clinic resources and staffing without external funding.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 1. Percentage of patients with an ACP document (i.e MDPOA form, living will, MOST form) before and 3 months after a group visit, per medical chart review; comparisons using McNemar test

2. Patient feedback regarding the usefulness of the visit, per evaluation surveys.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Starting in April 2018, we obtained clinic leadership support to implement ENACT Group Visits into the practice. We conducted three cohorts that had two sessions per intervention. Of 19 patients, 42% had an ACP document prior to participating, which increased to 68% at 3 months (p=0.06). We then conducted four cohorts that had only one session per intervention. Of these 23 patients, 26% had an ACP document prior to participating, which increased to 61% at 3 months (p=0.008). Patient feedback from evaluation surveys from all visits (n=46), showed that 61% strongly agreed that group visits were a better setting than a usual clinic visit and 74% strongly agreed that the visit provided useful information.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Group visits are an effective way of discussing and increasing documentation of ACP documents in a general internal medicine practice. The intervention can be adapted to the scheduling and availability of patients. Involving the staff team can help recruit and conduct the visits in a sustainable way.

A JOINT MOTHER/INFANT PRIMARY CARE PROGRAM PROMOTING EVIDENCE BASED POSTPARTUM CARE AFTER GESTATIONAL DIABETES MELLITUS DIAGNOSIS

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Postpartum handoff from obstetrics to primary care among women with gestational diabetes mellitus (GDM) rarely happen, hindering access to diabetes screening and prevention among patients at very high risk of developing Type 2 Diabetes.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Demonstrate feasibility of a mother/ infant dyad clinical program promoting postpartum obstetric to primary care handoffs for women diagnosed with GDM.

2. Provide postpartum Type 2 Diabetes (T2DM) prevention services to women diagnosed with GDM in the setting of joint mother infant primary care visits aligning with infant well child visits.

3. To improve guideline based postpartum T2DM screening rates, compared to baseline institutional and state screening benchmarks, among postpartum women with GDM through engagement in a primary care based mother/infant dyad clinical program.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Pregnant women with GDM in central Ohio were referred by obstetrics clinics, maternal/ fetal medicine clinics, Women Infants and Children (WIC), and the inpatient labor and delivery unit to the postpartum Mother Infant dyad program, based at an academic medical center Med-Peds clinic (7/1/2018 to 9/03/2019). The clinic's nurse care coordinator contacted referred patients. Patients willing to participate were scheduled for dyad primary care visits coinciding with 1 month and 4 month infant well child checks. Dyad based T2DM preventive counseling, tailored using national Diabetes Prevention Program (DPP) framework components and postpartum best practices (e.g. breastfeeding support and postpartum depression screening), was provided with newborn, 2 month, 6 month, and 9 m well child visits. Post-partum T2DM screening was ordered at the 1 month dyad visit for completion between 4-12 weeks postpartum. T2DM risk profiles and care plans were reviewed at the 4 month postpartum visit. Women with a diagnosis of postpartum depression or any psychiatric illness were provided nurse care coordination outreach via telephone and patient portals between visits.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Measures of success included number of referred and enrolled patients, postpartum T2DM screening rates, and patient engagement in T2DM prevention activities.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Institutional EHR data review prior to project start showed 10% of patients with GDM completed any postpartum T2DM screening or primary care follow up in the year after delivery. As of 11.30.19, 339 eligible referrals were received and 64 mother-infant dyads were seen. 53/64 of these patients (80.4%) completed postpartum T2DM screening. 75% of patients reported attending a postpartum visit with an OB/GYN; 60% reported completing postpartum T2DM screening; 81.2% reported receiving education about their T2DM risk at

postpartum visits; 77.7% reported breastfeeding at their 1-month postpartum visits; and 57.8% reported receiving a postpartum depression screening.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Formalized Ob/Gyn to primary care handoffs and joint mother infant care improve postpartum T2DM screening and prevention among patients with GDM.

A MULTIFACETED APPROACH TO IMPROVE CONTINUITY AT AN URBAN INTERNAL MEDICINE RESIDENCY PRIMARY CARE CLINIC

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Lack of continuity in the internal medicine (IM) residency primary care clinic impacts patient and caregiver satisfaction, as well as no-show rates.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To improve IM residency continuity to over 50% within first 6 months of 2019-2020 academic year.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : We implemented a multifaceted strategy over a 12-month period at an IM residency primary care clinic which included: mailing letters informing patients when their resident PCP graduates, which included the name of their new resident PCP and the PCP's coverage team; designing a graphic flier for patients which included a photo of the resident PCP the PCP's coverage team; educating the call center, medical assistants (MAs), office assistants (OAs), and nurses about the nuances of residency education, resident schedules, and the importance of continuity; releasing resident schedules as far in advance as possible (4-6 months); empowering schedulers to nudge patients to the PCP or respective coverage team for non-urgent appointment needs; encouraging staff and residents to ensure each patient left the clinic with their next appointment date in-hand; balancing resident panel sizes; incorporating phone visits into senior resident schedule templates; assigning a dedicated MA and OA to each resident coverage team.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Measures of success included 1) improved continuity, defined as the patient being seen by the assigned PCP or one of the members of the PCP's coverage team, 2) improved no show rates, and 3) increased job satisfaction among clinic staff as measured by the Minnesota Satisfaction Questionnaire Short Form.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Using September 2018 to January 2019 as a baseline, the continuity was 47.4% on average. After implementation of all interventions in August 2019, the continuity rate was greater than 50%, with a mean continuity rate of 63.9%. Furthermore, using linear regression, there was a significant negative association with continuity and no-shows (p=0.04). Baseline job satisfaction rates were being obtained by 2019 graduates who were providers in September 2018 to January 2019. Post-intervention job satisfaction is currently being collected.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Continuity is key in primary care.

Despite scheduling challenges among IM residency primary care clinics, patients still value continuity as demonstrated by their increased attendance. IM residents have anecdotally expressed improved job satisfaction with increases in patient continuity. In the setting of primary care shortages, changes need to be made to ambulatory IM residency training in order to attract physicians-in-training to primary care. Improving continuity may be one critical element in doing so.

AN EDUCATIONAL INTERVENTION TO REDUCE THE COLLECTION OF POTENTIALLY LOW-VALUE LABS

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Can we reduce potentially low- value labs (PLVLs) by 10% on general medicine inpatient teaching units by conducting an educational intervention and providing physicians with weekly feedback on their performance?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To decrease PLVLs (i.e. a basic metabolic panel, complete blood count, or magnesium level drawn on patients admitted to the hospital ≥ 72 hours) by at least 10%.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : During the first week of each 4-week inpatient rotation during weeks 21-34 of 2019, we conducted a 30- minute educational session geared toward trainees rotating through 2 general medicine inpatient units at a large university hospital. During the educational session, we reviewed principles of high-value care, defined a PLVL, and requested that each teaching team expressly discuss each patient's need for lab testing as part of their daily rounding checklist. On Fridays, we provided each team with a weekly report of the rate of PLVLs per discharged patient and the specific patients who received such labs. Participants then completed an online survey to provide feedback regarding the intervention.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We compared the rate of PLVLs per discharged patient between the intervention units and 2 general medicine teaching units that did not receive the intervention during the study period. We also determined the change in the rate of PLVLs in the 13 weeks preceding the intervention in comparison to the study period. To ensure our intervention did not adversely affect patient care, we compared readmission rates, average length of stay (LOS), and case-mix index (CMI) pre and post intervention. From the survey, we identified perceptions of the intervention and identified opportunities for improvement.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Excluding the first week of each rotation from weeks 21-34 in 2019 (to account for delays in educational session delivery), the overall rate of PLVLs was 4.45 vs 4.16 among patients discharged from non- intervention units. In the 13 weeks preceding the intervention, the rate of PLVLs was 4.29, representing a 3.7% increase during the intervention period. Within each rotation period, there was a transient drop in PLVLs in the week after the educational session – weeks 21-22: 7.8 vs 3.9, weeks 26-27: 5.4 vs 2.5, weeks 31-32: 8.5 vs 4.7. Overall, 30-day readmission rates (pre: 23.9%; post: 17%), average LOS (pre: 7.5; post: 6.8 days), and CMI (pre: 2.05; post: 2.09) decreased or were unchanged during the intervention. While 78.9% of participants

agreed that the educational presentation was effective in conveying information regarding low- value lab testing, only 42.1% reported that the weekly reports were helpful in reducing PLVLs.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The educational intervention was transiently effective at reducing the rate of PLVLs, but lacked durability. Improving the content and dissemination of the weekly reports may facilitate more effective reflection among teaching teams and enhance the durability of the intervention in future iterations.

AN INTERPROFESSIONAL APPROACH TO SCREENING AND ADDRESSING SOCIAL DETERMINANTS OF HEALTH AND BEHAVIORAL HEALTH NEEDS

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Patients seen in primary care frequently have needs for behavioral health and community support services that are not effectively identified during clinic appointments.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Increase the number of patients screened for social determinants of health and behavioral health conditions. Increase the percent of patients that request help or information about resources related to social determinants of health.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : A Comprehensive Core Standardized Assessment (CCSA) questionnaire is used to assess social determents of Health (SDoH), behavioral health, and general health concerns in New Hampshire Medicaid patients 18-64 years of age seen in the General Internal Medicine (GIM) clinic at Dartmouth-Hitchcock Medical Center (DHMC). DHMC is located in Lebanon, New Hampshire and is the state's only academic medical center, serving patients from across rural northern New England.

In order to improve screening rates and increase the number of at-risk patients referred for care, we developed a standardized workflow, incorporating medical assistants (MAs) in both the design and implementation phases. The MAs met twice monthly with the project lead to develop a workflow and interventions that would help achieve the objectives. The workflow engages the MAs as a liaison between the community health worker (CHW) and the primary care provider and to communicate with patients about how the CHW can help with SDoH, especially in patients that identify positive SDoH but do not request help. The MAs also identified and rank ordered 14 interventions. The MAs created smaller workgroups to manage each of the top 5 priorities, which included: MA education on SDoH and the CCSA questionnaire; coordination with reception staff; communication with a CHW; public announcements in the waiting area; and quality improvement management.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): A data dashboard tracks monthly rates of CCSA completion; positive screens for SDoH; patient identified interest in receiving help or information about help; and rates of referral for services.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): In the 4 months prior to the intervention, a mean of 27 patients per month completed the CCSA questionnaire, with a mean of 23 patients screening positive for SDoH related risk factors. 5 patients per month (22% of positive screens) indicated that they would like help. In the initial 6 months of the intervention, a mean of 66 patients per month completed the questionnaire, 49 per month screened positive, and 10 (20%) per month indicated that they would like help. Total referrals for SDoH issues were 15 per month pre-intervention and 20 per month post-intervention.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Medical assistants can be effectively engaged in both the development and implementation of processes that improve screening and reduce the stigma of asking for help in primary care patients with unmet needs related to social determents of health. Increasing the proportion of patients reporting an interest in receiving help may be more challenging than increasing screening rates.

A POPULATION HEALTH VALUE APPROACH TO HIGH NEED, HIGH COST POPULATIONS: A SYSTEM-WIDE INTERVENTION TO REDUCE HOSPITALIZATION AND ADDRESS SOCIAL INFLUENCING FACTORS AMONG CHRONIC KIDNEY DISEASE PATIENTS

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Chronic kidney disease (CKD) is a leading cause of healthcare utilization and morbidity, and caring for stage 4-5 CKD populations is complex and inefficient.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Discuss methods to create a multispecialty leadership team and actionable electronic health record and claims data to risk stratify and identify improvement opportunities including social influencing factors for engaged and unengaged stage 4-5 CKD patients.

Discuss methods to redesign proactive multispecialty care coordination pathways bridging primary and multispecialty care teams and develop greater ambulatory infrastructure to support care needs.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : In 2016, UCLA Health implemented a Population Health Value (PHV) CKD intervention for the organization's 1442 stage 4-5 CKD patients. The organization created a multispecialty multidisciplinary team to redesign care coordination pathways across settings and develop greater ambulatory infrastructure to support care needs including patient input.

The intervention used a full-time, unlicensed CKD Care Coordinator (CKD-CC) who provided coordination support to the system-wide care team. Different than prior efforts that focused in primary care or subspecialty clinics alone, this was a system-wide effort and also addressed attributed patients who may not reach primary or specialty care.

The CKD-CC aimed to proactively identify and coordinate rapid interventions across the health system for stage 4-5 CKD patients with clinical decline using clinical informaticas and a system-wide care team network. A registry helped early identification of decline, and she

consolidated relevant clinical and social service needs in real time to align resources and define acute care plans with the system-wide care team. The CKD care coordinator also guided appropriate care to less costly ambulatory sites and a network of community resources grew to address patients' social influencing factors.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Outcomes included hospitalizations and emergency department (ED) visits. We used a multiple time series design evaluating outcomes during the pre-intervention (April 1, 2015- September 30, 2016) and post-intervention (January 1, 2017- December 31, 2017) periods.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): The monthly estimated rate of decline for hospitalizations among stage 4-5 CKD patients was 5.4% (95% CI: 3.4%-7.4%), which was 3.4 percentage points faster post-intervention than the 18- month pre-intervention decline of 2.0% (95% CI: 1.0%-2.2%) per month (p=0.004). Medicare patients' average ED visit rate of decline was 3.0% per month (95% CI: 1.2%- 4.8%) post-intervention, which was 2.6 percentage points faster than the pre-intervention rate of decline of 0.4% per month (p= 0.02).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Rather than implementing a new technology or tool across a heterogenous population, it was key to understand the spectrum of needs that patient had including social influencing factors.

Using methods of co-creation was slow initially but also the reason for success in implementation of shared system-wide care pathways with shared resources.

A PRIMARY CARE BASED INITIATIVE TO REDUCE HOSPITAL READMISSION RATES BY IMPROVING TRANSITION OF CARE

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Research has shown that timely follow-up appointments are associated with lower 30-day readmission rates, however, boundaries that prevent timely follow up with primary care physicians (PCP) include lack of communication between the inpatient physician, PCP, and patient.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To increase discharge follow up appointments for patients who receive their primary care at Hertel Elmwood Internal Medicine Clinic (HEIMC) by utilizing Cortext.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The inpatient service at Buffalo General Medical Center (BGH) and HEIMC are linked closely by a secure messaging service called Cortext. The team formulated a group on Cortext that contains a list of PCP that are involved in the care of HEIMC's patients. The inpatient service sends a message containing the patient's name and date of birth to the HEIMC group via Cortext. The HEIMC receives this message and contacts the patient via telephone to schedule a follow up appointment within 7 days. We communicated our goals and instructions with the inpatient teams verbally and with the use of visual aids, such as flyers and handouts.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The outcome measures include percentage of HEIMC patients that have successfully followed up with their PCP and percentage of HEIMC patients that were readmitted to BGH despite timely follow up. The process measures include the ratio of cortexts received from BGH's inpatient clinicians for HEIMC patients vs. the total number of HEIMC patients discharged from BGH. Also, the percent of HEIMC patients that were contacted to schedule a follow up appointment. The balance measures include the average wait time for scheduling an urgent appointment before and after the implementation of the project.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Among the patients discharged from the hospital in which a Cortext was received, approximately 66% of patients were scheduled for an appointment within 7 days of discharge vs. 26% in the non-Cortext group. In the Cortext group, 0 patients had an ER visit or hospital readmission within 30 days of discharge. In the non-Cortext group, 12.7% of patients had an ER visit and 3.6% were readmitted to the hospital within 30 days of discharge. Lastly, in the Cortext group 88% of patients had scheduled a follow up visit vs. 71% in the non- Cortext group. Of those patients with scheduled appointments in the Cortext group, 100% of patients attended their appointments vs. 85% in the non-Cortext group.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The preliminary data collected suggests that improving communication between the inpatient providers at BGH and PCPs at HEIMC helps increase timely outpatient follow up and reduces ER re-visits along with hospital readmission rates. With the progression of this program to outside clinics and hospitals, we hope to enhance patient's quality of care by improving transition back into the community and reducing readmission rates.

ASSESSING CAPACITY TO MEET DEMAND: A NOVEL APPROACH TO PANEL SIZES

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Is there a formula primary care leadership can use to consistently define panel size expectations for primary care providers based on provider capacity and patient characteristics?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): -Create and test a capacity assessment that calculates maximum panel size for providers based on return-to-clinic (RTC) rates, patient complexity, and available clinic slots.

- Describe how the method for calculating maximum panel size can be applied to all primary care practices across a healthcare system.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) :

1. Calculate average RTC rates for six patient groups defined by a complexity index based on a modified/enhanced Charlson co-morbidity index.

2. Calculate the proportion of patients in each group for each primary care clinic.

3. Calculate the available clinic slots per provider, per year, based on a 1.0 FTE. (e.g. a 1.0 FTE averaging 8 slots per session at 8 sessions per week working 45 weeks a year has 2880 available slots).

4. Using the number of slots available, the proportion of patients and average RTC rates in each complexity group for a given clinic, calculate the panel size that would be expected to fill all available slots.

5. Adjust each provider's panel size based on their clinical FTE.

6. Reduce the maximum panel size for advanced practice providers to allow for more acute visits.

7. Adjust provider's expected panel size again by 10% for each standard deviation from the clinic complexity index mean.

We used this capacity assessment to evaluate panel sizes for 52 primary care providers across 4 General Internal Medicine practices in an academic setting. The complexity index factors in patient elements such as chronic disease, utilization, and medications.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Adoption- used as standard practice by the health care system.

# of providers appropriately empaneled- a provider's actual panel size is within 5% of expectation.

# of providers under-empaneled – a provider's actual panel size is more than 5% below expectation.

# of providers over-empaneled - a provider's actual panel size is more than 5% above expectation.

# of clinics appropriately empaneled- a clinic's actual panel size is within 5% of its expectation.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): In contrast to the current, arbitrary methodology, of 52 providers 31% were under-empaneled and 67% were over-empaneled, leaving 2% appropriately empaneled.

When applied to clinics as a whole, three out of the four clinics evaluated were found to be over-empaneled.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Using a broadly accepted capacity assessment tool to determine maximum panel size ensures providers have access and availability to care for their existing patients before expanding to new patients.

Adjusting the panel size for the unique patient complexity distribution at each clinic tailors panel sizes based on patient characteristics, increasing buy-in from providers and improving the accuracy of capacity measures.

ASSESSING READINESS TO GRADUATE: HEALTHCARE UTILIZATION AFTER PARTICIPATION IN HIGH INTENSITY PRIMARY CARE

Melanie Martin, Jessica Valente. General Internal Medicine, Wake Forest Baptist Medical Center, Winston Salem, NC. (Control ID #3391892)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Care Plus is a high intensity program for primary care; this study investigates duration of engagement in the program and hospital utilization after leaving this intensive program.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) Determine duration of program participation and types of discharges from the Care Plus program; 2) Quantify the frequency of hospital admissions and ER visits 1 year post-Care Plus discharge.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Care Plus was created in 2013 as a multidisciplinary team based model for high-need, high-cost patients from an academic safety net practice. Previous data has shown significant reduction in hospital utilization for enrolled patients as compared to their historical selves. This study reviews duration of engagement of enrolled patients and hospital utilization for patients that leave the intensive program and return to usual primary care.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We reviewed duration of program enrollment and categorized types of discharge. We further calculated the number of hospital admissions and ER visits 1 year pre-post Care Plus enrollment compared to 1 year post-Care Plus discharge.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Average duration of program participation is 2.8 years. Of the 321 total participants, 109 (34.2%) participants remain enrolled. 210 patients were discharged from Care Plus [deaths (26.4%); graduated Care Plus (16%); relocation/placement (11.6%); lack of engagement (10.3%)]. Comparing 1 year pre-post program enrollment, we demonstrated an overall 41% decrease in hospital admissions and ER visits. For patients who returned to usual care, this decreased hospital utilization was sustained 1 year post-Care Plus discharge (-37.8% decrease admissions, -40.1% ER visits). Further subgroup analyses showed that non-engaged patients (average duration in program 1.6 years) experienced a 37% and 81% *increase* in hospital admissions and ER visits 1 year immediately post-Care Plus discharge, but still 30% and 20.5% less admissions and ER visits, respectively, when compared to pre-Care Plus enrollment. Care Plus graduates (average duration in program 1.7 years) showed sustained decreases in hospital admissions (-26.7%) and ER visits (-43.6%) 1 year post- Care Plus discharge.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Multidisciplinary models for patients with frequent healthcare utilization can reduce hospital and ER visits during program enrollment and up to 1 year after discharge. Decisions about patients' continued participation can be challenging but data suggest some benefits continue beyond program enrollment. The significant mortality rate of our cohort speaks to the vulnerability of high intensity primary care patients.

A STUDY EVALUATING VARIATION IN RADIOLOGY ORDERS WITHIN A LARGE PRIMARY CARE NETWORK AND THE EFFECT OF PEER-COMPARISON FEEDBACK ON ORDERING TRENDS

Adrian Clark-Randall, David Halpern, Kevin Shah. Medicine, Duke University, Durham, NC. (Control ID #3391461)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Does peer-comparison feedback lead to reduced clinical variation in radiology orders?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. To evaluate existing variation in radiology ordering in a large primary care network in central North Carolina

2. To determine whether sharing monthly utilization data with providers reduces variation or changes practice patterns.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : First, we examined provider-level radiology orders (excluding recommended screening exams like mammography) within a large academic primary care network in North Carolina, spanning 159 providers and approximately 1.3 million outpatient encounters over a three year period. We calculated an imaging rate (radiology tests ordered per 1000 patient encounters) for each provider. We then examined the effect of a peer-comparison dashboard tool which provides a benchmark for providers to evaluate their imaging behavior compared to others at the same practice as well as across the network. We measured the impact of data-sharing by comparing two years of data prior to the creation of the utilization

dashboard with one year of data obtained after implementation, examining both trends in imaging orders as well as orders stratified by imaging type (X-Ray, CT, MRI, Ultrasound, Nuclear Medicine, PET).

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We measured imaging rates, stratified by imaging type, across providers on a monthly and yearly basis, as well as variation, defined by the standard deviation in imaging rates by provider over time. Imaging rates are normalized to encounter volume.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): We observed significant variation in imaging rates among providers in the network, with some "high-utilizer" providers and others who ordered radiology tests less frequently. Regression analysis demonstrated that neither patient age nor provider experience was significantly associated with imaging volume. Additionally, there was no significant difference in imaging rates between advanced practice providers and physicians. While patient characteristics *did* vary by provider, these differences were *not* significantly associated with imaging rates. After implementation of the utilization dashboard, we saw a 17.2% decrease in median provider imaging rate (p=0.00017) and a 14.1% reduction in provider variation (p=0.14), as measured by standard deviation. Decreases in ordering rates were seen across all provider deciles. Median order rates for more costly cross-sectional imaging, including CT, MRI, and nuclear medicine studies, decreased by 30.5% (p=2.3e-7), 16.7% (p=0.011), and 40.5% (p=0.019) respectively, after implementation of the dashboard.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Peer-comparison based feedback can impact provider imaging ordering even in the absence of targets or financial incentives. Peer comparison is a low touch, lost cost intervention for influencing provider ordering and may have applicability in other clinical areas.

A TEAM-BASED APPROACH TO IMPROVING MEDICATION ADHERENCE AMONG PATIENTS WITH CHRONIC DISEASE

Jonathan Arend[3]; Edward Bailly[1]; Cathleen Mathew[1]; Ruchi Tewari[2]; Shalini Bansal[3]. [1]Internal Medicine Associates, Mount Sinai Hospital, NY, NY; [2]Pharmacy, Mount Sinai Health System, New York, NY; [3]Medicine, Mount Sinai Health System, New York, NY. (Control ID #3392151)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Poor adherence to medications among patients with chronic disease is associated with significant morbidity and mortality, as well as high cost to the health care system. Although numerous strategies have been employed to improve medication adherence (MA) in these populations, achieving success remains challenging and likely requires a multimodal approach.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To improve the detection of patients with suboptimal MA; to improve the efficiency of MA interventions; and to improve MA among patients with chronic disease

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Our academic internal medicine practice serves predominantly Latino and African American residents of East Harlem, a medically and psychosocially complex population. These patients shoulder a significant burden of chronic disease, the effects of which are exacerbated by suboptimal rates of MA. In order to improve MA among our patients with chronic disease, we developed a MA program that incorporates a range of professional and paraprofessional disciplines and applies pharmacy data to identify patients at risk for suboptimal MA. The team consists of patient navigators, registered nurses, nurse practitioners, and a clinical pharmacist, working in coordination with primary care providers. Interactions occur in the context of population-based outreach, pre-visit planning, face-to-face encounters, and post-visit follow-up. Activities include medication fill reminders and missed fill notifications, barriers assessment and related interventions, conversion to 90-day prescriptions, and nurse follow-up after newly prescribed medications. Patient identification, adherence patterns, and expected fill dates are provided by the patients' managed care organizations and are based on pharmacy claims and health information exchanges in which pharmacies participate.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Medication adherence rates, based on the proportion of the measurement period in which patients have the medication in their possession, according to pharmacy dispensing records.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): As we have refined our program over the past several years, rates of MA among our patients with chronic disease have continued to trend upward. For example, in the patient population covered by one of our Medicare Advantage plans, adherence to cholesterol medications increased from 75% to 83% and adherence to diabetes medications increased from 74% to 83% from 2016 to 2019.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Efforts to support MA among patients with chronic disease often require resources beyond the primary care provider in order to be successful. High functioning, multidisciplinary teams coupled with reliable data sources for patient identification, risk stratification, and monitoring may be necessary to optimize MA in certain populations.

AUGMENTED INTELLIGENCE: AUTOMATION OF VANCOMYCIN DOSING AND MONITORING TO IMPROVE PATIENT SAFETY

Vimal Mishra, Alan Dow. Internal Medicine, Virginia Commonwealth University, Midlotian, VA. (Control ID #3392084)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Because vancomycin is the leading cause of medication errors resulting in morbidity, an approach utilizing augmented intelligence (AI) may improve the therapeutic dosing of this medication. Treatment failure and chances of developing drug-resistant S. aureus increases if vancomycin serum trough level is less than 10 mg/l.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): We describe an approach utilizing augmented intelligence (AI) to improve therapeutic dosing of Vancomycin and frequency of trough dose collection at the appropriate time.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The complexity of vancomycin dosing may make it an ideal target for augmented intelligence (AI), the use of computational methods and systems to enhance human decision-making. A multidisciplinary team identified a lack of timely monitoring of serum vancomycin level and failure of appropriate dosing as the highest risk steps in vancomycin use. To address the lack of timely monitoring that had been dependent on practitioner recall, the team designed an EHR-based rule that automatically ordered appropriately timed trough levels and reminded nurses to draw this trough level before another dose could be administered (Intervention

1). Then, to improve initial dosing, the team designed and implemented an AI-based tool that automatically calculated and suggested appropriate vancomycin dose (Intervention 2).

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The impact of these interventions was studied as an interrupted time series. Data from encounters from October 2016 to December 2016 were defined as the pre-intervention group (Pre). In January 2017, Intervention 1 was implemented, and vancomycin trough level data were collected for encounters between February 2017 to April 2017 (Post #1). Intervention 2 was implemented at the beginning of May 2017, and data were collected from May to July 2018 as the Post #2) group. Vancomycin serum levels between 10-20 mg/l were considered appropriate. Groups (Pre, Post #1 and Post #2) were compared via least-squares means with Bonferroni adjustment for multiple comparisons.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Prior to either intervention, 53.9% of patients had therapeutic trough levels. After the first intervention (Post #1 group), the percentage of therapeutic levels dropped to 43.4% although trough levels were more often drawn in a timely fashion, suggesting better measurement due to automation may have identified additional lapses in care (p=0.51). After the second intervention (Post #2 group), the percentage of therapeutic trough levels increased to 65.8% with a small increase in the percentage of supratherapeutic trough levels (p=0.0059 vs. pre; p<0.001 vs Post #1).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): AI-based automation for ordering vancomycin doses and trough levels enhanced vancomycin efficacy by increasing the timeliness of troughs collected and the percent of therapeutic trough levels. This study demonstrates the imperative of an automated approach to collecting vancomycin levels and prescribing dose amounts. A similar approach can be applied to other high-risk medications. Further work should continue to refine this approach.

BREAKING THE ICE FOR HEALTH CARE PROXY DISCUSSIONS

Kwesi Blackman[2,1]; Modupe Oluya[2,1]; Alastair Thomson[2,1]; Ami Jani[2,1]; Bryan Chesen[2,1]; Gayatri Malhotra-Gupta[2,1]; Nadia A. Williams[2]; Andrew A. Chang[2,1]; David L. Stevens[2,1]; Melissa S. Lee[2,1]. [1]Internal Medicine, SUNY Downstate Health Sciences University, Brooklyn, NY; [2]Ambulatory Medicine, NYC Health + Hospitals/Kings County, New York, NY. (Control ID #3392163)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): A primary care performance improvement project conducted by residents at our institution in 2018 found that despite 83% (n=78) of patients being interested in discussing advanced care planning (ACP) with their primary care providers (PCPs), only 37.5% had documented ACP discussions.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): - To improve patient health literacy around health care proxy (HCP) discussions

- To develop a standardized educational video based on the New York State HCP form

- To measure the impact of the video on patient perceptions and understanding around ACP

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Internal Medicine residents in our urban safety-net primary care practice produced a 2-minute educational video addressing common questions about HCP. Starring physicians and nurses, the message was delivered by culturally familiar staff. A similar intervention addressing influenza vaccination myths improved flu vaccination rates in 2018. An educational video was played in the exam room while the resident met with his/her attending preceptor to avoid additional patient wait time. Patients were asked three questions about perceptions of HCP before and after the intervention.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Effectiveness of the video was measured using a quasi-experimental pretest, posttest design. Patients were asked 3 questions before and after the intervention to evaluate perception around importance of a HCP, ability to identify a HCP, and comfort in discussing healthcare preferences. Results were analyzed using descriptive statistics and Wilcoxon signed rank test.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): -49 patients (response rate, 96%) completed the survey after conducting a pilot study of 10 patients. Participants were 59.1% female, within 55-64 age group and 71.4% Afro-Caribbean.

- Our intervention yielded statistically significant increases in patient agreement on HCP importance 38.9% ($p<0.001$), willingness to assign an HCP 12% ($p<.001$), and willingness to discuss ACP values with someone 3% ($p=.006$).

- Although not measured, we noticed anecdotally that physicians in our practice felt a standardized educational tool prompted conversations around HCPs during subsequent primary care visits.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?):

- This innovative form of patient education using video media during office visit time facilitated discussions and improved patient perception around HCP.

- Key components included a tailored, culturally sensitive educational platform featuring our patients' healthcare team. We highlight the importance of using personalized, alternative media as an approach to improving health literacy and perceptions around ACP.

BRING IT UP: OUTCOMES FROM AN ADAPTED COLLABORATIVE CARE MODEL FOR DEPRESSION CARE INNOVATION IN A SAFETY-NET, PRIMARY CARE CLINIC

Lisa Ochoa-Frongia[1]; Tamara Bendahan[2]; Margo Pumar[2]; Andrea Elser[2]; Rachel Loewy[2]; James Dilley[2]; Elle Clelland[3]; Jackson Barnett[3]; Gala Moreno Lepe[3]; Karen Yee[1]; Christina Mangurian[2]. [1]Medicine, University Of California San Francisco, San Francisco, CA; [2]Psychiatry, University of California San Francisco, San Francisco, CA; [3]School of Medicine, University of California San Francisco, San Francisco, CA. (Control ID #3391561)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Does our resource-limited, adapted collaborative care model of depression treatment improve care by PCPs in a primary care safety-net clinic?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To determine if our intervention improves rates of:

1) PCP delivery of evidence-based care for depression including prescription of antidepressants and referral for behavioral therapy

2) Depression improvement

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS.

OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Over 80 clinical trials demonstrate the efficacy of the collaborative care model (CCM) to treat depression in primary care by integrating physical and behavioral health services using multi-disciplinary teams. However, there is significant variability in the success of real-world CCM implementation. The feasibility of CCM in safety-net clinics faces clinical, organizational and financial challenges limiting the use of key components such as the depression care manager (DCM). Yet, research on CCM adaptations in under-resourced settings is sparse.

Bring It Up! (BIU) is an adapted CCM pilot study for patients with depression conducted at The Richard Fine People's Clinic (RFPC), a primary care safety-net clinic in San Francisco serving over 8,000 adult patients (39% Latino, 24% Asian, 18% White and 14% African American). 40% of patients speak a primary language other than English, 1% have private insurance, and 10% are homeless. 21% of RFPC patients have a depression diagnosis.

40 patients of seven PCPs at RFPC received BIU. Inclusion criteria: 1) Age 18+; 2) PHQ-9 score 10+; 3) Diagnosis of Major Depressive Disorder or dysthymia. The PCPs received BIU training on depression standards of care and could refer patients to the BIU team (PCP mental health champion, psychiatric consultant, data analyst and medical assistant). This team tracks BIU patients, provides basic depression care coordination and assists PCPs in evidence-based depression care.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Electronic health records were reviewed for: 1) PCP adherence to depression standards of care including titration of antidepressant to effective dose, PCP follow up frequency and referral to behavioral health services 2) change in depression symptoms as evidenced by PHQ-9 scores over multiple visits (via paired t-test).

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Compared to the general RFPC population with depression, BIU patients were treated with much higher rates of evidence-based depression treatments such as prescription of antidepressants (27% vs 76%) and behavioral health referral (11% vs 64%). We will also examine patient outcomes including changes in PHQ-9 scores and remission rates.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Training primary care providers on evidence-based management of depression in conjunction with the support of a multidisciplinary behavioral health care team adapted for the setting improves fidelity to evidence-based depression care.

CALL THE NURSE! BUILDING A LEARNING TELEPHONE TRIAGE SYSTEM AT A LARGE ACADEMIC MEDICAL CENTER.

Cody Dashiell-Earp, Amy Vigil, Jennifer Rodgers. University of Colorado, Denver, CO. (Control ID #3387390)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Research demonstrates that nurse- led telephone triage can help health systems manage the demand for same-day appointments and reduce provider workload while providing safe and appropriate care for patients, however, little is published about how to implement, maintain and continuously improve an evidence-based telephone triage system.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Build a system for continuous triage protocol review and customization.

Develop education and clinical decision support tools that allow nurses to deploy evidence-based telephone triage protocols in real time.

Understand how protocols are used and how they impact emergency room use.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The ambulatory telephone protocol committee (ATPC) reviews each triage protocol on an annual basis. This committee includes stakeholders from across the health system, including nurses, physicians and pharmacists. The majority of protocols were purchased from a vendor and adapted by the ATPC to reflect local resources and best practices. Nurses were educated on telephone triage and a clinical decision support tool was created to help nurses search for and document protocol use during calls. A report was built to capture and summarize EHR data related to protocol use.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): % of triage encounters in which a protocol was used

% of generic "sick adult" protocol vs specific protocol such as "female dysuria"

% of patients recommended for home care

% of patients recommended for emergency room care

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Over 12 months, there were 19,784 telephone encounters completed by office-based nurses in 10 primary care offices. Of these, 4,208 encounters were symptom-based triage encounters in which a standardized triage protocol was used. The remaining 15,576 encounters were a call in which information was communicated but a protocol was not used, such as reviewing lab results. 206 unique protocols were used. The top 5 most used protocols were sick adult (12%), cough (6%), female dysuria (5%), well-child information (4%) and breathing difficulty (4%). 66% of patients were advised to care for themselves at home, while only 3.5% were instructed to proceed to the emergency department.

Review of our protocols on an annual bases is labor intensive. Many of the protocols we purchase must be adapted not just to reflect local resources and system constraints, but in some cases to reflect well-established best practices. Our vendor has been responsive to feedback regarding changes to a number of protocols.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): An interdisciplinary team representing stakeholders from across the health system is needed to maintain a telephone triage system. Commercially-available protocols can be used, but must be reviewed regularly to ensure they are up-to-date with the most recent evidence and consistent with local resources. Major revisions should be shared with vendors.

Telephone triage reduces provider workload and demand for same day visits without increasing emergency room use

CAN APPRECIATIVE INQUIRY IMPROVE INTERDISCIPLINARY EXPERIENCES?

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Do brief multidisciplinary appreciative inquiry sessions enhance multidisciplinary communication and experiences?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): (1) Allow chance for each member of the team to voice their role on the team

(2) Guided opportunity to discuss multidisciplinary norms

(3) Improve team morale and reinforce role as a respected team member

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Every other Wednesday (corresponding to resident team switch day) the medical unit director or nurse manager introduced a guided session at the beginning of multidisciplinary rounds (MDR) by saying, "We see each other all the time but we don't know much about each other's work process and how to be more effective for one another."

The team (including unit interns (I), residents (R), attendings (A), nurses (N), nurse practitioners (NP), case managers (C), and social workers (S)) was then prompted to say their preferred name, role, and preferred communication method; what positive things others do to improve their day; and actions that could further improve rounds. The following week, the leader revisited the prior stated priorities of the multidisciplinary team and asked for further suggestions or feedback as well as shout-outs to other team members.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Study coordinators timed and directly observed each session. They took field notes on content, non-verbal cues, and wrote their own impressions of the discussion. A retrospective pre-post survey using a four-point Likert scale (1=strongly disagree, 4 = strongly agree) was administered during the revisit session the following week to evaluate improvement in feeling heard on MDR, knowing MDR members and roles, feeling collegiality, and understanding what others need to be effective in their roles. We used Wilcoxon signed-rank test for pairwise comparisons of pre- and post- perceptions and content analysis for free responses.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): The intervention was completed on three units over 6 weeks (3 rounds of intervention). Sessions lasted an average of 5 minutes. 90 participants responded to the survey (37 N, 15 I, 11 S, 7 C, 7 R, 5 A, 5 NP, 3 missing). Direct observations indicated participants proactively clarified interdisciplinary issues that may lead to unsaid frustrations (i.e roles and responsibilities for communicating disposition options to patients) and team members were engaged, particularly in giving positive feedback. Survey responses indicated improvements in participants feeling heard on MDR, knowing MDR members and roles, feeling collegiality, and understanding what others need to be effective in their roles (mean improvement of 0.5 on a 4-point scale, $P<0.001$).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A brief appreciative inquiry intervention facilitates interdisciplinary dialogue that can foster effective team collaboration and mutual understanding. Interpretation of the results is preliminary, and further studies with direct observation of changes in subsequent interdisciplinary communication practices are warranted.

CARING FOR THE HIGH NEEDS, HIGH COST POPULATION THROUGH COMMUNITY OUTREACH AND SOCIAL WORK

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): A large percentage of healthcare costs are allocated to a small group of medically complex patients with challenging psychosocial situations that encompass different social determinants of health; they are often referred to as "high needs, high costs" patients.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The objectives are to show how Oak Street Health (OSH), an outpatient practice, 1)utilizes Community Outreach (CO) and Social Workers (SW) to care for the most vulnerable/sick and 2) share OSH's results of CO, SW and medical team collaboration.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : CO engages the community by building relationships with various organizations, churches and individual members. They serve as the local neighborhood experts. SW provides case management and expertise on local community resources. They also help navigate complex home situations, challenging family dynamics and assist in Advance Care Planning. CO and SW at OSH focus on challenging patients which include complex medical conditions and social situations, and help identify barriers to one's care. A thorough understanding of a patient's home and community environment helps identify these barriers. CO and SW allow for patient engagement in the clinic. As patients become more engaged, they invest more time and interest in prioritizing their care, which yields better healthcare outcomes.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Together CO and SW provide insight in identifying and understanding the needs of the "high needs, high cost" population. In collaboration with the medical team, these high needs also allow for close analysis of costs, such as ER visits, hospital admissions or post- acute care.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): At OSH, findings to date have shown a 40% decrease in ER utilization and hospital admissions in comparison to Chicago's benchmark, a 5 star rating on the HEDIS score and a 92% Net Promoter Score.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The workshop's goal is to share OSH's innovative ways on how to care for the high needs, high cost patient through the utilization and collaboration among CO, SW and the medical team.

CATALYST - ADAPTING OFFICE-BASED ADDICTION TREATMENT IN PRIMARY CARE FOR ADOLESCENTS AND YOUNG ADULTS: LESSONS LEARNED AND OPPORTUNITIES FOR GROWTH

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Substance use often begins in adolescence and young adulthood (youth), yet most office-based addiction care is not developmentally tailored for youth. Engaging and retaining youth who use substances in care is very challenging.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To adapt the adult-focused Office-Based Addiction Treatment approach for youth by providing integrated behavioral health, family support, and other developmentally appropriate services.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : CATALYST is a multidisciplinary, outpatient program for youth who use substances. The care team at Boston Medical Center includes physicians, psychiatrists, a nurse, social workers, recovery coaches, and a program manager. Patients are seen in adolescent or adult primary care and are offered primary care including hepatitis C virus testing and treatment, addiction treatment, harm reduction, naloxone kits, psychotherapy, recovery support, family support, and assistance addressing social determinants of health. Patients are typically referred from the hospital system and the community. Care is tailored to meet patient and family goals and priorities. Innovative engagement strategies include text messaging communication, including reminders, transportation assistance, and food vouchers.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We calculated the proportion of patients with opioid use disorder who received medication (i.e., buprenorphine or naltrexone in CATALYST, or methadone at an outside opioid treatment program) and retention in care at six months.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): From July 2016 through December 2018, 153 patients had at least one visit, 61% (93/153) had an opioid use disorder (OUD). At the time of the first visit, patient characteristics were the following: median age 21 years; 94% primary language English; 60.8% white; 15% Hispanic; and 18% Black. Clinically, 31% had depression, 32% anxiety, and 19% post-traumatic stress disorder. The 82 patients who completed assessment for social determinants of health reported the following: 24% being unemployed or looking for a job; 28% housing insecurity or homelessness; and 30% food insecurity. Among patients with OUD, 88% (82/93) received medication for OUD. Patients with OUD were engaged in care for a median of 10 months; 58% were engaged six months after the initial visit.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Many youth presenting for care had co-occurring mental health disorders and a high proportion of housing insecurity, unemployment, and food insecurity. Despite this, retention at six months of care was high relative to current standards for OBAT. Adapting a developmentally appropriate behavioral approach and addressing behavioral health and social determinants of health needs may all be key for engaging and retaining youth in integrated addiction and primary care.

CHANGING HEALTHCARE INEQUALITIES BY OFFERING AVNEW MODEL FOR HEALTHCARE DELIVERY: PHARMACIST DELIVERED PREP FOR PEOPLE OF ALL GENDERS

Nicole L. Nisly, Michelle L. Miller. Internal Medicine, University of Iowa Carver College of Medicine, Iowa City, IA. (Control ID #3390982)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): For years we have discussed healthcare inequalities for certain populations. The most significant challenge is how to reduce or eliminate health disparities. The Institute of Medicine designated LGBTQ identified people as a group at risk for health disparities. We offer a new model of access which is aimed at reducing health disparities by offering increased and prompt access at an LGBTQ inclusive program.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Offer immediate access to PrEP (HIV pre-exposure prophylaxis) to a vulnerable population, when general healthcare access is limited.

2. Develop a new model of healthcare delivery considering shortage of primary care physicians with long wait times for appointments.

3. Create a program which is safe, welcoming and inclusive of all LGBTQ identities and sexual behaviors, with a particular focus on Transgender and Non-Binary identified people.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Nationally, there is shortage of primary care physicians and access to care is often delayed and subject to long wait times. Physicians may not have adequate training or access in their practices to provide PrEP according to best practice recommendations which involves following patients on PrEP every 3 months. We developed an innovative program developed and led by a clinical pharmacist, utilizing a collaborative practice protocol, to provide PrEP (HIV pre-exposure prophylaxis) to diverse populations at high risk for HIV infection as well as people who desire to reduce their risk. An internal medicine physician serves as medical director, but the pharmacist is able to independenty prescribe, monitor and treat patients consulted. This service is offered in a university health system. Patients can be consulted by a variety of providers in several primary care settings. Once consulted, patients PrEP therapy is solely managed by the pharmacist, this includes clinic visits, lab monitoring, STI treatment as well as management of insurance coverage issues.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): - Enrollment statistics

- Hepatitis A and B immunity rates and vaccination
- HPV vaccinations completed
- STI data
- patient survey data

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): -235 patients have been consulted to the service since 3/2017

- Average patient age 31 (18-68)
- Gender identity: 69% men, 20% transwomen, 9% transmen, 1% women, 1% other
- total population hepatitis B immunity: 59% immune to hepatitis B
- population 25 yo and younger: 51% immune to hepatitis B

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our goal of this presentation is to arm providers with the tools needed to implement non-physician run PrEP Clinics and improve access to a potentially life saving medication. We can provide others with the clinical pearls we have learned over the past three years.

CHRONIC OPIOID MANAGEMENT IN PRIMARY CARE

Shalom Schlagman[1]; Bethany D. Corbin[1]; Alice Baker[1]; Enrico Caiola[1,3]; Angela K. Nagel[2,3]; Amanda M. Ramos[3]; Robert J. Fortuna[1,3]. [1]Internal Medicine-Pediatrics, University of Rochester, Rochester, NY; [2]Pharmacy Practice and Administration, St John Fisher College, Rochester, NY; [3]Culver Medical Group- Primary Care, URMC, Rochester, NY. (Control ID #3391897)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Since the turn of the century, the opioid crisis has claimed nearly four-hundred thousand American lives; operational processes are needed to implement best practices and support safe prescribing of opioids in the primary care setting.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. To implement best practices for prescribing opioids

2. To develop a weaning protocol to decrease opioid doses when the risks outweigh benefits

3. To support patients in whom an opioid use disorder is identified

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : We developed a multi-disciplinary opioid management program utilizing the tools within our EMR to actualized a three-pillar approach to (1) implement best-practices around opioid prescribing consistent with the CDC recommendations, (2) develop weaning protocols for patients receiving high doses of opioids, when medically appropriate, and (3) establish supports for patients when opioid use disorders were identified. The opioid best practices establish the expectations for (a) controlled substance agreements, (b) annual urine toxicology profiles, (c) co-prescribing of naloxone for patients receiving high dose opioids, and (d) routine appointments every 3 months for patients receiving over 50 morphine milligram equivalents (MME). We developed weaning protocols for patients receiving more than 90 MME of opioids, when weaning was determined to be medically appropriate. To support patients when opioid use disorders were identified, we established a referral process with health-home care managers and developed an internal buprenorphine program. To guide care, we developed tools within the electronic health record to track outcomes and alert providers to deficincies at the point of presciption or during visits. To align efforts throughout the office, a multidisciplinary team developed resident educational modules for opioid prescribing and opioid weaning.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): To evaluate the success of this program we measured (1) the percent of patients who have a controlled substance agreement on file; (2) the percent of patients who have a toxicology screen within the last year; and (3)the number of patients on >50MME with naloxone prescribed

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): At the beginning of this intervention, our Internal Medicine-Pediatrics teaching practice had nearly 300 patients receiving chronic opioids. Of these 36% received more than 50 MME, and 15% received more than 90 MME. Within one year of initiating our intervention, documentation of a controlled substance agreement increased (6% to 71%; P <0.001), urine toxicology testing increased (19% to 62%; P<0.001), and naloxone prescribing increased (0% to 60%; P<0.001). Co-prescribing of benzodiazepines was reduced, though the change was not statistically significant (16% to 12%; P=0.5).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): An operational and education structure to support a comprehensive opioid management program offers the potential to improve best practices and appropriate opioid prescribing. Operational and education tools will be shared to support dissemination.

COMMUNITYRX-HUNGER: TRIALABILITY OF A LOW-INTENSITY HOSPITAL-BASED INTERVENTION TO ADDRESS HUNGER AND OTHER RELATED SOCIAL NEEDS AMONG FAMILIES WITH HOSPITALIZED CHILDREN

Doriane Miller[2]; Emily Abramsohn[1]; Deborah L. Burnet[2]; Kelly Boyd[1]; Emily Chase[3]; Kate Doyle[1]; Kelsey Paradise[1]; Jennifer A. Makelarski[1]; Eva Shiu[1]; Elaine Waxman[4]; Stacy T. Lindau[5]. [1]Obstetrics and Gynecology, University of Chicago, Chicago, IL; [2]Medicine, University of Chicago, Chicago, IL; [3]University of Chicago Comer Children's Hospital, Chicago, IL; [4]Urban Institute, Chicago, IL; [5]Ob/Gyn and Geriatics and Palliative Care, University of Chicago, Chicago, IL. (Control ID #3391485)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): The rate of food insecurity (FI) among U.S. African American and Hispanic households with children is nearly double that of non-Hispanic white households with children; FI is associated with poor health outcomes among children and adults.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Using a double-blind, randomized controlled trial (RCT) design, the CommunityRx-Hunger (CRxH) intervention aims to 1) improve self-efficacy for self-care among FI caregivers of hospitalized children; 2) mitigate FI; and 3) not diminish satisfaction with care among all caregivers.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : We pretested the intervention arm of the RCT to assess feasibility of the intervention and data collection protocols. Research assistants (RA) were trained using standardized protocols including role-playing and real-time feedback with an investigator. Caregivers (i.e., parents) of hospitalized children were approached for participation based on home ZIP code and whether they were being treated by a clinician with whom we had engaged. All caregivers were screened for FI. Delivery of CRxH included 1) a FI-focused educational intervention about the common non-medical needs of families after a child's hospitalization, 2) review and delivery of a resource list for local, vetted resources addressing these needs, 3) coaching on how to access resources and a community resource navigator, and 4) a series of automated text messages from the navigator informed by the Critical Time Intervention supporting the transition from hospital to community. Text messages were sent at discharge, then weekly for one month. Participants were surveyed in-person at baseline and by phone at 7 and 30 days following discharge.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Continuous and comprehensive community and stakeholder engagement; recruitment and enrollment rates and sociodemographic and health characteristics commensurate with a prior study; intervention fidelity.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Between March-December 2019, we engaged a multi-stakeholder Advisory Board, physician and nurse scientists and hospital leadership via meetings, presentations and email. We trained 4 RAs. We initiated pretest (01/2020) on 2 of 5 hospital floors. Using EMR data, in 1 week we identified 20 children living in an eligible ZIP code. We screened caregivers for 11 of these patients; 10 (91%) were eligible and 8 (80%) consented to participate, similar to our prior study in the children's hospital (85%). On average, participants were slightly younger than in our prior study (27 years old, range: 19-44 vs. 36 years old, range: 18-57). Participants in this pretest were all women and non-white, more than anticipated (70% and 62%, respectively). Three participants (38%) screened positive for FI in the last twelve months, on par with our prior study (43%). CRxH took 3 minutes (range: 2-5) to deliver and was correctly delivered to all participants.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Community and stakeholder engagement is critical for identifying champions of the intervention. Trialability of CRxH will inform implementation of the larger RCT.

CRUSADERS AGAINST SOCIAL INJUSTICE: HOW A SAFETY-NET HOSPITAL SYSTEM LEVERAGES VOLUNTEERS TO COMBAT INEQUITY

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Clinicians often report feeling overwhelmed trying to provide quality patient care that includes all facets of the biopsychosocial model due to lack of resources, time to discuss social determinants of health, and expertise to address legal or financial issues.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To address complex social needs of patients, the Health Advocates Program (HAP) was created in 2012 at Alameda Health System, which is a county safety-net health system located in Oakland, CA. The objectives of HAP are to:

1. Provide public benefits application assistance
2. Help alleviate the factors that prolong hospital stays
3. Increase exposure of pre-health students to the hospital system and social determinants of health

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : HAP is a volunteer-based organization comprised of 100+ undergraduate volunteers, 94% of whom plan to pursue a career in the health professions, and 5 paid staff. Providers refer low-income and unstably housed patients with the goal of helping them get linked to community-based resources. Between June and September 2019, the program on average received 92.5 inpatient and 137 outpatient referrals monthly.

To understand the impact this program has on staff and participants, we conducted 20 semi-structured, anonymous, opt-in interviews with providers and volunteers associated with HAP. A thematic coding system of participants' responses and literature review were used to inform findings and identify measures to better support volunteers in their efforts to help patients.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Thematic coding qualitatively showed that providers felt HAP enabled them to more holistically address their patients' needs. Volunteers felt enriched by actively improving patients' lives.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Although public benefits intend to support low-income, disabled, and elderly individuals, volunteers express that the complex terminology of applications excludes these very populations. With an advocate to navigate the public benefits system, patients can apply for resources that they are unknowingly qualified for, such as SNAP, SSI, and IHSS. Furthermore, although the providers interviewed are aware of the social determinants of health, they feel helpless discussing these issues without being able to provide their patients solutions.

HAP provides a link to more deeply discuss non-clinical aspects of patients' lives, allowing for greater whole person care and strengthening the connection between patients and providers. Also, providers mentioned that data generated by HAP increases their awareness for areas of need that are especially lacking. Lastly, HAP provides future health professionals meaningful opportunities to experience patient health in relation to the safety net.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Keys for success include:

1. An integrated electronic health record system to promote transparent team-based care.
2. A pipeline of enthusiastic, high-quality volunteers and a mix of paid staff to maintain structure, training, and do program outreach.
3. Robust education to providers about resources the program can provide and how to refer to the program.

DEVELOPING PLATFORMS TO FACILITATE INTRA-INSTITUTION KNOWLEDGE SHARING AND COLLABORATION IN HEALTHCARE INNOVATION

Margaret Krasne[1]; Ashley Shaw[2]; Mugdha Joshi[4]; Deanna Belleny[5]; Cynthia So-Armah[3]; David W. Bates[3]; Lindsay S. Hunt[5]; Russell Phillips[5]; Lisa Rotenstein[3]. [1]Internal Medicine, Johns Hopkins, Baltimore, MD; [2]Pediatrics, Massachusetts General Hospital, Boston, MA; [3]Medicine, Brigham and Women's Hospital, Boston, MA; [4]Harvard Medical School, Boston, MA; [5]Center for Primary Care, Harvard Medical School, Boston, MA. (Control ID #3375880)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Currently, it can be challenging for innovators to share knowledge and capitalize on opportunities to collaborate with others conducting similar work even within a single organization.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): We customized our national knowledge-sharing tool (www.carezooming.com) for the Brigham and Women's Hospital Internal Medicine Residency and Division of General Internal Medicine (www.bwh.carezooming.com) and the Harvard Medical School Center for Primary Care (https://advancingteams.carezooming.com/) in order to provide these entities with a communal platform to publish and share practical information about improving systems of care, connect innovators conducting similar work to foster collaboration, and offer opportunities for project leads to share project needs and recruit team members.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Each organization's knowledge forum consists of searchable protocols of projects completed by members of the specific organization including practical information such as a project description, team members involved, measures, and results. Protocols are either submitted by members of the community directly or generated from publicly available abstracts. The database also includes a searchable list of innovators with whom users can connect through the platform. A monthly newsletter is sent to community members showcasing 3 new projects, highlighting projects that expressed particular needs, and highlighting opportunities for dissemination of project outcomes. Connections are suggested between individuals conducting related work. Reports of ongoing work can be drawn from the data available in the database and used by departmental leaders for reporting and decision-making.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Quantitative measures include the number of featured protocols, number of featured innovators, number of newsletter recipients, and users' reported usefulness of the website in their healthcare innovation efforts. Qualitative measures include themes that emerged from conversations with users about their experience with the site.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): The two websites combined contain over 100 implementation protocols representing innovations in over 20 important medical domains including quality and safety, technology integration, and patient-centered care. The content is circulated monthly

to a combined 600 people. The websites feature over 70 innovators. We have made over 75 connections between users and innovators. In interviews, users expressed that the websites have fostered community, increased awareness of ongoing projects, and celebrated the importance of quality improvement work and innovation research. User survey data on the utility of the newsletter and website is forthcoming.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): We often struggle to develop and implement quality improvement and healthcare innovation projects due to lack of on-the-ground knowledge. When thinking about implementation of these projects, practical guidance and potential collaborators can often be found within one's own institution if they are easily identifiable through a searchable database.

DEVELOPMENT AND IMPLEMENTATION OF AN EARLY WARNING SCORE TO PREVENT CLINICAL DETERIORATION IN HOSPITALIZED ADULTS AT DENVER HEALTH HOSPITAL

Beza Jobira[1,2]; Thomas MacKenzie[2,1]; Tara Hiller[2]; Carolyn A. Valdez[2]; Rehaan Shaffie[2,1]. [1]University of Colorado School of Medicine, Aurora, CO; [2]Denver Health & Hospital Authority, Denver, CO. (Control ID #3374833)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Adult hospitalized patients who are clinically deteriorating have a delay in the recognition of their clinical deterioration, triggering a rapid response activation and in an escalation of care, which increases in-hospital mortality and morbidity.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) Develop and implement an early warning score, the Deterioration Index Model, at Denver Health Hospital. 2) Reduce the number of cardiopulmonary arrests on the floor. 3) Develop and implement a stand-alone designated rapid response team (RRT) that proactively responds to deteriorating patients.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The in-hospital mortality rate at Denver Health is increasing. The need to develop and implement a new early warning score for deteriorating patients in the inpatient setting came out of a pilot study called the Deterioration Index (DI). Prior to the DI pilot, a single vital sign parameter was used to identify rapidly deteriorating patients; however, this system failed to capture majority of patients who needed escalation of care. The DI score, built within the EPIC electronic medical record, provided a composite score by weighting vital signs, neurological assessment, lab values and change in score over time, and the DI score is updated automatically based on patients' most up to date clinical markers. The DI identified deteriorating patients that needed escalation of care in real-time and triggered a rapid response activation to be evaluated by a dedicated RRT.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Primary outcomes of interest include in-hospital cardiac arrest and respiratory failure (increased oxygen or intubation requirement). Secondary outcomes of interest include goals of care discussion, and proactive changes in code status. Pre-intervention data (2018) prior to implementation of the DI pilot will be compared with the post- intervention data (2019).

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Compared to pre-intervention, we found that post-intervention period had a reduction in rates of cardiac arrest events. In addition, there were an increased rate of comfort care orders placed and increased rate in code status change to Do Not Resuscitate (DNR) during post-intervention period.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Identifying clinically deteriorating patients requires more than a single vital sign parameter. A multifactorial early warning score that not only accounts for vital signs, neurologic assessments and key lab values is critical in identifying in-hospital deterioration with improved accuracy and sensitivity. A dedicated RRT without competing clinical responsibility is imperative for proactive assessment of deteriorating patients and appropriate escalation or changes in goals of treatment.

DEVELOPMENT OF A TRANSITIONS PRIMARY CARE CLINIC IN AN ACADEMIC MEDICAL CENTER

Lisa Rotenstein[1]; Caroline Melia[1]; Peter Gonzalez[1]; Rebecca Cunningham[1]; Stuart Pollack[1]; Christin N. Price[2]. [1]Medicine, Brigham and Women's Hospital, Boston, MA; [2]Psychiatry, Brigham and Women's Hospital, Brookline, MA. (Control ID #3391693)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Transitions of care, such as between the emergency department (ED) or hospital and home, leave patients vulnerable to adverse outcomes, including readmissions, worsening symptoms, reductions in functional status, and psychological distress.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): -To establish a Transitions Primary Care Clinic that serves patients who do not have a primary care provider (PCP) or cannot get timely PCP follow-up after a transition of care.

-To demonstrate that a Transitions Clinic (TC) can enhance accessibility of care while reducing healthcare utilization.

-To quantify patient experiences of care at a TC.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : This program was established at Brigham Health, an academic medical center in Boston, MA. The TC was established within an existing primary care practice and opened in January 2019. It employs one full-time RN Care Coordinator, one full-time medical assistant, and is staffed by one PCP each weekday afternoon. Both medical and social diagnoses that require close follow-up post-discharge are addressed. Patients are seen as many times as necessary until PCP care is established.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): -Time to a TC visit.

-Number of patients seen in the TC, and their referral sources and payor breakdown.

-Impact of the TC on repeat ED use and hospitalizations.

-Percent of patients successfully connected to a new PCP.

-Patient ratings of ease of scheduling, getting to an appointment, and satisfaction.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 11 months after its establishment, the clinic has received 469 referrals (73% from the ED, 23% from inpatient) and has seen 179 patients. 52.5% of patients seen have Medicaid as their primary insurance (27.3% in the Brigham Health-affiliated ACO), 12.3% have Medicare, and 24.9% have commercial insurance. Patients are seen a mean (SD) of 4.6 (±2.9) work days after discharge. This contrasts with a mean 68.7 ± 44.5 work day wait to see a new PCP across Brigham Health. While patients seen in the clinic had a mean (SD) of 0.4 (±0.7)

hospitalizations and 1.2 (±1.0) ED visits in the 3 months prior to their visit, this decreased to 0.2 (± 0.5) hospitalizations ($p<0.01$ for difference) and 0.3 (±0.7) ED visits ($p<0.01$ for difference) in the 3 months after their visit. 67.0% of patients seen in the TC successfully connected with a new PCP. Average patient ratings of ease of scheduling, getting to an appointment, and satisfaction were 4.7/5, 4.5/5, and 4.8/5, respectively.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A TC can provide accessible, attentive care post-discharge. Insurance issues and inability to reach patients post-discharge were the most common reasons a patient was not seen in the TC after a referral was placed. Availability of a multidisciplinary team that can see patients for repeated visits until establishment of PCP care was a key factor for success of the TC. Further work is needed to assess the effect of this clinic on healthcare spending and its quantitative impact on addressing social determinants of health.

DIABETES DISTRESS, ITS PREVALENCE AND CLINICAL DETERMINANTS IN PATIENTS WITH TYPE II DIABETES

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): The correlation between depression and poor diabetic control has been well established. However, emerging literature suggests that diabetes distress, independent of depression, can have a profound impact on self-management and diabetic outcome and necessitates a different management strategy.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. To identify the prevalence of diabetes distress among a vulnerable, underserved urban patient population in our outpatient community health center.

2. To compare two screening tools' ability to capture diabetic patients at risk for poor outcomes, caused by behavioral and psychosocial factors.

3. Investigate the correlation between diabetes distress and poor diabetes mellitus control

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : This cross sectional study was implemented at the Ryan Adair clinic, a federally qualified health center in Harlem that serves as a primary care training site for our internal medicine residents. We identified all patients with diabetes who presented to the clinic over a four-week period. A well-validated diabetes distress screening tool (PAID5) was administered to each patient by a physician. We retrospectively reviewed the charts of those patients to identify Hb A1C values, smoking status, BMI, lipid panel, PHQ2, pre-existing mental problems, and known complications of diabetes.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): PAID5 cutoffs were deemed positive at a threshold score of 8. PHQ2 of 3 was considered the cutoff to screen positive for depression. The cohort was divided into two groups based on diabetes distress status. The average Hb A1C as well as the prevalence of uncontrolled DM (defined as Hb A1C>=9) was compared between each group.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): A total of 69 patients were screened during the study period. 42% of the cohort population screened positive for diabetes distress, whereas, only 3% of those screened positive for depression based on PHQ-2.

While 57% of those who screened positive for diabretes distress were found to have uncontrolled diabetes, only 24% of diabetic patients with no DD had uncontrolled disease. The average Hb A1C for all the participants in the positively-screened group was 9.6%, and in the second group it was 7.72%.

Behavioral parameters were also noted to be different between the two groups. Those with diabetes distress were more obese (BMI: 34.7 vs 31.6), with more tendency to smoke (27% vs 22.5%). Lipid profile were similar between both groups.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Diabetes distress is an underdiagnosed condition, that has a profound impact on the course and outcomes of type II diabetes. Screening for diabetes distress and early intervention can lead to better management and control of diabetes.

DIGITAL COACHING STRATEGIES TO FACILITATE BEHAVIORAL CHANGE IN TYPE II DIABETES: A SYSTEMATIC REVIEW

Conor J. Hillert[1,2]; Brad Gershkowitz[1,2]; Bradley H. Crotty[2,1]. [1]Medicine, Medical College of Wisconsin, Wauwatosa, WI; [2]Collaborative for Healthcare Delivery Science, Medical College of Wisconsin, Milwaukee, WI. (Control ID #3389928)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Diabetes is extremely prevalent and costly to our healthcare system leading to poor outcomes and placing a large strain on our health care system in terms of patient volume.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES):

Aim 1: To determine if digital coaching strategies offer similar clinical benefits to in-person and telephone- based health coaching for the prevention and management of type II diabetes.

Aim 2: To compare the effectiveness of each strategy on clinical outcomes, patient engagement, cost, and ease of implementation considerations for use in a work health population.

Aim 3: To find and elucidate the best mHealth application based behavioral modification approaches to treating diabetes and prediabetes.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : We reviewed the existing peer-reviewed literature on diabetes health coaching applications using PRISMA guidelines. We analyzed 7311 abstracts, 105 full-text articles, and ultimately 20 papers met our rigorous inclusion criteria. Our review was focused on finding, analyzing, and synthesizing knowledge about an emerging field of mHealth interventions focused on treating and preventing type II diabetes. One of the goals of our research was to find an application with the strongest evidence of efficacy to implement as a prescribable app at my home institution of Froedtert & the Medical College of Wisconsin.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We looked at quantitative metrics of weight loss, BMI, and changes in A1c as primary outcomes in our analysis. We also examined the quality and risk of bias of each of the studies using a clinically validated scale designed specifically for mHealth and technology-based interventions. We assessed the efficacy of interventions and compared them against standards created by the Diabetes Prevention Program (DPP).

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Twenty studies met our criteria. All studies reported statistically significant improvements in at least one measure of diabetes control, including HbA1c or weight loss when compared to baseline measurements (range of -3.7% to -7.5% body mass at 1 year for four studies). These results were similar to outcomes seen in the Diabetes Prevention Program, which reported -4.7% body mass at 1 year. Six studies compared a digital coaching group to an in-person or telephone-based coaching group and showed better or similar outcomes in the digital coaching group. Overall our analysis of current evidence showed long-term clinical benefits in diverse populations for reducing HbA1c and body weight for adults at risk of type II diabetes.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Digital health coaching is a promising strategy for the management and prevention of type II diabetes and offers similar benefits to in- person or telephone-based health coaching.

We recommend that healthcare providers and healthcare organizations consider the option of using digital health coaching strategies to prevent and manage type II diabetes especially in cases where in-person health coaching or telephone-based health coaching is challenging.

DOTPHRASE.ORG: A PLATFORM FOR CROWDSOURCING EVIDENCE-BASED, EFFICIENT, EDUCATIONAL NOTE TEMPLATES

Patrick Sanger, Eric H. Lee, Nathaniel Gleason. Internal Medicine, UCSF, San Francisco, CA. (Control ID #3392190)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Documentation is inefficient, arduous and often not evidence-based; dotphrases can efficiently serve as diagnostic and therapeutic clinical decision support.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. To facilitate the crowdsourcing of usable, accurate, evidence-based dotphrases across multiple medical specialties

2. To identify best practices for creation and maintenance of dotphrases

3. To serve as an educational resource for clinicians

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The authors developed a public website based on MediaWiki (created to run Wikipedia) with iterative design input from 10 internal medicine residents, a target end-user group. The site allows users to create, revise, and share dotphrase content. Dotphrases have associated metadata ("tags") – such as organ system, medical field, and inpatient/outpatient – which allow for easy browsing and filtering. Users can rate each dotphrase with an overall star rating and flag inaccurate content. Threaded comments under each dotphrase allow discussion. Any user can make edits to dotphrases; volunteer page editors and section editors monitor changes to maintain high quality, and a moderation system can be enabled to require approval of changes by these editors if needed. A community-maintained "Best Practices" guide can be displayed while browsing or editing. A mobile interface is under development. Broad dissemination via medical schools, residencies and social media is planned Q1 2020.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Quantitative (cumulative and monthly trend): Number of accounts registered; number of institutions represented; number of dotphrases created; average number of edits per dotphrase; average star rating; % of dotphrases with page editors volunteered; number of dotphrase page views; number of dotphrase downloads. Qualitative: comments and suggestions received via feedback channels.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): No existing public websites that facilitate aggregation and distribution of dotphrases were identified. No literature was found relating to community standards or best practices for dotphrases. No existing software platforms (including our Epic EHR) provided both the usability and flexibility required for this project —significant software customization was required.

During a beta launch in Q4 2019, of approximately 120 senior internal medicine residents emailed via listserv, 10 users signed up and contributed 93 dotphrases.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): * Focus initially on simplicity and usability, then add complexity based on end user input.

* Beta test with limited users to identify usability issues and technical errors prior to broad dissemination.

* Provide structure for contributions (ie SOAP headings, organ systems) but avoid being overly prescriptive with content or style.

* Identify and reach out to authors within your institution who have a reputation for high quality personal dotphrases.

* Start with barebones content and incrementally improve it; do not aim for perfection initially.

ECONSULT IN A LARGE SAFETY NET HEALTH SYSTEM: EARLY IMPACTS ON ACCESS TO CARE

Hannah Byrnes-Enoch[1]; Xuan Xu[1]; Jesse Singer[2]; Dave Chokshi[3]; Theodore G. Long[1]; Andrew B. Wallach[1]. [1]Ambulatory Care, NYC Health + Hospitals, New York, NY; [2]Population Health, NYC Health + Hospitals, New York, NY; [3]Brigham & Women's Hospital, Boston, MA. (Control ID #3391459)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): How effective is an eConsult referral management system in improving measures of access to care in a large urban safety-net health system?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Establish a referral management system across ambulatory clinics

2. Increase access to specialist expertise by improving communication between primary care and specialty clinicians

3. Maximize existing specialty clinic capacity by ensuring patients receive the right appointments at the right time

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : NYC Health + Hospitals, the nation's largest safety-net health system, began implementing an integrated eConsult referral management system in 2016 across 11 hospital outpatient departments and 6 community health centers averaging over one million referrals each year. The system integrates clinician review of all referrals with a proactive appointment scheduling system for referrals requiring a face-to-face (F2F) visit. Specialist clinician reviewers have the opportunity to triage referrals to F2F visits or to reply with an electronic consultation note. As of early 2020, over 170 specialist clinics located in 12 care delivery sites are using eConsult to manage approximately 20,000 referrals per month.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO

EVALUATE PROGRAM/INTERVENTION): For 38 adult medical and 11 surgical specialty clinics using eConsult before February 2019, we calculated monthly average referral volume and access metrics at 2 months prior to eConsult as baseline. Clinics were stratified by type and compared with the first two months and the fourth & fifth month after implementation on the following metrics:

1. Referral volume

2. % of referrals requiring F2F appointment a) % resulting in a scheduled appointment

3. % of appointments occurring within 30 days

4. Average wait time (days) for F2F appointment

5. Referral appointment no-show rate

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 1. 25,005 referrals submitted to the 49 specialty clinics were included in the analyses

2. Referral volume dropped after go-live, likely due to modifications to EMR order naming and structure; it returned to near previous levels by months 4 and 5

3. The percentage of referrals requiring an appointment dropped as expected after implementation, then rose significantly in the 4th and 5th month for surgical clinics, which may indicate that surgeons require some time to adjust to the new workflow

a) Overall, the percentage of referrals needing a F2F visit and resulting in a scheduled appointment improved significantly, increasing from 79% at baseline to 88% in the second comparison period

4. The percentage of scheduled appointments occurring within 30 days improved significantly overall compared to baseline, from 28% to 29% ($p<0.0001$)

5. Average wait time for appointment improved compared to baseline ($p<0.0001$). For adult medicine specialty clinics, only the first two months improved significantly

6. Overall no-show rate increased from 23% at baseline to 25% after implementation (not significant)

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Implementation of an integrated eConsult and referral system can improve measures of access to care, but effects may vary between medical and surgical specialties

ELECTRONIC HEALTH RECORD VISUAL OVERLAY PROMISES TO IMPROVE HYPERTENSION GUIDELINE IMPLEMENTATION

Raef A. Fadel[2]; Jacob Ross[1]; timothy asmar[1]; Karthik Sridasyam[1]; Guneet Ahluwalia[2]; tamara roumayah[2]; Megan Scott[2]; Hanan Ibrahim[2]; Rawan Hammoudeh[2]; Nitesh Gandhi[2]; Meaghan Flynn[1]; zachary demertzis[2]; Joseph Miller[3]. [1]Emergency Medicine, Henry Ford Hospital, Detroit, MI; [2]Internal Medicine, Henry Ford Hospital, Detroit, MI; [3]Internal Medicine, Henry Ford Hospital, Detroit, MI. (Control ID #3392657)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Primary care management of essential hypertension (HTN) in urban communities has become increasingly challenging given time constraints in direct patient care, electronic medical record burnout, lack of socioeconomic resources, compounded with recently published guidelines integrating risk stratification tools - such as atherosclerotic cardiovascular disease (ASCVD) risk - into decision-making and further increasing physican duties.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Measure whether overlay of visual decision support (VDS) with standard electronic health record (EHR) platform improves guideline-based treatment, and reduces time burden associated with EHR use, in the outpatient management of essential hypertension.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Improvement of electronic health record to include visual support device in management of patients with essential hypertension in an academic Internal Medicine clinic affiliated with a tertirary care hospital.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Assessed whether treatment selection was congruent with guidelines and tracked time physicians consulted the EHR in two scenarios: 1) using standard EHR to guide treatment, and (2) using VDS, including graphical blood pressure (BP) trends, target BP with recommended interventions, ASCVD risk score, and information on the patient's social determinants of health, to guide treatment.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): We evaluated 70 case simulations in total. Use of VDS compared to usual EHR was associated with: higher proportion of correct guideline prescribing (94% vs. 60%, $p<0.01$), more ASCVD risk determination (100% vs. 23, $p<0.01$), and more correct BP target identification (97% vs. 60%, $p<0.01$). Time clinicians spent consulting the EHR fell an average of 121 seconds with use of VDS ($p<0.01$). On a 10-point scale, clinicians rated the VDS 9.2 vs. 5.9 ($p<0.01$) for ease of gathering necessary information to treat HTN.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The integration of VDS tools into the EHR demonstrates potential to reduce time and improve HTN guideline implementation. Further testing in clinical practice is indicated, and can improve overall quality of patient care in the outpatient setting.

EMBRACING OUR VALUES: CREATING A SOCIAL MEDICINE CORE WITHIN ACADEMIC HOSPITAL MEDICINE

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Opportunities to promote social medicine are often not integrated within traditional hospital medicine priorities.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Incorporate tenets of social medicine within the mission and culture of our hospital medicine division

Develop a core group of hospital medicine faculty to engage in work around equity, advocacy, diversity, and inclusion within the realm of hospital medicine

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Social medicine is care that encompasses health disparities, advocacy and equity, bias and privilege, and understanding local and national contexts that impact health. As hospitalists working with diverse patient and trainee groups, we sought to incorporate these topics into the core work done by our division.

We first mapped social medicine concepts to existing areas of focus in our academic hospital medicine division: Quality Improvement (QI),

Mentorship & Education, Patient Experience, and Faculty Development. Over one academic year, we developed novel activities in the following areas:

Health Policy & Advocacy: We led faculty development sessions on health-related election issues, single payer system, and prescription drug pricing. We helped coordinate hospitalized patient voting assistance and participated in in state and national advocacy.

Inpatient Health Disparities: With QI leadership, we assessed disparities in common inpatient metrics by gender, race and ethnicity, primary language, and payer and housing status. This led the division to select opioid prescribing and use of interpreter services as QI areas of focus.

Care for Vulnerable Populations: We facilitated sessions on gun violence as a public health issue, trauma- informed care, and care of patients with limited English proficiency. We assessed physician uptake and use of video interpreters, to identify an intervention to improve their use.

Diversity, Equity, and Inclusion: We educated faculty on creating an inclusive teaching environment, responding to microaggressions, and promoting gender equity in medicine. We partnered with leadership to address enhance recruitment and hiring of diverse faculty, and promoted faculty participation in institutional diversity, equity, and inclusion training.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Social Medicine faculty development sessions were well-attended. Improving the use of interpreter services became our annual QI focus. Our division adopted a statement of diversity as part of faculty recruitment. We significantly increased the number of faculty from underrepresented and diverse backgrounds.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): In one academic year, 50% of faculty and all in leadership positions completed institutional diversity training. Projects among hospital medicine fellows showed a shift towards addressing Social Medicine issues (e.g., improving interpreter services, forming a Social Justice Discussion Group).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Concepts of Social Medicine are relevant to many aspects of our roles as academic hospitalists and, with support from leadership, can be successfully adapted to align with traditional priorities.

ENGAGING STAKEHOLDERS TO IMPROVE HEALTHCARE TEAM COMMUNICATION

Katarzyna Mastalerz[1]; Charles Snyder[2]; Rivera Luis[2]; Lori Sarten[3]; Cynthia Burrows[2]; Sarah Flood[2]; Jillian Merkle[4]. [1]Hospital Medicine, Rocky Mountain VA Medical Center, Aurora, CO, Denver, CO; [2]Nursing, Rocky Mountain VA Medical Center, Aurora, CO, Aurora, CA; [3]Pharmacy, Rocky Mountain VA Medical Center, Aurora, CO, Aurora, CO; [4]Denver Health Hospital, Denver, CO. (Control ID #3354359)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Inpatient healthcare providers and leadership identified poor interprofessional (IP) communication as a cause for increasing length of stay and late discharges.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Improve interprofessional (IP) communication about patient care plans.

2. Engage stakeholders to create and implement a bedside interprofessional rounds (IDR) structure to improve communication.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Our facility is a 133-bed Veterans Affairs Medical Center (VAMC) with bedside rounding and significant structural and cultural professional siloes. Starting in January 2019, stakeholder hospitalists, pharmacists, nurse managers, rehabilitation specialists, care coordinators, and social workers met iteratively to discuss how to transform bedside rounds to improve IP communication and care coordination. We used elements of Human Centered Design to prototype a rounding structure. Stakeholders took questionnaires back to their professional groups to discuss barriers and facilitators. Patients and residents were surveyed their experiences of rounds, and bedside nurses provided input about the information they wanted to contribute daily. We secured executive leadership support via our mission/vision and project charter. Taking into account all the inputs, after reviewing existing bedside IDR structures, stakeholders created a structured rounding framework which included the medical team, bedside nurse, pharmacist, and care coordinator. Each professional group was assigned a leader to support training and implementation. We implemented the structured bedside IDR on 6/23/2019.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We gathered pre and post implementation data that included IP team attendance and participation during rounds and qualitative interviews with patients. We also we tracked discussion themes at a bimonthly interprofessional huddle. We will examine staff engagement, length of stay, and discharge times as lagging indicators.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): After implementation, consistently more IP team members participated in bedside rounds, including nurses participating 90% of rounds (as opposed to 84% prior), and care coordinators attending 76% of rounds vs 14%. Physicians and pharmacists had high rates of attendance and input. 95% of nurses called to bedside rounds reported that their input was incorporated into the plan.

IP team members perceived a sense of improved communication and shared mental model of care plans by patients and the healthcare team. The rounds served as a platform for reducing unnecessary VTE prophylaxis and decreasing telemetry use.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Thoroughly and intentionally engaging local stakeholders to create the rounding model significantly simplified implementation and empowered healthcare team members.

Ongoing strong IP leadership after implementation was crucial; we identified champions in each profession to continually advocate for the vision of the project.

EVALUATION OF A NURSE-DRIVEN TELEPHONE-BASED VIRTUAL VISIT PROGRAM FOR DIABETES MANAGEMENT

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Can a nurse-driven telephonic diabetes management intervention improve A1c control among diabetic patients?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To improve diabetes control (measured by A1c) through providing individualized self-management support to diabetic patients referred by their primary care provider.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS.

OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The program consisted of virtual visits (VV) which were telephone visits conducted by nurse practitioners (NPs) to provide clinical support between office visits at an academic general internal medicine practice and designated patient centered medical home. NPs recruited patients with A1c >8 based on quarterly reports of the practice's diabetes registry and PCPs could also refer their patients directly. The number and frequency of VVs was individualized by the NP to the patient's needs and perceived engagement level.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The primary outcome was the change in patients' A1c before and after participation in the program.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): A retrospective evaluation of the VV program from 2014- 2018 was conducted based on EHR data. Patients with at least two VV encounters during this period and a A1c >6.4 prior to their first VV encounter were included. The final sample comprised of 376 patients. The mean age was 58 ± 11 years, 58% of patients were female, and 44% had Medicare insurance. The mean baseline Charlson Comorbidity Index (CCI) was 4.8 ± 2.9 and the mean baseline HbA1c was 9.85 ± 2.3. There was substantial variation and a right skew in number of VV encounters with a mean of 5.1 ± 4 and median of 3.

On average, patients' A1c decreased by 1.15 ± 2.5 points from before their first VV to after their last VV encounter. Multivariable regression models were used to identify factors associated with change in A1c. Adjusting for age, insurance type, residing in a high-risk low-income zip code, enrollment in the online patient portal, CCI, number of VV encounters, PCP type, and number of office visits between the first and last VV encounter, the duration of time between the first and last VV (-0.04, 95% CI -0.075, -0.004), female gender (-0.52, 95% CI -1.038, -0.006), and number of office visits in the year prior to the initial VV encounter (-0.28, 95% CI -0.445, -0.108) were significantly associated with A1c change. In an adjusted multivariate logistic regression model with the outcome of a ≥1 point decrease in A1c, only having fewer office visits in the year prior to the initial VV encounter (-0.21, 95% CI -0.35, -0.06) remained a significant predictor.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): In this retrospective evaluation of a nurse-driven telephone-based VV program for diabetes, there was preliminary evidence of an improvement in A1c. However, future work should incorporate an adequate control group to assess for regression to the mean. Adjusted analyses of factors associated with A1c change suggest that patients with fewer office visits in the year prior were more likely to benefit. Thus, patients with a history of poor engagement with traditional office-based care may be an ideal target population for non-face-to-face care interventions.

EVERY PATIENT, EVERY VISIT: A HEALTH SYSTEM APPROACH TO BEHAVIORAL HEALTH INTEGRATION IN PRIMARY CARE

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Since co-occurring depression can complicate and even worsen medical disease, should the primary care clinic be responsible for routine, universal screening for depression of all patients seeking medical care?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Develop an effective and efficient process for a primary care clinic to screen patients for depression using a PHQ9 screening tool.

2. Teach mutliple primary care clinics about depression, the PHQ9 screening tool, and a standardized approach to screen every patient, every visit for depression using the medical assistant during the rooming process.

3. Measure rates of depression diagnosis and potential changes in health care outcomes with increased screening for depression.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Stage 1 of this project began by identifying 9 high-performing, early-adopter outpatient primary care clinics within a large health care system. Each clinic nominated champions who were taught basic principles of practice transformation and quality improvement through recurrent learning sessions. Early sessions focused on depression screening with education on the PHQ-9 screening tool, how to use it, and what to do with positive results. Clinics were also taught how to incorporate the PHQ9 screen into the rooming process by the medical assistant. The goal was set to screen "*every patient, every visit*" with a PHQ-9 screen. Two subsequent stages including more primary care clinics (for a total of 29 clinics) entered into a similar learning cohorts at later dates. They followed the same learning curriculum with integration of the PHQ-9 screen into the routine primary care visit.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Rates of PHQ9 screening and severity of depression based on PHQ9 scores were tracked as were ER utilization rates across the network for these 29 clinics over a 26-month period. Rates were compared across the various stages of implementation using Chi-square tests and included the pre-implementation phase (Stage 0).

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Rates of depression screening increased over time ($p<.001$) as follows: (1) Stage 0 (23%), (2) Stage 1 (29%), (3) Stage 2 (33%), and (4) Stage 3 (48%). There is a significant increase in the percent of visits which scored as severe or moderately severe depression ranging from 2.4% in Stages 0 and 1 compared to 2.8% in Stages 2 and 3. Among those with a visit in which the PHQ9 score was in the severe depression range, the percent with an ED visit 90 days after did not significantly change from Stage 0 (14.5%) to Stage 3 (15.9%) ($p=0.9$).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A large network of integrated primary care clinics can be taught and engaged to successfully implement process change in a short period of time. Depression is underrecognized in primary care and once universal depression screening of "every patient, every visit" was implemented, screening increased across the network with more severely depressed patients diagnosed. This project includes data for the initial roll out of one component of primary care transformation in a large health care system with additional cohorts are planned in the near future.

FACTORS INFLUENCING PATIENTS' ABILITY TO SELF-MANAGE AND CONTROL TYPE 2 DIABETES

Yeriko Santillan, Tamara Goldberg, Olufunke Olushoga, Theresa Mack. Internal Medicine, Mount Sinai St. Lukes West, New York, NY. (Control ID #3380401)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Since most guidelines suggest that self-management is a critical pillar of optimal diabetes care, it is essential to understand the barriers to self-care among high-risk diabetic populations to improve overall control.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To identify the factors impacting self-management of diabetes in an urban, underserved population.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Our project was conducted at a Federally Qualified Health Center in New York City that serves as a primary care training site for internal medicine residents. The clinic population is ethnically diverse and financially- burdened, with the majority of patients falling below the federal poverty level. In 2019, the rate of uncontrolled diabetics (A1c ≥9%) was between 25-32%. To better understand barriers to diabetic self-care among this population, we conducted a retrospective case study of 161 patients seen at our clinic between January 2017 and January 2019.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The following was collected: age, sex, zip code, history of psychiatric diagnoses, applicable Z codes based on social/educational history, number of primary care visits, number of visits with a nutritionist, number of visits with a certified diabetic educator (CDE), number of hemoglobin A1c results and their values, and number of missed appointments. We then stratified patients who achieved an A1c <9 by the end of the study period and those who remained ≥9, and compared the above variables using odds ratio.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Of 161 patients with hemoglobin A1c ≥9, 44% attained a hemoglobin A1c <9 by January 2019. Women were more likely to remain uncontrolled than the men in our study (OR 1.22). Patients who did not achieve glycemic control were more likely to have poor health literacy (OR 2.6), life-management problems i.e. cognitive and/or physical issues limiting ability to adhere with medications and manage daily tasks (OR 4.27), to be under- or uninsured (OR 1.78), have a concomitant mental illness (OR 1.44), and to have missed appointments with their primary provider (OR 1.42). Patients who did not attend a nutritionist or CDE appointment were just as likely to achieve glycemic control as those who did (OR 1.0).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): This retrospective chart review sheds light on key variables contributing to long-term diabetic control among a low-income, underserved urban population. Decreased number of missed appointments with a PCP was associated with better control, yet we found no difference in control between those who were engaged in care with a CDE or nutritionist and those who were not. Life-management problems and poor health literacy had the greatest association with poor control. These results help guide our intervention priorities such as reducing no-shows, routinely screening and documenting social barriers to care, focusing on resources to mitigate these barriers, and providing patients with literacy-appropriate educational material. A limitation of this project was that social barriers were not documented in s a standardized way, suggesting the importance of educating our resident providers about Z codes.

FEASIBILITY OF A NUTRITION AND LIFESTYLE FOCUSED SHARED MEDICAL APPOINTMENT PROGRAM IN A RESOURCE-CHALLENGED COMMUNITY SETTING

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Will a Shared Medical Appointment Program (SMA) in a resource-challenged community with a high burden of chronic disease and racial and socioeconomic health disparities be feasible and acceptable to programmatic stakeholders and community residents in the Fairfax/Hough neighborhood of Cleveland?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) To determine the feasibility of community resident participation in a 10-week SMA in a community setting.

2) To understand the barriers and facilitators for implementation and scalability of the pilot program through a participant focus group and one-on-one stakeholder interviews

3) To evaluate pre- and post-intervention changes in wellness indices, self-efficacy, and trust in medical researchers using a written survey.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Functioning for Life (FFL) is a 10-week SMA program focused on providing nutrition, lifestyle and behavioral health education and interventions to patients with various chronic conditions, and is led by a multi-disciplinary team of caregivers (a medical provider (MD/DO/PA/NP), dietitian and health coach). Participants (n=15) were community residents in the Fairfax/Hough neighborhood of Cleveland, OH and the sessions were conducted in a community center. Participants received in-kind healthful food, dietary supplements, and lab testing. An IRB-approved research evaluation of the program was conducted.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 1) Participation in the 1-2 hour weekly session for 10 weeks

2) Improvements in health behaviors, trust in medical researchers/physicians, self-efficacy, and biometrics

3) Input from participants and stakeholders via focus group and interviews regarding feasbility

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): All 15 particpants attended all weekly sessions, which was faciliated by the community organization staff calling participant to remind them to attend sessions. The majority of participants were older adult, African American women.

Pre- and post-surveys showed participants had increased sleep duration, fruit and vegetable intake, and improved self-reported health status after the program. The majority did not have a hard time following the nutritional recommendations, incorporating the lifestyle changes, taking the supplements, and/or eating the food delivery meals.

All participants had improvements in their systolic blood pressure; there was a 10mmHg decrease in mean systolic blood pressure over 10 week program (SBP 132 to 122). Other changes included a change in mean diastolic blood pressure from 65 to 61 (-5mmHg) and a mean weight loss of 6lbs lost from 226lbs to 220lbs.

Faciliators to the program included enthusiastic clinical staff who were familiar with the content and could adjust to a low health literacy group, partnership with a trusted community partner, and group support. Barriers to sustainability include heavy time and personnel resources to carry out the program and lack of in- kind food delivery.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): SMAs can be feasible and acceptable in community settings in partnership with trusted organizations.

FOOD AS MEDICINE: HOW TACKLING FOOD INSECURITY IN PRIMARY CARE CAN ADVANCE THE QUADRUPLE AIM AND HEALTH EQUITY

Rita Nguyen[1,2]; Helen Gambrah[4]; Brian Aldana[3]; Erin Franey[6]; Sarah Cox[1]; Ellen Chen[5]. [1]Population Health Division, San Francisco Department of Public Health, San Francisco, CA; [2]Internal Medicine, University of California San Francisco, San Francisco, CA; [3]University of California Berkeley, Berkeley, CA; [4]Vanderbilt University School of Medicine, Nashville, TN; [5]San Francisco Health Network, San Francisco Department of Public Health, San Francisco, CA; [6]Food as Medicine Collaborative, San Francisco Department of Public Health, San Francisco, CA. (Control ID #3392395)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Food insecurity is associated with worse health outcomes and increased healthcare costs but it is unclear how healthcare can effectively tackle this major social determinant of health.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Establish a multisector collaboration to drive policy, systems, and environmental change within healthcare to address food insecurity

2. Frame food insecurity as an equity issue and use quality improvement (QI) tools to operationalize equity within clinics to improve Black/African American (B/AA) health

3. Align food insecurity interventions with QI goals to advance the quadruple aim

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The Food as Medicine (FAM) Collaborative is a multisector collaboration that advances health equity by developing partnerships between healthcare and food systems to address food insecurity. We implemented Food Pharmacies in ten primarily safety-net clinics across four health systems in an urban region. Food Pharmacies allowed patients to access food, nutrition education, cooking demonstrations, and referrals to the food safety net and were integrated into primary care operations. These efforts were aligned with QI goals around B/AA hypertension control. QI tools were applied to operationalize equity and ensure B/AA were prioritized. The culture change that occurred as a result of establishing Food Pharmacies enabled healthcare partners to identify and drive a policy agenda to change Medicaid funding for food insecurity.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Blood pressure; pre-post surveys and focus groups on diet changes, patient satisfaction; qualitative feedback from providers; clinical productivity (patients per hour).

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 867 patients across 10 clinics with Food Pharmacies were served between Jan-Sept 2019, 67% of whom were B/AA (compared to 5% of the population). Among patients who filled their food prescription >=3 times for whom we had access to clinical data (n=144), there was a 4.4 mm Hg decline in systolic blood pressure (CI 0.71-8.69, p=.021) and 2.7 mm Hg decline in diastolic blood pressure (CI 0.92-5.37, p=.005). 91% of patients adopted healthier eating practices (n=117). Patient reported a greater sense of community as a result of participation in food pharmacy. Clinicians reported decreased burnout. Physician productivity increased from the organizational benchmark (2.4 billed visits per hour vs 2.25). 60 organizations signed on to a position paper authored by the FAM Collaborative advocating for California's Medicaid to include food supports as a covered medical benefit, including the California Primary Care Association and the California Association of Public Hospitals and Health Systems.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Partnerships between food and health systems are not only possible but also synergistic in advancing health equity, QI goals, and food security.

Tangible, on-site food programming can advance culture change in healthcare to embrace food insecurity as a health issue to tackle. This culture change can then enable greater collective policy change.

Effective equity work requires naming and addressing racism within healthcare.

FOOD FOR THOUGHT: A CULINARY NUTRITION PILOT FOR INTERGENERATIONAL PARTICIPANTS IN AN UNDERSERVED, URBAN SETTING

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Given the prevalence of chronic health conditions (i.e. heart disease, diabetes, etc) and its interplay with social determinants of health, we implemented a community-based culinary nutrition series in an underserved area to improve participants' understanding of the relationship between chronic health conditions and dietary practices.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): (1) Increase participants' nutritional literacy and knowledge of chronic disease, (2) Assess participants' confidence and willingness to prepare healthy, low cost meals and (3) Evaluate changes in dietary habits in favor of healthier options.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : This project is an academic-community partnership between a community-based organization (CBO), resident physicians in Internal Medicine, Family Medicine and Pediatrics, and dietetic interns. Our partner CBO has 4 sites in a geographically isolated, underserved urban area with a predominantly African American population. The intervention includes 6 culinary nutrition sessions at each of the 4 CBO sites (24 sessions total). The curriculum teaches participants basic nutrition facts, impact of diet on chronic disease, and how to prepare healthy/low cost meals. Topics include: Weight Management, Cardiovascular Disease, Diabetes, Dietary Fat, Hypertension and Plant Based Diets. Each session includes a presentation on the topic of the day with relevant chronic disease and nutritional education. An applicable recipe is demonstrated with a taste test. Pre- and post-session surveys are given to participants age 15 and above. Age-appropriate questionnaires are given to those less than 14 years old.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Survey data showing improvement in health and nutritional literacy as well as increased willingness to change dietary habits are used to evaluate success.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): To date, 2 (of 6) sessions have been

completed. Data was gathered from 1 CBO site. There was an average of 7 participants per session. Mean adult participant age was 33 years (range 18-49). All adult participants were female. Mean child participant age was 9 years (range 5-15). The mean household number was 5.5. Most respondents felt that vegetables were easily to moderately affordable. 33% (3/10) of participants noted an increase in confidence in preparing a healthy meal. Most participants endorsed that they will change their eating habits after the session. There was no significant change in health care literacy after the intervention. 80% of the children ages 13 and under endorsed that they would try the recipe again.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): This intervention demonstrates implementation of an interdisciplinary academic-community partnership to improve nutritional and health literacy in an underserved community is feasible. Overall, participants are willing to improve dietary habits. This pilot program also provides an opportunity for exposure of resident physicians and dietetic interns to social determinants of health, which may influence their future practice.

FROM SCREENING TO SERVICES IN SOCIAL DETERMINANTS OF HEALTH: A RESIDENT- LED ANALYSIS OF PROGRAM IMPLEMENTATION

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Cambridge Health Alliance began screening for health-related social needs (HRSN) - food, housing, transportation, medication and utility insecurity - during primary care visits. Patients who screened positive for food insecurity (25%) were referred to a local food organization, Project Bread, who then called the patients to provide food access. Successful contact was made in about 60% of cases. We aimed to improve this connections rate.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Understand the process of HRSN screening at individual clinic sites; Elucidate barriers to connecting patients with resources; Implement changes to improve the rate of successful connection to Project Bread

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : We spoke with the screening tool development team, Project Bread, clinic resource specialists and staff, and patients. We mapped the screening process at three different primary care clinics to identify pitfalls and area of improvement. Many patients and providers did not understand the processes and many front-line staff did not understand the goals and outcomes of the screening, despite training. Reviewing 29 consecutive patients revealed that of those who screened positive for food insecurity, most were unaware that their responses would trigger a referral for services, but they all responded favorably to being contacted by Project Bread when it was explained by the physician.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 1) Improved understanding among physicians and health system leadership of the challenges individual clinics and healthcare systems face when rolling out new programs. 2) Greater appreciation of the importance of HRSN and improved morale regarding screening among non-physicians. 3) Increased and ongoing engagement of residents in quality improvement work.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Decreased unsuccessful connection rate from 47% to 41% in six months. Now, direct hot line number is provided to patients who screened positive at the visit.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): First, efficiency of the screening was improved when any changes to the screening process was adapted to each clinic's workflow. Second, medical assistants' overburden of new screening form and uncertainty of how to trouble shoot incomplete forms or patient questions was smoothed-over after additional training. Third, low appreciation for the screening due to poor understanding of goals and benefits of HRSN screening among non-physician staff gradually improved as residents and leadership communicated with staff. Fourth, automation screening and referral processes decreased work for providers but also reduced the discussion about HRSN with physicians, which may have contribute to reduced connection to resources. Now, survey data are entered earlier so providers know the screening results before seeing the patients. Fifth, through our data collection, conversations, and observations, we learned that introducing a new screening tool can be quite disruptive to a healthcare system, but continuous engagement and quality improvement can smooth the rocky road.

GUARANTEEING HEALTH CARE TO ALL IN NEW YORK CITY

Theodore G. Long[1]; Marielle Kress[1]; Mitchell H. Katz[2]. [1]Ambulatory Care, NYC Health + Hospitals, New York, NY; [2]Office of the President, NYC Health + Hospitals, New York, NY. (Control ID #3390869)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): There are nearly 300,000 people who are uninsured and ineligible for health insurance in New York City, with half of all the uninsured in New York City's public healthcare system only going to the emergency room and never going to primary care.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES):
- Determine the components and structure of a universal access to care program in the largest city in the country
- Work within the nation's largest public healthcare system to implement the program
- Complete real time evaluation of the program and study long-term outcomes through research

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : NYC Care is a health care access program that guarantees low-cost and no-cost services to New Yorkers who do not qualify for or cannot afford health insurance based on federal guidelines. The program is available regardless of immigration status or ability to pay. While NYC Care is not an insurance plan, under NYC Care patients have a similar experience to what people with health insurance have such as a membership card, a primary care doctor, a transparent fee schedule based on family income, a 24/7 customer service line, and 24/7 access to affordable medications. Services include outpatient, inpatient, diagnostic, emergency department, and pharmacy and are provided at NYC Health + Hospital sites.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Real time evaluation metrics are being monitored including enrollment, expanded access medication utilization, and wait times for new patient appointments. Once the program has been in effect for at least one year, other metrics will include: patient experience/satisfaction, age appropriate screening and chronic

disease outcomes, avoidable emergency department/hospital use, overall costs and costs for specific services.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): The program went live in the Bronx in August 2019. In the first four months, 10,000 patients were enrolled. One hundred percent of new patients were offered a primary care appointment within two weeks. In addition, over 14,000 medications have been filled in new expanded hours alone, meaning these medications would not have been available to uninsured patients before the program started.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): ● Understanding community need and working with community based organizations to engage hard to reach populations is critical for bringing people into primary care

● Access to care is a cornerstone of primary care, but with a national shortage of primary care doctors, access programs like NYC Care must develop innovative workforce solutions to meet the demands of new and existing patients.

● In systems like NYC Health + Hospitals where large amounts of money are already being spent on inpatient hospitalization and emergency department use, it may be possible to refocus resources on primary care and thereby achieve better outcomes without substantial increases in overall costs.

HBA1C-TRIGGERED ENDOCRINOLOGY ELECTRONIC CONSULTATION FOR T2DM MANAGEMENT

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): It is unknown whether automatically triggered endocrinology electronic consultations (eConsults) to primary care providers based on hemoglobin A1c (HbA1c) can be successfully implemented and whether they can improve glycemia in T2DM.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Evaluate whether automatically triggered endocrinology eConsults for primary care patients with a HbA1c between 8.5-10.5 can be implemented in clinical practice

2. Evaluate whether recommendations provided by endocrinology in automatically triggered eConsults are implemented by the receiving primary care providers

3. Evaluate whether automatically triggered endocrinology eConsults led to improved glycemic control as compared to a matched control group

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Many health systems have implemented eConsult programs. One potential way to optimize and enhance utilization of eConsults is by automatically triggering eConsults based on clinical criteria. We randomized 161 primary care providers (PCPs) affiliated with Massachusetts General Hospital (MGH) into intervention (n=81) and control (n=80) arms. PCPs in the intervention arm automatically received endocrinology eConsults on a rolling basis if their patients met pre-specified inclusion criteria: age < 80, HbA1c 8.5-10.5, PCP office visit within 14 months, and no prior endocrinology visit within 2 years. Patients who received an eConsult were matched 1:1 with controls. Patients were followed for 6 months after completion of the eConsult.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We performed a comprehensive chart review at the beginning and end of the study period to track implementation of eConsult recommendations. We compared change in HbA1c in intervention and control patients using paired t-tests and sign test.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): No significant differences in baseline characteristics existed between the two groups. Among 275 patients initially eligible for an eConsult, 130 patients received one. The main reason for deferring consultation was improvement in HbA1c in the interim. A total of 230 discrete management recommendations were made via eConsult with an implementation rate of 34.7%. Of the 130 matched pairs, 95 had 6-month HbA1c follow-up data for paired analysis. The mean HbA1c decrease was 0.91 (SD 1.4) in the intervention arm and 0.61 (SD 1.29) in the control arm (p=0.12). Intervention patients had greater improvement in 58% of the pairs (p=0.05). The 145 patients from the intervention group who did not receive an eConsult had a mean HbA1c decrease of 0.23.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): An automatically triggered endocrinology eConsult system can be successfully implemented in clinical practice. HbA1c threshold triggered endocrinology eConsults show promise for improving diabetic control. Future interventions should work toward real-time implementation to optimize effectiveness.

HERE'S MY CARD: ASSESSING PATIENT PERCEPTION ABOUT ACCESS TO RESIDENT PRIMARY CARE

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Patients are not confident in their ability to access their resident primary care providers (PCP) and teams (PCT).

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To improve patient confidence in their ability to contact the resident PCT To determine how our patients prefer to communicate with their care teams

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : A standard patient satisfaction survey administered by Press Ganey from July 2018 to July 2019 indicated that 89% of patients were likely to recommend our safety-net primary care practice in Central Brooklyn.

However, only 77% felt they had good access to the practice. In our Internal Medicine resident practice, patient continuity and accessibility to resident PCPs is complicated by the rotating resident inpatient- outpatient schedule. We studied the use of a standard resident MD business card to determine its impact on patient confidence around communications with the resident PCT.

A one-question survey using a Likert scale was administered prior to the visit to gauge baseline patient confidence regarding the ability to contact their PCP and care team. Patients were given a business card with resident PCP name, Practice availability, and appointment line information. After

the visit, patients were asked the same question to assess if the business card impacted patient confidence around the ability to contact their PCP/PCT.

Patients were also asked how they preferred to be contacted by the practice: email, phone, text messaging or letter.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We used a quasi- experimental study design with a one-question pre- and post-intervention survey that utilized a 5-point Likert Scale. Pre- and post-intervention data was analyzed using the Wilcoxon Signed Ranks Test.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 30 patients were included in our study; the mean age of our patients was 54.3 years, 18 were females and 12 were male.

A Wilcoxon signed-rank test showed that provider business cards elicited a statistically significant increase in patient confidence in being able to contact the PCT ($Z = -2.7137$, $p = 0.006$); the mean pre-Intervention rating was 2.8 while the mean post-Intervention rating was 3.7.

Of the 30 patients surveyed regarding their communication preferences, 86.7% selected phone, 6.7% email, 3.3% text message and 3.3% regular mail.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): - Resident business cards significantly improved patient confidence regarding the ability to contact their resident primary care team.

- Based on previous studies linking patient satisfaction to perceived connection with a PCT, a resident business card with specific dates of clinic availability and a contact number for the PCT can improve patient satisfaction.

- Patient communication preferences vary by community. This may be impacted by social determinants of health; many patients in our practice prefer phone calls over email communication.

- Although our practice recently transitioned to EPIC, we don't know how our patients in a safety net system will use the new technologies.

HIDOC: AN EXPANDED OUTPATIENT CARE DELIVERY MODEL TO MEET THE NEEDS OF MEDICALLY COMPLEX, HIGH-UTILIZING PATIENTS

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): How can a complex care medical home model grow to continue to improve utilization outcomes for its population?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): - Address acute care needs of medically complex patients experiencing frequent exacerbations of advanced chronic illness, in a primary care setting

- Achieve sustained reductions in excess ED and inpatient utilization within a primary care population

- Redirect care from an overcrowded university hospital (UH) to a more accessible community hospital (CH) location, when appropriate

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The Duke Outpatient Clinic (DOC) is a hospital-based adult medicine primary care teaching clinic in Durham, NC. It serves minority, older, and lower-income patients, including many with high rates of emergency department (ED) and hospital use. Prior work addressed behavioral drivers of utilization, and over 2 years reductions in ED visits and hospitalizations were observed, but in the third year hospitalizations rose. Analysis of ED visits leading to admission identified an opportunity for acute care for complex patients experiencing frequent exacerbations.

The HIDOC (Highly Individualized, Dedicated Onsite Care) program began in January 2017, featuring onsite walk-in acute care for problems that might be sent to an ED; and a team composed of a nurse case manager who also provides bedside clinical care, nurse practitioner scheduled to be able to see walk-ins and do home visits, clinical social worker, and medical director. Clinical pharmacy support is also available.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The DOC primary care population panel is defined as patients with 2 primary care visits in the past 36 months, and one in the past 12. This list is updated at the start of a fiscal year (FY). For each intervention year, inpatient admissions and ED visits by DOC primary care panel patients were measured at the two hospitals, both university-affiliated, located in the same county as the clinic. To provide a direct basis for comparison, inpatient and ED utilization was also measured for the same DOC panel in the preceding year. Admissions were counted if they originated in the ED. Descriptive statistics were used to analyze changes in utilization in the first 2 full years after implementation.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): In July 2017, at the start of FY18 (Year 1), the DOC primary care panel numbered 3,877, and in FY19 (Year 2) 3,831. In Year 1, there were reductions of 16.4% in ED visits and 17.9% in hospitalizations at the UH. Year 2 saw a 22.0% reduction in ED visits and 2.7% fewer hospitalizations at the UH. At the CH, ED visits decreased in both years, and hospitalizations rose 8.8% in Year 2.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): After creating additional onsite capacity to serve the acute medical needs of patients with advanced chronic illness, continued reductions in ED and inpatient utilization were observed; there was also some evidence of redirection of care. Adequate staffing is a challenge in many primary care settings. Here we were able to make an alternative justification for additional staffing, to create more capacity to address an important hospital need.

HOSPITAL-BASED INITIATIVES TO ADDRESS UNMET SOCIAL NEEDS OF HIGH-RISK PATIENTS

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Prioritization of medical needs during acute care hospitalization and lack of organizational support prevent healthcare teams from fully addressing social concerns, contributing to a lack of evidence-based care around social needs screening in acute care settings

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Implement a social needs screening program to improve care transitions for socially at-risk populations and to decrease readmissions

2. Identify obstacles to linking patients with community resources

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : As part of a quality improvement initiative–Social Needs Action Program (SNAP), patients admitted to the medicine service at an academic tertiary care hospital were screened using an application adapted from the Protocol for Responding to and Assessing Patients' Assets, Risks, and Experiences (PRAPARE). Patients were screened if they met the following criteria: high risk for readmission based on UPMC predictive algorithm, residing in 2 targeted low-income zip codes, did not enroll in hospice, and not residing in a long- term group home or skilled nursing facility. A patient who screened positive for one or more social needs was referred to a community helper after discharge. The SNAP team community helpers are part of a program called Connections4Health that is modeled after Health Leads, which trains volunteer college students in social services referrals. The SNAP physician who engaged the patient in the hospital communicated findings and recommendations with the inpatient care team and PCP. Weekly check-ins between the SNAP physician and community helpers ensure that patients are followed until the social needs are met. Home visits and assistance with scheduling follow up appointments were provided for high-risk patients.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Metrics for program evaluation include percentage of social needs met as self-reported by patients, decrease in 30-day readmission rates, and increase in PCP follow-up after discharge.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 187 patients who met the inclusion criteria were screened over a one-year period from October 2018 to October 2019. Patients in the intervention group were predominantly black (76%) and female (55.4%). Transportation, social support, food insecurity and housing modification are among the more common social needs identified. Food insecurity was successfully addressed most of the time while the rates of needs met are lower for paying utility bills, transportation, caregiver and housing needs. The 30-day return rate decreased from 38.2% in the year prior to the intervention to 26.8%. 30-day PCP follow up increased from 22% to 35%.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Improving care transition and addressing social needs are feasible for hospitalized patients at high risk for readmissions. Coordination of care, prompt outpatient follow-up and home visits are important to reduce readmissions. Meeting financial and housing needs remain challenging. Warm handoffs between the inpatient and the community teams are needed to ensure ongoing engagement with patients after discharge.

IMPACT OF NURSE-DRIVEN ADDICTION MEDICINE CONSULT SERVICE ON HOSPITAL UTILIZATION AND PATIENT OUTCOMES DURING ITS FIRST YEAR

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): While acute hospitalization represents an opportunity to identify and engage patients with active substance use disorders into treatment, health systems routinely fail to offer evidence-based services to patients with addiction.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The purpose of the addiction medicine consult service (AMCS) is to proactively manage substance use withdrawal among hospitalized patients; to promote patient engagement and linkage to substance use treatment; and to initiate evidence-based pharmacotherapy during acute hospitalization.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The AMCS was launched in October 2018 at an urban academic hospital with a large suburban and rural catchment area. The service was composed of a multidisciplinary team consisting of a physician (a general internist boarded in addiction medicine or a toxicologist), social worker, and peer navigator. In March 2019, a certified addictions registered nurse was added to the team. The nurse triages consults to prioritize care and then facilitates coordination of care. Patients are engaged across the continuum of the hospital stay, and the team engages bedside staff and hospital leadership through informal discussions and staff didactics to improve delivery of compassionate, non-judgmental addiction care.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We tracked engagement metrics (e.g. numbers of consults seen, reasons for consults, pharmacotherapy, and discharge disposition). We evaluated impact of the AMCS on hospital utilization (ED visits, readmissions, and hospital length of stay) and on patient outcomes (90-day mortality measured from date of index discharge) using propensity scores to match controls hospitalized during the previous year.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): The AMCS provided care to 490 patients through September 2019. Patients had diagnoses of alcohol use disorder (28.7%), opioid use disorder (OUD) (27.8%), and polysubstance use disorder (40.3%). Only a minority (n=26; 5.2%) were engaged in substance use treatment prior to hospitalization, but during hospitalization, the majority of those with OUD were started on evidence-based medications (n=237 started on buprenorphine; n=58 on methadone; and n=2 on vivitrol/naltrexone).

There was a reduced likelihood for 30-day readmission rates for patients seen by AMCS compared to matched control group (average treatment effect=-3.80%; 95% CI: -7.4,-0.18; p=0.039). Ninety-day all-cause mortality was significantly reduced among patients seen by AMCS (-3.19; 95% CI: -4.1, -2.3; p=<0.001) compared to matched controls.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): In a short-period of time, there has been wide-scale adoption of the AMCS to an inpatient acute care setting. A nurse-driven addiction medicine consult model appears acceptable and feasible to patients and staff. AMCS involvement may help reduce hospital utilization and improve all-cause mortality for patients with substance use disorder.

IMPACT OF THE NP ANCHOR MODEL: CLINICIAN JOB STRESS, PATIENT ACCESS, AND PANEL MANAGEMENT

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Job stress, workload, and caring for complex patients are well-documented challenges facing primary care providers (PCPs); team-based care is one strategy for addressing these challenges, but few data exist to support this approach.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Improve PCP satisfaction and decrease job stress by implementing team-based care through physician-nurse practitioner (MD-NP) partnerships

2. Increase patient access to care with a team clinician

3. Improve diabetes control

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : We implemented MD-NP care teams ("NP Anchor" model) in a primary care practice at a large urban safety-net hospital. Using a ratio of 1 NP FTE:1.5 MD FTE we created teams using NPs as team "anchors." 40% of the NP's time is protected to address between-visit care (*e.g.,* test result follow-up, medication titration, and outreach to complex patients). The remaining time (60%) is allotted for clinical sessions. We began this initiative with one team in February 2016 and gradually expanded the model to its current state of 17 teams (17 NPs and 55 MDs), covering 90% of our practice.

Beginning in June 2019 NP Anchors met with team MDs to review lists of patients with poorly controlled type 2 diabetes mellitus (DM2), defined as a glycosylated hemoglobin (A1C) >9%. During these panel management sessions MDs and NPs developed care plans for patients that included MD/NP appointments, referrals to clinical pharmacists, and referrals to patient navigators to address social determinants of health such as food insecurity and housing.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 1. NP and MD satisfaction measured through anonymous surveys

2. Access to care measured by time to 3rd next available appointment

3. Panel-based diabetes control measured by percent of patients on each team with an A1C >9%

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): We sent anonymous surveys to all 17 NPs and 55 MDs, with response rates of 95% for NPs and 75% for MDs. 100% of respondents agreed/strongly agreed that the NP Anchor model expanded access to care for their patients, 90% agreed/strongly agreed that important information was communicated effectively between MDs and NPs, and 79% agreed/strongly agreed that being part of the NP Anchor model helped reduce stress at work.

With the addition of an NP to the care team, the average time to 3rd next available routine appointment with a team MD or NP went from 43 to 20 days.

We looked at diabetes data for 16 MD-NP teams and one team without an NP. On average, each team had over 300 patients with DM2. Mean percent of patients on each team with A1C >9% at baseline (prior to implementing panel management) was 20.6%, and variance over time within each team was low (mean variance 0.6%). At 6-month follow-up, 13 NP Anchor teams saw a decrease in percent of patients with A1C >9% (mean decrease 3.1%) and 3 teams saw a slight increase (mean increase 0.6%). The team without an NP saw a 2% increase in percent of patients with an A1C >9%.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Data suggest that NP Anchor teams are effective in reducing job stress for PCP's, improving patient access to care, and potentially improving diabetes outcomes.

IMPLEMENTATION OF A COMPUTERIZED ADAPTIVE TEST FOR DEPRESSION SCREENING IN PRIMARY CARE

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): A common tool to screen for depression in primary care is the Patient Health Questionnaire-2 (PHQ-2); however, the PHQ-2's sensitivity in our academic urban general internal medicine (GIM) clinic was 58% and many cases of major depressive disorder (MDD) were missed.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To increase the sensitivity of MDD screening in our GIM clinic without increasing the time required to complete screening.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : In 2/2019, we implemented a computerized adaptive test for MDD screening and severity assessments (CAT-MH^{TM}) into the electronic health record (EHR) (Epic) at the University of Chicago GIM clinic. The clinic includes 40 attendings and 110 resident physicians (18 full-time equivalents), and 8 medical assistants (MAs). The CAT-MH^{TM} for MDD is a cloud-based bank of 88 questions for diagnosis and 389 questions to assess severity. Questions are adaptively administered depending on patient response. Patients without MDD answer an average of four questions in about 40 seconds. Patients with MDD complete about seven additional questions in about 90 seconds to assess severity. Before integration, PHQ-2 screening was due every 12 months and completed by MAs in 55% of visits. The rate of positive screens was only 1% and 10% of positive screens were not communicated to physicians. Using user-centered design, we gathered stakeholder feedback to create a new workflow. For patients screening positive, CAT screening reflexed into a severity assessment and trigger mandatory physician alerts with clinical decision support. Screening remained an MA responsibility. Then we used continuous quality improvement to troubleshoot issues and improve workflow.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Number and rate of screens, change in rate of positive screens, satisfaction

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Between 2/2019 and 12/2019, 6541 screenings were completed and 7% of patients screened positive for depression. However, because the new process required more steps and clicks (e.g., ordering and clicking on link), screening rates decreased to 38% of visits. In 6/2019, we surveyed clinical staff (response rate 63%, N=36/57). All MAs who responded (4/6) said they knew how to order the CAT and were confident administering the CAT; only 1 said they did not have time to do it. 73% (19/26) of attendings reported that the CAT was an acceptable tool and knew where to find results. Most attendings (17/26) were confident interpreting results and incorporating them into decision-making. About 58% (15/26) of attendings and 75% (3/4) of MAs were satisfied with CAT screening and agreed that the transition went smoothly.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Brief screeners for mental health conditions trade efficiency for sensitivity and lead to under-diagnosis. In contrast, computerized adaptive tests are efficient and more sensitive strategies for gathering patient-reported outcome data, which can be integrated into clinical practice and the EHR. Integration of novel EHR technology in clinical practice requires repeated trainings for physicians and staff in order to ensure the provision of high-quality care.

IMPLEMENTATION OF A HOME BLOOD PRESSURE TELEMONITORING PROGRAM TO IMPROVE HYPERTENSION CONTROL IN A PRIMARY CARE CLINIC

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Hypertension (HTN) guidelines recommend home blood pressure (BP) monitoring and team-based care to optimize BP control, yet implementation is challenging.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Pilot the use of supported home BP monitoring among patients with uncontrolled HTN in a clinic without previous telemonitoring opportunity

2. Assess BP change in individuals enrolled in the program

3. Assess patient and provider satisfaction with program and adjust protocol based on ongoing feedback from all involved parties

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : In partnership with the New York Presbyterian Hospital (NYP) Innovation Team, we developed a novel home BP telemonitoring program. Primary care patients with elevated office BP were referred at participating clinician's discretion. They must reside in New York State, and are capable of self-measuring their BP with or without the assistance of a caregiver. Patients are instructed to measure BP twice daily for the first week, followed by a minimum of three times per week for up to 6 months. Key components include: 1) providing eligible patients with home BP device paired with Samsung tablets that transmit data via cellular or WiFi networks to a web-based database accessible to clinicians; 2) nurse support for clinicians through day-to-day monitoring of home BP readings, reserving urgent notifications for dangerously elevated BP readings; 3) nurse support for patients through scheduled video-visits at which nurses provide feedback on BP readings and education about HTN, including lifestyle modification and 4) biweekly meetings among referring clinicians, innovation team, and nurse representatives to discuss program workflow and opportunities for improvement.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Mean BPs are reported to clinicians each week. Paired t-tests will be run to assess statistically significant changes in mean BP from the start of the program to a future point, week 9 in the current analysis. In the future, we plan to compare BP changes with a non-randomized control group with propensity score matching as well as analyze process data including frequency of regimen intensification, impact on patient adherence, and patient and provider satisfaction with the program.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Since program launch in July 2019, 93 patients were referred and 80 initiated the program. At the time of analysis, 40 patients had 9 weeks of program participation. Seventy percent were female and mean age was 68 years (SD 11). Mean home BP at week 1 was 143/83 mmHg (SD 18/12) compared to 132/79 (SD 14/10) at week 9 (95% CL for SBP 4.8-16.3 mmHg, $p<0.001$). Mean number of home BP readings in week 1 was 6 (SD 3) compared to 9 (SD 5) in week 9 ($P<0.001$).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): 1. Invited clinicians were enthusiastic to participate and received positive feedback from patients at follow-up

2. Decrease in BP observed at 9 weeks suggest promising early pilot results, and future comparison to control group will confirm this trend

3. Initial concerns about excessive provider notification for elevated BP readings were resolved once the threshold for urgent phone calls was increased

IMPLEMENTATION OF A LOW-COST PROGRAM FOR MEDICAL SCRIBES IN A LARGE PUBLIC HEALTH CARE SYSTEM

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Although medical scribes can increase clinic efficiency and decrease levels of burnout, the implementation of medical scribes programs is associated with high costs that limit their use.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Identify and recruit volunteers from the community to be trained as medical scribes

2. Develop a training curriculum to prepare the volunteers to document in the medical record

3. Assess the feasibility of and satisfaction with the early implementation of the program

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : NYC Health + Hospitals is the largest public health system in the United States, with more than 11 acute care hospitals and 70 community based health centers in New York City. Within this system, we sought to design and implement a medical scribes program at low or no cost. We developed our own training curriculum, which included both didactics and electronic medical record practice. The setting for the pilot phase of the program was five primary care clinics. We chose the clinics because of their readiness for the program and the diversity of their practice sizes, ranging from 7 to 24 full-time clinicians in each practice. We planned to measure the success of the program using surveys, interviews, and clinic efficiency metrics.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 1. Numbers of volunteers who completed the program for training as scribes

2. Satisfaction with the training program among scribes

3. Satisfaction with the scribes program among physicians and nurse practitioners

4. Changes in clinic efficiency metrics – including patient cycle time and time spent on documentation – before and after the start of the program

5. Changes in levels of clinician burnout before and after the start of the program

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): We recruited 19 community volunteers to complete our training curriculum and to work as a medical scribe. All of the volunteers were college undergraduate or postgraduate students in New York City. The feedback from the training was positive, with survey responses ($n = 12$, response rate = 0.63) showing that 100% of the volunteers thought the training was very informative or somewhat informative. In a survey of supervising providers ($n = 9$, response rate = 0.50), 100% of the respondents expected the volunteer scribes to have a very positive or positive impact on work satisfaction and interactions with patients. In response to semi-structured interviews, supervising providers

reported the scribes to be doing work that was meaningful and helpful to their clinical practice.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): 1. It is feasible to recruit and train emerging adults to volunteer as medical scribes

2. The early work of the scribes is associated with high levels of satisfaction among supervising physicians and nurse practitioners

3. Large public health systems with limited budgets can address concerns about clinic efficiency and burnout by designing internal programs for medical scribes

IMPLEMENTATION OF AN ELECTRONIC AUTO-REFERRAL PROGRAM TO IMPROVE LUNG CANCER SCREENING

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Rates of lung cancer screening with low-dose computed tomography are low nationwide, despite convincing evidence of a survival benefit.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) Increase the rate of lung cancer screening in eligible patients.

2) Pilot a process of bulk referral and direct patient outreach (auto-referral) to a comprehensive lung cancer screening program.

3) Qualitatively assess the patient perspectives on the pilot process.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : We identified patients within an academic primary care clinic who were older than 55 years and current smokers as documented in the electronic medical record (EMR). They were sent a message through the electronic medical record (EMR) patient portal that they may be eligible for lung cancer screening and they have been automatically referred to our comprehensive lung cancer screening program. Patients were then contacted by phone to assess eligibility, and if eligible, to schedule an appointment for lung cancer screening. Patients who declined screening were contacted later to complete a phone survey to assess barriers to lung cancer screening.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The goal of the pilot was to implement an auto-referral program through the EMR patient portal and to evaluate the effectiveness of this novel approach. We also wanted to assess patient perspectives on barriers to lung cancer screening and our pilot process.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Thirteen patients were included in the pilot auto-referral program and were sent a message through the EMR. 8 of the 13 patients were digitally identified to have read our auto-referral message. Ultimately, 2 of the 13 individuals enrolled in our comprehensive lung cancer screening program, 1 was confirmed ineligible, 7 declined screening, and 3 were not able to be reached. On follow-up phone survey, patients who declined screening said the reasons were existing medical comorbidities, logistics of making the appointment for screening, desire to speak with their provider for more information, and not believing the need for screening.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The auto-referral program affords healthcare networks a scalable approach to improve lung cancer screening enrollment. It augments standard PCP processes for referral and sends information directly to high-risk patients who may not be aware of screening. Limitations to our process included lack of complete smoking history within the electronic medical record, dependence on the use of the EMR patient portal, and small sample size. Our experience with the pilot auto-referral program presents a new strategy, but also highlights the difficulties, in increasing rates of lung cancer screening.

IMPLEMENTATION OF A SOCIAL DETERMINANTS OF HEALTH SCREENING AND REFERRAL PROCESS AT A FEDERALLY QUALIFIED HEALTH CENTER

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Does a screening and referral process for social determinants of health (SDH) improve patients' connection to resources?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): In this pilot study we sought to evaluate the impact of SDH screening on patient connection and satisfaction with the referral process.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : New patients attending a federally qualified health center (FQHC) are interviewed by a nurse at intake to assess for social needs using the OCHIN tool, which is integrated into the electronic medical record (Epic). Certain responses trigger an alert to the treating provider to make a referral to the FQHC's Family Support Services (FSS) program. FSS staff then contact the patient by phone to discuss social needs and help direct patients to resources. Referral outcomes are now recorded in Epic. The clinic population is largely Spanish-speaking and lower-income. We conducted a pilot study to assess the impact the screening and referral process had on patients' connection to resources and satisfaction with the process using a combination of documentation in Epic and interviews with patients conducted two to four months after the initial clinic visit.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We examined documented connection to resources and self-reported patient satisfaction with the screening and referral process.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Preliminary data include 53 patients identified with at least one social need who were referred to FSS between Nov 2018-May 2019. Of all participants, mean age was 40.7 years; 53% were female; 89% were Hispanic/Latino and 77% were Spanish-speaking. Of 16 needs eligible for FSS referal, most patients had more than one social need (median=3 needs). Referral order and referral outcomes were not always documented in Epic, although this improved with time. Of the 53 patients, 5 were missing a documented referral order in Epic and 17 were missing a documented referral outcome in Epic. Based on Epic documentation, 17 patients were attempted to be contacted by FSS but staff were unable to reach them and could not leave a message; 9 patients were reached but declined services or said they were not needed; 3 patients were left a voicemail; 5 patients made an appointment to meet

with FSS; 2 patients met with FSS or received a referral to another community resource. A total of 27 patients completed a follow-up interview. Most indicated that they had not received a phone call. However, many participants indicated that they liked the screening process and being asked questions related to social needs.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Even with a robust Family Support Services program in place, it is difficult for staff and patients to connect and not all patients with a social need identified through a screening tool will want assistance. We are doing additional work to understand the best ways to connect patients to resources.

IMPLEMENTATION OF BREAST CANCER SCREENING SHARED DECISION MAKING USING AN EHR-BASED DECISION AID

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE):

Providers and patients in the U.S. face at least four different professional society guidelines for breast cancer screening, and many have suggested that shared decision-making may be the best approach to address this dilemma.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To support providers and patients in shared decision making for breast cancer screening by integrating a decision aid (Health Decisions) into the EHR

To align care with patients' breast cancer screening preferences by capturing their chosen screening schedule in the EHR

To harmonize patients communications (reminder and result letters) with their chosen screening strategy

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Due to variation in US professional society guidelines, patients may receive different guidance on breast cancer screening depending on the provider they see. To improve patient experience, Dartmouth Hitchcock's (DH) Knowledge Management Unit and Clinical Practice Committee endorsed organizational guidelines recommending a) risk assessment for women 25 and older to identify those at above average risk, and b) shared decision making for women 40 and older to support women in selecting the screening strategy aligned with their goals and values. In November 2018, DH installed a breast cancer screening decision aid (HealthDecisions^{TM}) in the electronic health record (Epic). We then programmed the health maintenance function of the EHR with a menu of screening choices that can be set manually to capture patient's screening decisions. These changes were implemented in the ambulatory setting at all DHH primary care campuses.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Our goal was to measure the penetration of breast cancer shared decision into DH primary care practices from the launch of the decision aid in November 2018 through December 2019. We used any manual re-set of a patient's breast cancer screening schedule as a proxy for completion of shared decision-making. We also calculated the frequency of manual re-sets according to provider characteristics (gender, medical specialty, and practice location). Our secondary outcome was the proportion of women who chose annual v. biennial screening according to patient age.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): DH primary care providers actively chose a breast cancer screening strategy for 6,708 patients over 14 months. The proportion of patients choosing annual vs. biennial screening varied by provider gender (63% v. 53% for male v. female), specialty (64% v. 59% for Family Medicine v. Internal Medicine), and practice location (range 64% to 43%). Fifty-six percent of women age 40-49 years elected annual screening v. 63% of women ages 60-64 and 65-74 years.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): When provided with a high quality decision aid embedded in the electronic health record, provider and patient uptake of shared decision making for breast cancer screening is high. However, the screening strategy selected by patients may vary systematically according to provider gender, discipline, and practice location.

IMPLEMENTATION OF DAILY SAFETY HUDDLES TO REDUCE HARM EVENTS AT A SAFETY NET HOSPITAL

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): The Hospital's rates of catheter associated urinary tract infections (CAUTIs), central line associated blood stream infections (CLABSIs), and hospital acquired pressure injuries (HAPIs) were above the national average.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Decrease the total event rate of CAUTIs, CLABSIs, and HAPIs on an inpatient med-surg unit from 0.9 per month to 0.5 per month by using unit safety huddles.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The unit safety huddle (USH) was first piloted on a thirty-two bed medical-surgical unit. The huddles occur daily and are led by frontline nurses and attended by unit nursing staff, nurse leadership, hospital administration, and physicians. Using a standardized script, the huddle facilitator helps the staff identify patients at risk of harm and discusses interventions to keep patients safe. To augment the huddles, an existing white board was repurposed to visually identify patients at risk of CAUTIs, CLABSIs, and HAPIs by using differed colored magnets. After creating colored magnets to represent risk of harm events, the staff further tailored their board to highlight additional risks important to their respective unit (E.g., Patient mobility status).

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The number of harm events that occurred before and after the launch of the USH and huddle boards were tracked and converted to harm events per month. Success was defined as decreasing the rate of harm events from a baseline of 0.9 events per month to 0.5 events per month.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Following the implementation of the USH, the pilot unit saw a marked reduction in the total number of CAUTIs, CLABSIs, and HAPIs, and the rate of harm events dropped to 0.45 per month. Given the success of the USH, it was recently spread to several other units. More time is needed to see the impact of the USH on these additional units.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The daily focus of the USH on preventing harm events continuously reinforced key preventative strategies and interventions. The multidsiciplinary attendance at the USH promoted a culture of teamwork, communication, and transparency. Having leadership and administration at the huddles demonstrated strong institutional support for the initiative and ensured that frontline staff were equipped with what they needed to succeed (E.g. supplies, clear lines of communication with medical teams, staffing).

IMPLEMENTATION OF POST-ACUTE REHABILITATION AT HOME: A SKILLED NURSING FACILITY-SUBSTITUTIVE MODEL

Matthew R. Augustine[2,6]; Claire Davenport[1]; Katherine Ornstein[1]; Mitchell Cuan[1]; Pamela Saenger[1]; Sara Lubetsky[1]; Alex Federman[2,1]; Linda DeCherrie[3,2]; Bruce leff[4]; Albert L. Siu[5]. [1]Geriatrics & Palliative Medicine, Icahn School of Medicine at Mount Sinai, New York, NY; [2]Medicine, Icahn School of Medicine at Mount Sinai, New York, NY; [3]Geriatrics, Icahn School of Medicine at Mount Sinai, New York, NY; [4]Geriatrics, Johns Hopkins University School of Medicine, Baltimore, MD; [5] Geriatrics and Palliative Medicine, Icahn School of Medicine at Mount Sinai, New York, NY; [6]Geriatrics Research Education and Clinical Center, James J Peters VA Medical Center, New York, NY. (Control ID #3374431)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): For patients who require frequent and intensive therapy services after hospitalization, delivering post-acute rehabilitation in patients' homes offers a potential alternative to care in skilled nursing facilities (SNF).

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To deliver SNF-level post-acute rehabilitation and transitional care within the home.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The Rehabilitation-at-Home (RaH) program was a 30-day bundle of post-acute rehabilitation and transitional care delivered within the home from October 2015 to September 2017. The program included a multidisciplinary home-based team of providers, including physicians, physical, occupational and speech therapists, and social workers. Participants were eligible if they were 18 years or older, resided in Manhattan, NY, and qualified for SNF-based rehabilitation services. Patients were admitted from home, the Emergency Department, and inpatient observational, medical and surgical units. The 30-day bundle included an "active" phase of home- based medical and rehabilitation services followed by a "plus" phase of transitional care.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We abstracted demographic data, characteristics of hospitalization or acute care, participant functional mobility, and characteristics of RaH treatment through chart review. Seven providers and investigators (6 physicians, 1 physical therapist) reviewed RaH notes from medical providers and therapists to identify functional mobility, goal achievement, and barriers to care and judge global functional improvement. To identify factors associated with greater functional improvement, we used multivariable logistic regression with the binary outcome of considerable vs. moderate/slight/no global functional improvement.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 237 patients participated in RaH over 264 episodes of care. Participants were predominantly over the age of 85 (57%; mean 84.2, SD 10.0 years) and of non-Hispanic white (70%) race and ethnicity. The majority were admitted after hospitalization (88.2%) for conditions representing 117 different diagnostic related groups. Average length of stay in RaH was 14.2 (SD 6.5) days with patients receiving 1.83 (SD 2.22) medical provider, 1.67 (SD 1.58) nursing, and 5.24 (SD 1.05) physical therapist visits weekly. The majority of patients fully or almost fully met their goals for bed mobility (65%), bed transfer (69%), chair transfer (67%), and ambulation (64%) with the majority achieving moderate or considerable (61%) global functional improvement. Achieving moderate or considerable global improvement was negatively associated with dementia diagnosis (OR 0.30, 95% CI 0.10-0.88) and positively associated with higher baseline ambulation (OR 4.74, 95% CI 1.95-11.51). At 30 days, 87.3% of participants were living within the community.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Delivering SNF-level post-acute rehabilitation care in patients' homes for a broad range of diagnoses was feasible, and most participants achieved moderate or considerable functional improvement. This approach may help older adults maintain living status in the community.

IMPLEMENTATION OF PRIMARY CARE BASED TREATMENT OF OPIOID USE DISORDER USING THE COLLABORATIVE CARE MODEL

Charles D. Brackett. GIM, Dartmouth-Hitchcock Medical Center, Lebanon, NH. (Control ID #3391108)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Treatment of opioid use disorder (OUD) is highly effective, but access is limited and care is often fragmented.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Our primary goal was to add treatment of opioid use disorder with buprenorphine to an ongoing project implementing the Collaborative Care Model of behavioral health integration into primary care at several clinic sites. We sought to improve access to treatment, and to address psychiatric and physical co-morbidities in a holistic, efficient, and non-stigmatizing way.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The collaborative care model, which traditionally has focused on depression and anxiety, adds a behavioral health clinician (BHC, LICSW), supervised by a consulting psychiatrist, to the primary care team and utilizes a registry to proactively track patients. Workflows were developed to include care of patients with OUD by alternating visits between the waivered primary care provider (PCP) and the BHC. These visits are supported by a medical assistant, who collects urine for drug screening, queries the Prescription Drug Monitoring Program, administers the Brief Addiction Monitor questionnaire, and cues buprenorphine prescription refills. An infrastructure of necessary documents, note templates, electronic health record (EHR) tools was developed. Implementation teams are supported by regular meetings with core project staff, and clinician decision making is supported by a locally developed guideline, EHR based e-consults, and a monthly learning collaborative.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Our main measure of reach was number of patients initiated on buprenorphine per month, and our main measure of quality was 90 day treatment retention. A pre-implementation staff questionnaire was done to assess attitudes and

barriers, and will be followed by a post-implementation questionnaire. We tracked number of PCPs waivered to prescribe, and number of PCPs prescribing buprenorphine to one or more and five or more patients.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): At the beginning of the intervention, <20% of PCPs were waivered. The majority of those had not prescribed yet, and were unwilling to do so without the availability of in-clinic behavioral support. Over the implementation period, the number of waivered PCPs quadrupled (11 to 46). The number of PCPs prescribing buprenorphine for 5 or more patients in the past year rose from 2 to 18. The number of patients initiated on buprenorphine rose to 8-11/month. 90 day treatment retention was 65% in the most recent quarter.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Both OUD and buprenorphine are associated with stigma and misunderstanding that must be overcome at the all-staff level; this takes time, and can be done explicitly through training and implicitly through positive experiences of early adopters. Other barriers to primary care based treatment include limited clinician access and under recognition of OUD. Although medical treatment of OUD is relatively straightforward, the behavioral and monitoring needs are best met by a team approach. Medical and psychiatric comorbidities are common, and are best addressed through an integrated approach.

IMPLEMENTING LOW-THRESHOLD ACCESS TO MEDICATION FOR OPIOID USE DISORDER IN A NON-URBAN SETTING: EXPERIENCES FROM REACH MEDICAL.

Judith L. Griffin. REACH Medical, Ithaca, NY. (Control ID #3389292)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Access to high quality, evidence- based healthcare services for people who use drugs (PWUD), including medication for opioid use disorder (MOUD) and harm reduction services, is very limited non-urban and rural areas.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The primary objective of REACH was to expand access to high quality, compassionate and equitable healthcare in our community, especially for PWUD and those who traditionally face stigma and discrimination accessing healthcare. Additionally, we sought to transform the healthcare delivery model for PWUD to actively reduce stigma and increase patient engagement. Finally, we aimed to create and retain a healthcare workforce that is dedicated to providing low threshold care in a harm reduction framework.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : REACH—an acronym for Respectful, Equitable Access to Compassionate Healthcare—is an independent medical practice in Ithaca, NY that opened in February 2018. REACH offers integrated outpatient care including MOUD, primary care, behavioral health services, PrEP and testing and treatment for Hepatitis C and HIV at a single location. REACH contracts with local medical providers to maximize the number of available buprenorphine slots offered in a novel approach to expand MOUD access.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Patient engagement as measured by enrollment and retention in care are key measures of success. Additionally, testing and treatment for Hepatitis C is an important measures of success in terms of providing comprehensive care to our patients (primarily, but not exclusively, PWUD). The number of new waivered providers in the community and their ongoing provision of MOUD are also measures of interest. Finally, outcome measures like the number of overdose deaths in our community are critical to measuring success.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Since opening REACH has seen nearly 1,500 unique patients, with over 1,000 receiving MOUD. The retention rate is approximately 80% for patients receiving MOUD. Over 80 patients currently are engaged in or have received treatment for Hepatitis C and over 1200 naloxone kits have been distributed. In its first 12 months, REACH successfully assisted 10 new providers in obtaining their DATA-waiver and onboarded these providers, thereby increasing access to MOUD significantly in the community. Ten providers continue to work at REACH. Specialties include internal medicine, family medicine and emergency medicine.

Between 2017 and 2018 the number of overdose deaths in Tompkins County dropped 19% from 22 to 18. Though we are not able to draw a directly causal link, given that REACH opened in February 2018, this may be early evidence of impact.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Patient and provider engagement are high in a low-threshold, low-stigma practice environment offering compassionate, evidence-based care. MOUD visits serve as an opportunity to deliver other healthcare services, including primary care or treatment for Hepatitis C, to PWUD. Contracting providers who work in other settings in the community to prescribe MOUD may reduce barriers and facilitate expansion of MOUD in underserved areas.

IMPLEMENTING TRANSITIONAL CARE MANAGEMENT SERVICES IN A LARGE ACADEMIC OUTPATIENT PRACTICE

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Can implementation of Medicare's Transitional Care Management (TCM) services in a large academic outpatient practice reduce medication errors, readmissions, and mortality?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The Centers for Medicare and Medicaid Services introduced TCM services in 2013, which provide financial reimbursement for Medicare patients discharged from inpatient hospital settings to home. TCM services are designed to identify acute issues in Medicare patients within 48 hours after discharge, ensure timely outpatient follow-up within 7-14 days, and improve transitions in care.

Intervention objectives:

1. Implement a standardized TCM protocol in an academic hospital-based primary care clinic

2. Operationalize a multi-disciplinary team approach that includes community resource specialists (CRS) and pharmacists

3. Reduce medication errors, readmissions, and mortality among Medicare patients receiving TCM services

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Healthcare Associates is a large academic hospital-based primary care

clinic. We have operationalized TCM services to include a multidisciplinary team. We have measured both process and outcome measures. Outcome measures will be analyzed among 3 patient populations: 1) Medicare discharges who do not receive any TCM services; 2) Medicare discharges who receive a TCM phone call and an office-based follow-up visit; 3) Medicare discharges who receive a TCM phone call and a follow-up home visit.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): To assess the impact of our intervention, outcome measures include the average time to follow-up visit (days), post-discharge visit keep rate, percentage of patients with medication errors identified during the TCM phone call, and 30-day readmission rates in the intervention and control groups. We will also measure the percentage of patients referred to CRS and clinical pharmacists in the intervention arms receiving a post-discharge TCM phone call.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Among Medicare discharges who received a TCM phone call (n=19), 80.0% had an office-based follow-up visit scheduled within 14 days after discharge. 55.0% of patients were scheduled with their own PCP and the average time to follow-up visit after discharge was 8.3 days ± 4.8. 76.4% of patients kept their scheduled appointment. 75% had at least 1 medication error identified during the TCM phone call and 55% were subsequently referred to a pharmacist for further investigation of medication errors. 10.0% of patients were referred for CRS evaluation. Data will continue to be collected and compared between the intervention and control arms through March 2020.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our pilot demonstrates feasibility in implementing TCM services in a large academic outpatient practice. A multi-disciplinary team approach that includes CRS and pharmacists can help identify other transitional care issues related to home services, transportation, health literacy, and other key social determinants of health. Assessing practice resources will help determine feasibility in implementing TCM services at other institutions.

IMPROVING ACCESS TO CARE FOR VETERANS THROUGH SAME-DAY VIDEO APPOINTMENTS TO HOME

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Many Veterans lack access to timely primary care within the VA due to geographic barriers and local clinic staffing shortages, resulting in poor veteran and staff satisfaction and, when accessed, non-VA care disconnected from individual health histories and VA benefits.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES):

Provide same-day access visits via video for complaints evaluated in primary care clinic

Demonstrate that video-to-home visits can resolve majority of patient health concerns with high rates of staff and veteran satisfaction

Describe complaints addressed, visit success rates and demographics veterans served

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The VISN 21 Clinical Resource Hub (CRH) Open Access Program (OAP) was started in late 2018 to provide same day access to primary and urgent care services via telemedicine to veterans living in predominantly rural areas of Northern California. Among non-metropolitan Veterans, 18% drive >1 hour and over one quarter of the most rural Vets drive > 2 hours for primary care (West 2010). Rurality is associated with higher rates of disease and poverty (Moy 2017). While the OAP improved access to VA care, it did not address travel time. Thus in late 2019 we initiated the Video-to-Home pilot. The pilot consisted of video-to-home (VVC) visits offered M-F and up to 7pm and aligned with the VA directive of using telehealth to "[improve] convenience by providing access to care from their homes when they need it."

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): >90% of concerns addressed same day

>90% of concerns resolved measured by rate of in-person follow up < 72 hours

>90% VVC success rate

Concerns, age and rural status similar those addressed in local clinics

Positive qualitative feedback from veterans and staff

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 98 of 106 (92%) visits were conducted the same day requested with majority of next day visits due to vet preference

96 of 106 appointments (91%) resolved the veteran's concerns; 4 were directed to in-person care by the provider

4% of VVC visits were unsuccessful. Failure was due to technology problems or user difficulty with the technology.

Complaints were similar to national data (proxy): MSK (n=29), derm (n =13), GU (n = 14), HEENT (n=12), GI (n =10), resp (n=7), misc. (n=5), ophtho (n=3), neuro (n=1) and dental (n=1)

52 of 106 VVC visits were vets > 55 y/o (48%), 10 vets were > 75 y/o (10%). Majority lived in rural (90%), highly rural (6%) and urban (6%) areas.

Veteran & local staff satisfaction was persistently and overall very positive.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Appointment timing: Mid- afternoon appointment times were most popular due to greater walk-in volume in PM, ease of other options in AM, and veteran preference.

Few (5%) of visits were unable to be completed in a video-to-home format, supporting the reliability of this method.

Our findings suggest significant adoption of video-to-home visits by veterans > 55 years old.

Aside from procedures, nearly all health concerns appropriate for general medicine clinic can be addressed with VVC

A faculty champion is critical to early and consistent success of such a program to provide training and encourage utilization.

IMPROVING GLYCEMIC CONTROL FOR PATIENTS WITH POORLY-CONTROLLED TYPE 2 DIABETES MELLITUS WITH POINT-OF-CARE HEMOGLOBIN A1C TESTING

Alexandra Hashemi[1]; Travis Howlette[1]; Charlotte Ezratty[2]; Katherine Small[1]. [1]Medicine, Mount Sinai, New York, NY; [2]Student, Icahn School of Medicine at Mount Sinai, New York, NY. (Control ID #3388585)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Can point-of-care (POC) hemoglobin a1c (A1c) testing performed at the time of clinic visit lead to improvements in glycemic control

in type 2 diabetes mellitus (T2DM) patients <75 years old with A1c values ≥ 9% by facilitating timely intervention at the visit?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To improve rates of timely interventions aimed at improving glycemic control, specifically adjustment of current medications, addition of new medications, and referral to a certified diabetes educator (CDE).

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Starting with our first Plan-Do-Study-Act (PDSA) cycle, we educated internal medicine attendings, residents, nurse practitioners, medical assistants, and nurses at the residency continuity practice of an urban tertiary care hospital about the initiative to standardize POC testing for T2DM patients <75 years with A1c values ≥ 9%. Providers received weekly care-gap reports which identified patients with upcoming visits and existing A1c values ≥ 9%. Clinicians provided medical assistants and nurses with this list and pended orders for POC A1Cs which were then performed by medical assistants and nurses while they were obtaining vital signs. The POC A1c results were available to providers at the start of the visit and used to make interventions at the time of the visit.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The primary outcome is rate of interventions ordered at the time of visit. Interventions included medication addition, dose adjustment, or referral to a CDE. Process measures include appropriate use of POC A1c testing (i.e. for patients <75 years of age with previous-to-visit A1c value ≥ 9%).

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): The electronic medical record tool identified 118 T2DM patients <75 years old with A1c ≥ 9% due for A1c testing (>70 days since last A1c) who were seen between 3/1/2019-6/30/2019. Seventy-four (63%) received POC A1c tests. Of the patients who received POC A1c tests, 76% received an intervention at time of visit. In contrast, only 27% of patients who had a serum A1c drawn (whose results were only available after the visit) had an intervention ordered ($p<0.0001$). Patients who were prescribed a new medication were more likely to have received a POC A1c than serum A1c (93% vs 7%, $p<0.05$). Patients who were referred to CDEs were more likely to have received a POC A1c than a serum A1c (92% vs. 8%, $p<0.05$). Patients who were prescribed an increase in medication dose were more likely to have higher A1c levels at the time of visit (10.8 vs. 10.0, $p<0.05$).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): POC A1c testing led to significant increases in rates of interventions for patients with poorly controlled T2DM, specifically medication adjustment/addition and referral to CDEs. POC A1c testing can be used to improve timely interventions as described which is critical for optimizing glycemic control and improving overall diabetes care. Further research will assess whether POC A1c testing results in decreased A1c results at the subsequent visit.

IMPROVING MEDICATION SAFETY AT TRANSITION TO A SKILLED NURSING FACILITY THROUGH A STRUCTURED DISCHARGE HUDDLE

Amber Inofuentes[1]; Jessica Dreicer[1]; Alexander Levit[1]; Katherine L. Coffey-Vega[2]; Paul Helgerson[1]; Bethany Delk[3]; Christa T. Brooker[4]; Evelyn Nicholson[1]. [1]Department of Medicine, University of Virginia, Charlottesville, VA; [2]Department of Medicine, University of Virginia, Charlottesville, VA; [3]Pharmacy, University of Virginia Medical Center, Charlottesville, VA; [4]Pharmacy, University of Virginia Health, Charlottesville, VA. (Control ID #3392194)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): In a needs assessment study of all discharges from three general medicine units to skilled nursing facilities (SNFs), 57% of discharge (DC) summaries contained a medication discrepancy, increasing the risk for serious adverse events at care transition.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. To decrease the frequency of medication discrepancies for patients discharged to SNFs.

2. To reduce the severity of potential medication errors for patients discharged to SNFs

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : In fall 2019, a needs assessment study was conducted to determine the prevalence of medication errors at discharge to SNF from three general medicine units of a 600-bed academic hospital. The four-week study revealed a 57% mismatch rate between medications embedded in the narrative compared to the medication list at the end of the summary. Errors often involved high risk medications such as antibiotics, anticoagulants, insulin, antiarrhythmics and diuretics. A multidisciplinary team began a structured process improvement effort to address this problem. Given the severity and frequency of errors, the team immediately implemented a DC huddle consisting of nurse-physician review of the DC summary for internal consistency, accuracy, and completeness. Residents, hospitalists and nurses were educated to the process through email, unit huddles, and structured team meetings. Units utilized visual management boards to track process fidelity and capture near misses (medication errors caught prior to discharge) in real time.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Beginning one week after huddle implementation, DC summaries sent to SNFs were reviewed to determine presence and severity of errors (scored using the Agency for Healthcare Research and Quality's classification system). Adherence to huddle process and near misses were also tracked.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): In a six-week period following huddle initiation, the absolute error rate decreased from 57% (n=52) to 41% (n=79). Of errors found, those prior to implementation were much more severe including two category I (risk of patient death), one category H (potential for requiring intervention to sustain life) and one category G (risk of permanent harm) and only 17% were category C (unlikely to cause harm). In one case, a patient discharged after an intracranial hemorrhage had orders to continue anti-platelet agents and in another, both an intravenous antibiotic and anticoagulant were omitted. Post-intervention, nearly 50% of errors detected were category C and there were no category G, H, or I errors. Notably, the huddle intervention had excellent penetrance, occurring prior to discharge 93% of the time, resulting in 53 near misses.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The high prevalence of medication errors on transition to SNFs has been documented in the literature, a finding confirmed at our institution. These errors can cause significant harm in a medically fragile population. Our initiative demonstrates that a brief medication safety huddle at discharge can significantly reduce the severity and frequency of medication errors due to internal inconsistency in DC documentation.

IMPROVING REGIONWIDE BLOOD PRESSURE CONTROL AMONG DISADVANTAGED PATIENTS SEEN IN PRIMARY CARE CLINICS

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Cleveland, OH; [2]Better Health Partnership, Cleveland, OH; [3]Medicine, Pop & Quant Health Sciences, Case Western Reserve University, Cleveland, OH; [4]Better Health Partnership, Better Health Partnership, Cleveland, OH; [5]Mercy Health, Cincinnati, OH. (Control ID #3391660)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Hypertension has been poorly controlled in the U.S. over many years, especially among disadvantaged patients.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To improve regionwide blood pressure (BP) control in patients cared for by 614 primary care providers in 7 Northeast Ohio urban health care systems at 35 clinics over five years (2013-17).

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : We used a positive deviance approach where Better Health Partnership (BHP), a regional non-profit health improvement collaborative, identified and disseminated a hypertension best practice including: 1) accurate/repeat BP measurements; 2) timely follow-up; 3) patient outreach; 4) a treatment algorithm; and 5) a communication curriculum. BHP approached 16 lower performing clinics to offer monthly practice coaching to implement the hypertension best practice (High intensity approach); 15 clinics approached BHP for consultation with clinic leaders around implementation (Moderate intensity approach), and 4 clinics solely attended BHP Learning Collaboratives where the best practices were disseminated (Low intensity approach). In the high intensity group, BHP staff resources were enhanced by federal and state grant funding.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Electronic health record data of hypertensive adult patients (ages 18+) at each practice were reported to BHP every six months for the last 12-month reporting period between 2013 and 2017, stratified by race/ethnicity, preferred language, and estimated income and education. Sample sizes varied between reports, but were around 115,000 individuals. Weighting by practice size, we estimated BP control changes for each intensity level in regression models.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): BP control (BP < 140/90 mm Hg) improved from 67% to 74% from 2013 to 2017 overall and across all socio- demographic and insurance categories. Higher levels of implementation intensity were associated with larger BP improvement. Our model-based estimates of improvement were 14.9 percentage points (95% CI 10.2, 19.5) in the high intensity clinics, 5.2 (0.8, 9.5) in moderate intensity clinics, and 0.2 (-3.9, 4.3) in low intensity clinics. Differences in BP control among disadvantaged patients uniformly declined from 2013-2017, including insurance types (larger improvements among uninsured and Medicaid patients compared with Commercial and Medicare patients), race and ethnicity (larger improvements in non-Hispanic Black and Hispanic patients compared with White patients), and income and education (largest improvements in the lowest groups).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): In this regionwide investigation of approximately 115,000 patients with hypertension in urban Northeast Ohio, BP control improvements were remarkable. This study highlights a regional collaborative opportunity to improve BP, adopting a documented "positive deviance" approach, and benefiting patients most in clinics that were the most intense adopters.

INCORPORATING PATIENT FEEDBACK INTO HOSPITAL MEDICINE QUALITY IMPROVEMENT AND RESEARCH: THE ROLE OF A PATIENT & FAMILY ADVISORY COUNCIL (PFAC).

James D. Harrison, Rachel Weiss, Margaret Fang, Brad Sharpe. Division of Hospital Medicine, University of California San Francisco, San Francisco, CA. (Control ID #3390815)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Hospital Medicine quality improvement (QI) and research could benefit from incorporating the patient perspective to ensure a patient- centered approach. However, hospitalists rarely get the opportunity to directly engage patients with this work, so often struggle to effectively integrate patient insights.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To create and operationalize a Hospital Medicine Patient & Family Advisory Council (PFAC) that is accessible to hospitalists and fosters opportunities to incorporate patient perspectives into QI and research efforts.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : We employed a consultative and collaborative approach using best practice tools and methodologies for patient engagement to create a Hospital Medicine PFAC. We recruited 16 PFAC members via a variety of methods during and after inpatient admissions. We developed a communication strategy to introduce hospitalists to the PFAC and how best to utilize it – including regular announcements in newsletters, presentations at faculty development events, and outreach to QI and research faculty. PFAC meetings are held monthly in the early evening ensuring they do not conflict with hospitalists' clinical work.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Descriptive qualitative summary of PFAC activities and quantitative survey results from 10 PFAC members and 11 presenters.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Since September 2018, hospitalists have presented and solicited feedback on 15 different QI and research initiatives ranging from mobility, medications, and discharge materials to telehealth, librarian resources, and artificial intelligence. Positive experiences were reported by the 8 (73%) presenters who responded to our survey. The most common reasons for bringing a project to the PFAC were to determine how best to ensure project implementation was patient-centered (63%), to get input on patient-facing materials (67%) and to determine how relevant a project was to patients (50%). Presenters felt coming to the PFAC was valuable/extremely valuable (75%) with 100% stating they were satisfied/highly satisfied. All presenters (100%) obtained feedback that was new or unique. PFAC feedback changed many aspects of each initiative including updates to patient-facing materials, surveys and interview guides, and workflow improvements to promote sleep opportunity, interpreter use and telehealth. Feedback on grant applications has also been invaluable. Seventy percent of PFAC members responded to our survey with 86% strongly agreeing that each meeting was interesting, productive, valuable and a learning opportunity. All PFAC members agreed/strongly agreed that their opinions were listened to and valued.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The PFAC model facilitates critical interactions between patients, caregivers and hospitalists, helping to ensure that quality

improvement and research efforts seeking to advance the care and experiences of hospitalized adults are patient-centered from concept development through implementation and dissemination.

INCREASING ORDERING OF COLORECTAL CANCER SCREENING IN A PRIMARY CARE CLINIC OF A SAFETY NET HOSPITAL

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Current guidelines by USPSTF recommend CRC screening for asymptomatic adults ages 50-75, citing strong evidence of reduction in CRC mortality (the current national average screening rate is 65%); it has been noted that low socioeconomic status (SES) patients have lower screening rates which can partially be attributed to both patient and system level barriers.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Measure CRC screening rates ordered and completed at Boston Medical Center (BMC) in one adult primary care clinic which serves a high proportion of low SES patients

2. Test whether offering Fecal Immunochemical Tests (FIT) in addition to colonoscopy can improve ordering of colorectal cancer screening rates

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : BMC is an academic medical center and a safety net hospital serving a diverse population. Adult primary care is comprised of six suites, one of which is the Women's Health Clinic where only about a quarter of eligible patients were screened for CRC.

As a pilot trial in the Women's Health Clinic suite, medical assistants (MAs) were instructed to use the Best Practice Advisory (BPA) option embedded in the hospital's electronic health record (EHR) to identify patients overdue for CRC screening and pend FIT test orders prior to the provider seeing the patient. The MA would also place the FIT testing kit on the provider's desk when rooming the patient. Colonoscopy could be ordered instead of FIT based on the patient-provider discussion. Each month, rates of CRC screening were shared with both MAs and providers of the suite. Five months of data were reviewed for patient encounters who were overdue for CRC screening.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Monthly CRC screening rates, both ordered and completed, were compared amongst pre and post intervention clinic cohorts over a 5 month period for patient encounters who were overdue for CRC screening.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 652 patient encounters were reviewed from January 2019 through May 2019, with the intervention being in March (i). There were 458 patients, 97% of which identified as female, 56% were Black/African American, 22% were White, 2% were Asian, and 20% declined to disclose a race/ethnicity. For patients who were overdue for screening, combined (FIT + colonoscopy) order rates were 26% in January and 77% in May. Of those, colonoscopy orders declined from 73%, to 40%, while FIT orders rose from 27% to 60%. Colonoscopy order completion rates were 58%, 71%, 50% (i), 55%, and 49%, while FIT completion rates were 55%, 60%, 40% (i), 38%, and 34%. Ultimately, of patients who were due for screening completion rates of either colonoscopy or FIT rose from 15% to 31%, with colonoscopy showing better completion rates.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): CRC screening completion rates doubled on month five (31%) compared to month one (15%). MA utilization of the BPA tool in EHR combined with MA teaching was successful at increasing CRC screening rates ordered and completed in a busy safety net hospital clinic.

IN-SCRIBING CHANGE IN AN ACADEMIC RESIDENT CLINIC

Ting-Jia V. Lorigiano[2]; Maura J. McGuire[2]; Jihae V. Snyder[2]; Belle V. Liang[2]; Nicholas V. Rebbert[2]; Peter Chin[2]; Gail Berkenblit[1]. [1]GIM, Johns Hopkins, Baltimore, MD; [2]Medicine, Johns Hopkins School of Medicine, Baltimore, MD. (Control ID #3391408)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE):

Given the challenges that medical residents face in the era of EHRs, can medical scribes improve resident satisfaction and panel management?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES):

1. Evaluate the effect of working with a scribe on resident satisfaction with documentation efficiency and quality as well as impact on the patient-physician interaction.

2. Determine if a scribe can enhance resident diagnosis capture to provide a more complete picture of panel case mix and health care needs.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Residents were given access to a medical scribe for two weeks during their ambulatory urgent care rotations. At the end of this period, residents were surveyed regarding their perception of patient interactions, documentation efficiency and note quality. Diagnosis capture in the medical record was compared prior to the scribe pilot and during the scribe pilot.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION):

1. Resident surveys assessed resident documentation practices and used Likert scales to evaluate their perceptions of note quality, documentation efficiency and ability to interact with patients during the visits prior to and during the scribe pilot. Statistical analysis using the Mann Whitney U test were performed to identify significant changes.

2. A medical complexity factor (MCF) score available in the EHR was used as a proxy for diagnostic capture.

Clinic composite MCF scores over time were obtained from the EHR and analyzed by linear regression as well compared to the total MCF for the prior year.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Thirty eight residents participated in the scribe intervention and 19 (50%) completed the survey. At baseline, 26% of residents reported taking hand written notes during a visit while 74% reported typing notes during the visit. Although 79% rated themselves as highly proficient in the EHR, only 21% of residents completed notes during the visit. While working with a scribe, more residents reported being satisfied with efficiency of documentation (3.58 versus 2.68; p 0.05), the time spent on notes outside of visits (3.2 versus 2.74; p=0.06), and their ability to listen to patients (4.16 versus 2.89, p <0.05). Residents perceptions of note quality were unchanged while working with a scribe versus usual practice (3.53 versus 3.68; p=0.77). 80% of residents surveyed were in favor of continuing working with scribes.

Diagnostic capture occurred at a greater rate in the resident clinic during the scribe intervention than in other hospital clinics (MCF increase/month

0.068 versus 0.043; p=0.01). Compared to the prior year, among a subset of 30 patients with continuous care in the resident clinic, MCF scores were higher in December of the year with the scribe intervention than in the prior year (1.065 vs 0.597; p= 0.03).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?):

1. Resident satisfaction with documentation and patient interactions was increased by working alongside medical scribes and increases in performance metrics, at least partially, offset the cost of scribes.

2. Resident diagnosis capture, important for panel management and value based adjustment can be improved by interactions with scribes.

INSTITUTING VIDEO VISITS FOR HYPERTENSION CONTROL IN AN URBAN TEACHING PRACTICE

Justin T. Gasper, Martha Catalina Morales Alvarez, Leonard Amoruso, Alfred Burger, Christina M. Cruz. Medicine, Mount Sinai Beth Israel, Icahn School of Medicine at Mount Sinai, New York, NY. (Control ID #3357126)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Poorly controlled hypertension is a common problem in urban clinics; studies demonstrate telehealth improves hypertension control, yet adoption has lagged.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Integrate video visits into our teaching practice workflow for hypertension management as part of a patient-centered approach for all patients with poor hypertension control.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Our outpatient medicine resident teaching clinic serves an urban community in New York City. On recent review of several quality metrics, our patient population hypertension control is at 40.8%–below the national average of 48%–and reflects the health disparities experienced by our racially and ethnically diverse population. Access to physicians and prescriptions present the greatest challenges in addressing poor hypertension control. While multiple large RCTs demonstrate telemedicine increases reduction in SBP and DBP, implementation is sparse. Recent New York telehealth parity law ensures reimbursement for telehealth for Medicaid patients, while recent app technology has integrated video visits into the ambulatory EMR.

As part of this evolving landscape, we offer video visits as part of a patient-centered approach at our resident teaching practice for patients with poorly controlled hypertension, as defined by 2017 ACC/AHA guidelines. Telehealth interventions are rapidly being adopted for a variety of indications, but there have been only limited trials. To our knowledge, no teaching practice has incorporated video visits into standard ambulatory workflow. Our patients are enrolled after an initial clinic visit; exclusion criteria include hospitalization or fall within three months, BP ≥180/110, or diagnosis of dementia. Visits occur every six weeks via smartphone, with BP readings to be performed at least three times on separate days by electronic cuffs or at local pharmacies. We hope that by eliminating transportation barriers, reducing wait times, and reducing medication barriers our patients will experience both continuity and improved hypertension control.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Integration of video visits into standard ambulatory workflow at our resident teaching practice.

Short and long-term improvements in BP control at 6 months, 1 year, and 2 years in patients enrolled and completing video visits.

Patient satisfaction to be evaluated by survey after first visits.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Analysis of performance metrics on preventive measures for all patients at our outpatient teaching practice with 2 or more visits over an 18-month period revealed adequate hypertension control, defined as BP ≤140/90, at only 40.8%.

Subgroup analysis stratified by race and gender revealed disparate outcomes.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Physicians and patients are enthusiastic about telemedicine use

Feasibility requires overcoming substantial administrative barriers and clinical inertia. Trainee supervision for these visits is not nationally developed; policies vary by institution. Understanding state-specific telehealth laws around access and coverage will inform feasibility for target populations.

INTERIM RESULTS OF AN EMERGENCY DEPARTMENT-BASED BUPRENORPHINE INITIATION PROGRAM IN A STATE WITH LIMITED MEDICAID EXPANSION: BUILDING BRIDGES

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Lack of insurance and few community-based entry points for starting medication assisted treatment for opioid use disorder (MOUD) substantially limit access to evidence-based treatment in Utah, a state with high rates of opioid-related mortality.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) Provide a portal of entry for uninsured and underinsured patients to access MOUD.

2) Provide short term intensive outpatient treatment with case management to facilitate enrollment in insurance and connection to primary care.

3) Provide linkage to ongoing treatment from community providers to achieve sustained remission for opioid use disorder.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The University of Utah BRIDGE program offers same-day initiation of MOUD in the Emergency Department (ED) followed by four weeks of free outpatient treatment, intensive case management, and connection to primary care-based addiction treatment. During the initial ED visit participants are assessed, counseled on starting Buprenorphine, and given a small supply of medications. Onsite care navigators facilitate a transition to a partnering outpatient treatment center for ongoing OUD care. During outpatient treatment, participants are screened for social determinants of health and offered available resources. After this four week intensive treatment period, patients are connected to select community programs for ongoing MOUD

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): During the four week program we continually assessed retention in treatment, substance use, naloxone distribution, housing and insurance status, and HIV/HCV screening. Longitudinal data on retention in care,

interval substance use, and other health outcomes were collected from partnering community programs.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): From April 23 through November 30, 2019, 507 patients were enrolled through a single ED. 67% attended their first outpatient visit. 55% completed the four week outpatient program. At entry, 45% of participants had Medicaid while 23% were uninsured. 32% of uninsured patients were enrolled in Medicaid through the program. 19% of patients had positive HCV Ab and 1% had documented HIV infection. Over 90% of patients received naloxone.

We have complete data from one continuity program. 27 patients were referred. 81% attended an initial visit.

74% are actively engaged in treatment. 74% are currently recieving MOUD. 78% were screened for HCV and HIV. 37% temporarily lost their insurance while in treatment. 15% had treatment interrupted because of insurance lapses. Data from other partners is forthcoming.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): 1) The scope of practice and case mix of a typical large ED are amenable to implementing programs for initiating MOUD. In areas with few community-based resources, EDs can play a central role in access to addiction treatment.

2) ED-based care navigators and a partnering outpatient clinic that can provide short term stabilization, intensive case management, and linkage to care can improve retention.

3) Insurance is a critical element in preserving access to MOUD. Restrictive policies frequently interrupt treatment and place patients at risk for relapse.

INTRODUCING CLINICAL PHARMACISTS FOR COLLABORATIVE DRUG THERAPY MANAGEMENT TO IMPROVE DIABETES OUTCOMES IN A LARGE PUBLIC HEALTHCARE SYSTEM

Hannah Jackson, Madden Rowell, Ross Kristal, Andrew B. Wallach, Theodore G. Long. Ambulatory Care, NYC Health + Hospitals, New York, NY. (Control ID #3389957)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Can we improve diabetes patients' outcomes with a new type of care team provider?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Integrate clinical pharmacists trained in Collaborative Drug Therapy Management into primary care teams as providers at five facilities to independently see patients and manage medications

2. Improve diabetes by A1c and standards of care (statin use, annual ophthalmology and podiatry exams)

3. Decrease ED utilization for uncontrolled diabetes patients

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : NYC Health+Hospitals has 11 hospitals and 60 community health centers (CHC) with more than one million patients and more than five million ambulatory care visits a year. Most patients have public or no insurance. We have over 63,000 diagnosed diabetes, with 36% not at their goal A1c<8.0 before program start. 5 initial pilot sites of 3 hospitals and 2 CHC for diversity in facility characteristics and practice population. Based on number of diabetes patients per site, we hired 1 to 3 clinical pharmacists (CP) trained in outpatient chronic disease management. CP joined the site's primary care (PC) teams as independent providers under a Collaborative Practice Agreement. PC physicians whose patients required intensive management referred patients to CP visits focused on diabetes medication management. Credentialing CP as providers (allied health professionals), let them start, change, or stop a medication, and order and interpret labs. Changes communicated to PC physician within 24 hours of patient visit.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 1. Numbers of patients seen and visits (new and revisit)

2. Numbers of medication changes made by CP (by "start", "change dose" and "stop")

3. Absolute and percent change in A1c prior to initial CP visit and after at least single visit

4. Total number of patients at goal A1c<8 prior to initial visit and after at least single CP visit

5. Percent patients receiving statin therapy (compared to patients without CP intervention)

6. Percent patients receiving annual ophthalmology and podiatry exams (compared to patients without CP intervention)

7. ED visits 12 months prior to and after initial CP visit

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED):
- 755 unique patients with 1,853 visits March to November 2019
- 2,210 medications initiated or changed
- 84% of patients seen by CP improved A1c
- Average A1c reduction 1.43%
- Largest A1c reduction 9.1%
- More than 1/3 of patients with high A1c's now A1c < 8
- Improved A1c goal and medication adherence estimates maximum net income $39,431,477 from value- based payments for system

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): 1. CP are effective addressing uncontrolled diabetes and have substantial impact on system's population health goals

2. To assess program success, we measure process metrics (ex: number of visits per patient; number of medications changed) and outcomes metrics (ex: change in A1c; use of statin therapy)

3. Financially feasible, improves gains with limited resources. In cost of adding CP to your system, including projected direct gains from billed visits, add indirect gains in meeting metric targets with value-based payments and increased access to PC provider

IT TAKES A VILLAGE: COMPARATIVE ANALYSIS OF STRATEGIES TO IMPROVE PROVIDER ENGAGEMENT FOR WEIGHT MANAGEMENT AT AN ACADEMIC MEDICAL CENTER

Shreya Shah[3]; Carmen Lu[1]; Sandra A. Tsai[3]; Amy Reisenberg[3]; Ana Calugar[2]; Heather Filipowicz[3]; Christopher Sharp[3]; Anuradha Phadke[3]. [1]Pharmacy, Stanford Health Care, Palo Alto, CA; [2]ambulatory quality, Stanford health care, Palo Alto, CA; [3]Medicine, Stanford University School if Medicine, Palo Alto, CA. (Control ID #3390625)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Despite evidence to support the benefits of weight loss counseling, the majority of providers do not engage in discussions about weight with their patients; while BMI screening rates at our institution are >85%, only 27% of patients have appropriate follow up documented by a provider.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Develop and implement a care pathway to identify and treat patients with BMI≥25 using evidence-based medicine.

2. Develop and implement electronic health record (EHR) tools, including clinical decision support (CDS), to improve assessment and provider engagement for patients with BMI≥25.

3. Improve rates of appropriate follow up documentation for patients with BMI≥25

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Our multi-level, multi-intervention quality improvement initiative took place at outpatient clinics within an academic medical center. Our care pathway includes an algorithm for risk stratification and management based on evidence-based medicine, and standardized clinical workflows to incorporate recommendations into practice. EHR tools include CDS to prompt BMI screening and follow up documentation for patients with BMI≥25. The CDS tool incorporates physician order entry with an orderset that includes diagnosis codes, documentation templates, suggested orders, and weight loss counseling instructions. The care pathway was piloted at a single primary care clinic (Pilot Clinic A). The CDS tool was piloted at several primary care and specialty clinics (Pilot Clinics A-E). These interventions were designed and implemented by a multidisciplinary team of clinicians, quality consultants, and extended care team members working through a structured lean quality improvement approach.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We measured rate of appropriate follow up documentation for patients with BMI≥25 (# of patients with appropriate follow up/total # of patients). Our pre and post-intervention measurement periods were 4 months, with similar volume of total patients pre-intervention (n=9095) vs post-intervention (9211).

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): At baseline, our mean rate of appropriate follow up documentation for pilot clinic A (n=2736) was 42.6% vs 35.8% for pilot clinics B-E (n=6359). Following the interventions, our mean rate of appropriate follow up for pilot clinic A was 60.6% vs 42.4% for pilot clinics B-E, with a relative difference of 17.9% (CI 15.4%-19.9%), $p<0.001$ determined using a Wilcoxon rank sum test with continuity correction.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): 1. EHR tools can improve provider engagement to discuss weight loss recommendations with patients.

2. Implementation of CDS alongside a team-based care pathway can be even more successful in changing provider behavior.

3. Attendees can learn how to replicate the various components of our initiative and understand the lean- based problem-solving approach we utilized in developing these solutions.

LEGAL BARRIERS AND SOLUTIONS TO ESTABLISHING AN IN-OFFICE FOOD BANK

Kaitlin Gordon[1]; Jennifer Olges[1]; Diane Chlebowy[2]; Cody Moore[1]; Amanda Miller[2]; Nancy T. Kubiak[1]. [1]Internal Medicine, University of Louisville, Louisville, KY; [2]School of Nursing, University of Louisville, Louisville, KY. (Control ID #3392137)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): To address the high prevalence of food insecurity (FI) in our clinic, we partnered with a local food bank to establish an in-office food pantry but encountered legal obstacles.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): We aimed to establish an in-office food bank for FI patients that complied with legal statutes about patient incentives.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : After assessing the FI level in our clinic, we partnered with a food bank to establish an in-office pantry which would provide shelf-stable, healthier foods. To justify implementation, we used the American College of Physicians' policy supporting interventions regarding nutritional social determinants of health. We reviewed the project with our legal department to address statutory barriers.

The Office of the Inspector General (OIG), tasked with preventing Medicare and Medicaid fraud, stated that providers may not remunerate patients by providing an item or service below fair market value. An independent entity (e.g. local food bank) may provide items or services to needy patients. A determination of need must be made and universally applied. The OIG stated that receipt of goods or services must not depend on the use of any particular provider.

To comply with these directives, we established a process for screening all patients for FI and policy regarding the food bank. Our policy used the federal eligibility guideline of 185% of the poverty level to establish need. This is verified by proof of Medicaid or by considering all sources of income for a household and using tables to determine eligibility. Our policy stated that patients that qualify for the food bank are eligible for one year, and may access food in the office at any time. Receipt of food may not be restricted for any reason, including no shows for the clinic.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): After developing the policy addressing these statutes, the food pantry opened in August 2019. Screening began in August 2019. In September, a monthly report of the number of referrals was created.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): From August-December 2019, 175 of 380 (46%) screened patients were FI and the remaining 205 were food secure. 108 of the FI patients were referred to the in-office food bank from September-December. The remainder did not meet eligibility requirements, declined referral, or were not initially recognized to be food insecure and subsequently could not be contacted to assess interest in the food bank. The food bank was accessed 77 times.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): While physicians look at the provision of a healthy diet as a prescriptive option, the legal system is wary of such endeavors, and compliance with OIG guidance is imperative to avoid potential civil penalties of up to $10,000 per wrongful act. Physicians should be aware of legal standards affecting in-office initiatives to address FI.

LENGTH OF STAY AND READMISSIONS REDUCTION POSSIBLE WITH ABDOMINAL PAIN SYNDROMES GUIDELINE

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Patients diagnosed with abdominal pain syndromes (functional abdominal pain) have high numbers of emergency room visits and hospital admissions with increased lengths of stay and readmissions.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): In patients presenting to our emergency room or admitted with Abdominal Pain Syndromes we aim to:

Reduce length of stay and readmissions

Reduce abdominal CT utilization

Reduce the percentage of patients receiving narcotic therapy

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Length of stay and readmission rates on the hospital medicine services at our institution was above goal.

Analysis of our problem through QI methods showed that patients coded with DRG 392 had the largest amount of opportunity days. Performing chart review revealed that a majority of these patients could be classified as having one of the abdominal pain syndromes. The root cause of our problem was determined to be lack of standardized care for these patients. Our intervention was to develop an Abdominal Pain Syndromes guideline under the guidance of our evidence based practice committee. A multi-disciplinary team was developed and included members from hospital medicine, gastroenterology, pain management anesthesia, emergency medicine, dietary, pharmacy, integrative medicine and case management. The guideline was developed using available evidence based literature, Milliman guidelines and expert opinion. An order set was developed. Education was deployed to the hospital medicine and emergency room faculty.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Measures of success included reduction in length of stay and readmission as the primary outcome. Secondary metrics included reduction in abdominal CT scans and the percentage of patients receiving opioid therapy.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Data was calculated from a baseline of twenty months prior to the January 2018 guideline roll out date through August 2019. Average length of stay decreased from 1.19 to 1.12 (p=0.127). Readmission rates decreased from 18.23% to 14.84% (p=0.038). Percentage of patients prescribed opioids increased from 75.67% to 80.21%. Abdominal CT scan usage increased from 42.72% to 44.88%. The guideline was accessed through the website 35 times in 2019. Control charts were analyzed for all four outcome metrics and did not have any noted special cause variation.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Standardization of care for abdominal pain syndromes is difficult given the paucity of strong evidence to guide management. A large multidisciplinary team was vital for development of our Abdominal Pain Syndromes guideline as using expert opinion was necessary. After initial guideline education, continued education is necessary to prevent the reduction in usage that was seen with our guideline.

We were able to show that standardization of care through guideline development can significantly reduce readmissions. This approach also reduced length of stay that was operationally significant. More analysis will necessary to determine why guideline development was not able to reduce imaging and narcotic usage.

LEVERAGING EXTENSION OF COMMUNITY HEALTH OUTCOMES (ECHO) FOR BEHAVIORAL HEALTH INTEGRATION IN FREE AND CHARITABLE CLINICS (FCCS)

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Free and charitable clinics often serve as the gateway for behavioral health care for the under and uninsured, however many lack the organizational infrastructure to provide behavioral health care.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Train free and charitable clinic staff to implement team-based care through a behavioral health integration model for patients with depression and anxiety

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Seven FCCs across the country participated in a series of 14 weekly, one-hour training sessions hosted by ECHO-Chicago through an interactive videoconferencing technology in partnership with Americares, a national non-profit that supports free and charitable clinics. The clinic care teams comprised of primary care providers, behavioral health specialists, care managers, IT staff and clinic leadership. This series, facilitated by experts from University of Chicago and CommunityHealth - a free clinic in Chicago, supported care teams to implement components of the Advancing Mental Health Integrated Solutions (AIMS) Collaborative Care model to integrate behavioral health into their clinics. The curriculum was designed to support clinics to implement changes around clinic redesign and enhanced workflow, utilize evidence-based screening questionnaires for case finding and measurement-based treatment to target, deploy a patient registry, use team- based approaches to care and enhance capacity around medication management. Plan, do, study, act cycles (PDSAs) focused on site operations were presented as case discussions to further the collective learning of the group, in keeping with the ECHO format. Participants also presented a series of patient cases to the experts to get real-time feedback on how to best manage some of their most complex patients. Participants presented capstone projects at the end highlighting systems changes made during the series.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Implementation of core components of Behavioral Health Integration using the Advancing Mental Health Integrated Solutions (AIMS) Collaborative Care model. Core components include: patient centered team care, use of registries for population based management, measurment based treatment to target, use of evidence based guidelines and accountable care.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): All sites made structural clinic-level changes to support patients with depression and anxiety. These included use of warm handoffs and improved communications, use of registries to track patients, steps to reduce stress and stigma, and increased use of screening tools, further advancing their journey toward behavioral health integration.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Participation in the ECHO series resulted in care teams at FCCs implementing PDSA cycles to significantly change clinic-level processes and operational changes to better address the behavioral health needs of patients.

LEVERAGING SECRET SHOPPER METHODOLOGY TO DRIVE QUALITY IMPROVEMENT AND MOTIVATE CHANGE IN THE CARE OF VULNERABLE POPULATIONS

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Leadership at a rural Federally Qualified Health Center (FQHC) sought assistance with improving poor patient satisfaction in seven diverse practices.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): We aimed to create a secret shopper program to 1) evaluate both clinical and non-clinical services; 2) gain a perspective of the patients' experience; and 3) facilitate and support system-wide quality improvement (QI).

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The University of Oklahoma Sooner Health Access Network (HAN) provides care management, specialty care access, education and training, and quality improvement support for practices serving the Medicaid population in Oklahoma. Working with FQHC leadership, the HAN developed a plan using a secret shopper methodology to determine the root causes of low patient satisfaction scores. Posing as patients, three HAN staff called practices to schedule an appointment and one staff member attended a clinical visit at each site. FQHC IT staff was engaged to ensure the secret shopper's chart was flagged in the electronic medical record.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): After secret shopper interactions, HAN staff recorded their experiences using a data collection tool with an emphasis on the evaluation of customer service, patient experience, trauma informed approach, cultural consciousness, policies and procedures, quality of care, safety, and compliance. Results were used to identify practice-level themes and specific gaps in care.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Two of the seven practices provided outstanding care and consistently followed practice policies and procedures. The remaining practices lacked basic customer service skills and adherence to policies and procedures. Key issues included failures to address positive depression screens (PHQ4), to provide interpreter services for patients with limited English speaking skills, and biases in appointment scheduling. As a result, FQHC senior leaders and the Board of Directors revisited their mission and vision statements and aligned their three-year strategic plan around customer service, education, and empowering employees. The education plan included customer service training, motivational interviewing, and trauma-informed approach for all staff. Employee knowledge of motivational interviewing was measured and on average, post-test scores were 21.4 percentage points higher than pre-test scores (95% CI: 14.5-28.4). Patient satisfaction survey response rates have increased by 300% over 11 months and the FQHC's nursing staff turnover rate has dropped by 50%.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Complex healthcare systems often lose their human focus and the secret shopper assessment yielded numerous opportunities for improvement that could not otherwise be detected. Secret shoppers presenting findings to leadership proved to be an unexpectedly emotional experience for all who attended but provided significant motivation for practice improvement.

LINKING PATIENTS TO PRIMARY CARE-BASED BUPRENORPHINE TREATMENT THROUGH A CENTRALIZED EMAIL REFERRAL SYSTEM

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Despite increasing demand for opioid use disorder (OUD) treatment in the US linking patients to primary care-based buprenorphine treatment has been challenging

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1)Facilitate referral of a large number of patients to primary care-based buprenorphine treatment using the email referral system 2)Facilitate a wide variety of providers to refer patients to treatment 3)Increase linkage to primary care-based buprenorphine treatment

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : We implemented an innovative email referral system at a large academic medical center in Bronx, NY which has high rates of opioid-overdose deaths. Buprenorphine treatment is coordinated at 6 affiliated community health centers by a non-physician clinical provider (clinical pharmacist, nurse). Created in late 2017 an institutional email listserv reaches all treatment coordinators who screen referrals, communicate directly with referring providers/patients and schedule initial buprenorphine treatment visits. In 2018, this email referral system was disseminated both internally and externally with partners in community, jails, public health department, and addiction-related websites. We established a registry of patients referred and extracted data from emails/medical records. Variables included patients' demographics, ongoing opioid use, buprenorphine treatment status, referral setting, and referring persons

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 1)Number and rate of unique patients referred through the email referral system 2)Types of referral settings and people 3)Linkage rate to primary care-based buprenorphine treatment

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Between 2018-2019, 70 unique patients were referred. Over 24 months the rate of referral increased 4-fold, from 8 referrals in first 6 months to 32 referrals in last 6 months. Most patients were middle-aged (mean age 49±13), male(71%), and publicly insured(73%). At time of referral, 44 patients(63%) were actively using heroin or illicit opioids, and 28(40%) had recently initiated buprenorphine treatment. Patients were referred from hospitals (43%), drug treatment programs(23%), jail(14%), and outpatient clinics(13%). 3 patients(4%) self-referred. Among all referred patients, 51(73%) were scheduled for an initial visit with the buprenorphine treatment coordinator. Of 19 referred patients who did not schedule an initial visit, 12(63%) had inaccurate contact numbers/did not respond. Of 51 scheduled patients, 37(73%) attended their first visits. Thus, the majority (53%) of all 70 referred patients completed their initial visit

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): We developed and evaluated an innovative email referral system that links patients with OUD to primary care-based buprenorphine treatment. Utilization of our email referral system increased 8-fold over 24 months, and majority of referred patients were successfully linked to care. Next steps include expansion to more providers/patients, along with efforts to improve linkage rate. As opioid epidemic worsens, a similar email referral system could be implemented in other large medical centers to improve access and linkage to OUD treatment

LIPID LESSONS: EFFECT OF A MULTIFACETED QUALITY IMPROVEMENT INTERVENTION ON PRESCRIPTION OF GUIDELINE-DIRECTED TREATMENT IN PATIENTS WITH AN INCREASED RISK OF CARDIOVASCULAR DISEASE

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Can a multi-faceted quality improvement (QI) approach, aimed at patient activation, result in improved patient understanding of statin therapy and improve guideline-directed cardiovascular disease prevention in an urban underserved primary care practice?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Determine the effectiveness of a multifaceted QI intervention on patient understanding of the benefits of statin therapy and on the improvement of guideline-directed prescription of statin therapy.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Atherosclerotic cardiovascular disease (ASCVD) is the leading cause of mortality in the United States. Guideline-directed statin therapy can help patients reduce risk, yet patients with lower socioeconomic status are disproportionately affected and less likely to be on statin therapy. Primary care patients between the ages of 40-75 with diabetes mellitus requiring primary prevention of ASCVD with statin therapy in an urban underserved resident practice were included in the study. A multi-faceted intervention including staff education, educational flyers, posters, and a short video played during visits, was designed to educate and engage these patients about ASCVD risk reduction with statin therapy.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Success was measured by assessing two components. The first component assessed patients' awareness, understanding and importance of statin therapy using identical 3-question pre-/post- intervention surveys on a 5-point Likert scale.

The second component assessed prescriber adherence to American Heart Association/American College of Cardiology guideline-directed therapy (moderate-high intensity statin for patients with diabetes). We reviewed randomly selected pre-/post- intervention charts from the same house-staff clinic.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): A multi-faceted QI approach can improve patients' understanding of statin therapy and enhance primary prevention outcomes even in settings with limited resources. For the patient component, pre-/post-intervention patient surveys were administered to 35 patients. There was a mean increase of 2.09 ($p < .001$), 2.00 ($p < .001$) and 1.97 ($p < .001$) in patient awareness, understanding or importance of statin use for each question respectively.

For the provider guideline adherence component, 47 pre-intervention charts were reviewed showing a 62% guideline adherence. A different set of 47 post-intervention charts were reviewed showing 89% guideline adherence. There was a pre-/post-intervention mean difference of 28% ($p < .05$). This allowed for a power of 80% at a two-sided significance level of 0.05.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A multi-faceted QI approach can improve patients' understanding of statin therapy and enhance primary prevention outcomes even in settings with limited resources.

LONG STAY COMMITTEE FINDS INNOVATIVE DISCHARGE PLANS FOR DIFFICULT DISCHARGES

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Length of stay outliers or "long stay patients" with complex discharges significantly increase hospital length of stay which results in higher cost and increased morbidity to our patients.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): We aim to develop innovative discharge plans for patients with the most complex discharge needs in order to reduce length of stay at our institution.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : We developed a multidisciplinary Long Stay Committee that facilitates the most complex discharges throughout the institution. The Long Stay committee is comprised of Medical Directors, Directors in Nursing, Directors of Case management/Social work, Risk management, Finance, Ethics, Psychiatry and Directors of Rehabilitation. The committee meets once a week to discuss cases.

This innovation led to the development of a long term care service through the hospital medicine division. This service is composed of medically stable for discharge general medicine patients with complex discharges and those requiring guardianship or Medicaid applications. The service is managed by a team including a lead physician, case manager and social worker. All discharge planning and continuity is achieved by this central team. Day to day patient care is delivered at a ½ shift allocation by hospital medicine faculty who focus on chronic disease management.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Goals for our program are reduction in the number of patients with a length of stay greater than 100 days. In addition, we strive to contribute to reduction in length of stay throughout the institution, specifically the hospital where most of general medicine patients reside. Most importantly, our goal is to develop innovative patient care discharge plans and models to serve our most at risk patients.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): In the last year we have reduced our number of patients with a length of stay >100 days from a rolling average of 12 to 4. We have contributed to hospital medicine division reduction in

length of stay index in patients >100 days from 9.89 to 8.82 and hospital wide from 8.09 to 7.52.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): In order to achieve innovative complex discharge plans for length of stay outliers a multidisciplinary team is necessary. We have found that weekly meetings are required to continue proactive management of the most complex patient discharges. In addition, innovative plans frequently require partnering with community resources and the judicial system to assure safe discharges. These plans may also require funding such as aiding a patient in traveling long distances in order to be discharged to a safe environment with family. In the end, this model of complex discharge planning requires resource utilization but ultimately leads to length of stay reduction for the institution.

MAID IN COLORADO: HOW A SAFETY NET HEALTH SYSTEM APPROACHED MEDICAL AID IN DYING

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Safety net systems struggle with their role when a state approves medical aid in dying.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) Build a program that justly serves Colorado without compromising other essential programs

2) Avoid conflict of interest or jeopardizing federal reimbursement for an institution dependent upon federal funding

3) Streamline a process for patients at the end of life

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The state of Colorado passed a law (Proposition 106) allowing medical aid in dying in November 2016, by a margin of 65% to 35%. Denver Health, an urban integrated safety net health system, considered its role in this new arena. After recognizing that many voting precincts in the Denver Health catchment area favored the law, at times by a 3:1 margin, the system convened a work group to assess the matter and consider "opting in" as a system to the law.

The Denver Health MAID program officially began 1/1/18 including: CMO, finance, legal, nursing, psychiatry, chaplaincy, physicians, social work and pharmacy. A Program Coordinator was hired and clinicians were recruited. A centralized service was designed, located in a non-FQHC area.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 1) Program data are recorded and reported to the state of Colorado. Data include demographics, terminal diagnosis, regimen consumed, time to death, and other info.

2) Follow-up is conducted with surviving family/spouses, hospices, and other parties to gain helpful feedback on day of death corcumstances.

3) An in-depth interview was recorded with one patient and used in educational events.

4) Family members have become advocates for the program and participated in continuing education.

5) A medical staff survey was conducted to assess receptiveness of Denver Health medical staff to the provision of medical aid in dying – 80% of medical staff members reported to moral, ethical, or religious conflict with Denver Health opting in to the state law.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED):

2018 Data (Year 1):

-Total Inquiries: 45

-Patients seen: 12

-Scripts written: 7

-Patients deceased w/Maid: 6

-Patients deceased before ingestion: 5

-Unknown outcome: 1

2019 Data (Year 2):

-Total patients seen: 36

-Scripts written: 26

-Patients deceased w/MAID meds: 17

-Patients died before ingestion: 10

-Patients alive w/plan to ingest: 6

-Patients who were disqualified: 2

-Unknown outcome 1

Other findings:

1) No conflict with federal funding

2) Billing for this service is challenging

3) Provider recruitment crossed multiple specialties and strengthened the program from 2018 to 2019

4) Denver Health received no negative feedback from opting in to MAID.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): 1) Safety net institutions can take a politically-controversial issue and discern a role that honors its patients, its community, and its staff.

2) Medical Aid in Dying programs can draw on the justice-based values of its staff to recruit a team that delivers high-quality, timely care to end of life patients seeking this service.

3) Vulnerable patients, including homeless or substance-addicted patients, can be well-served by a MAID

program that considers their request and pursues an appropriate evaluation.

MD PHONE HOME: DECREASING NO-SHOW RATES IN AN URBAN UNDERSERVED RESIDENT PRACTICE THROUGH DIRECT PHYSICIAN TO PATIENT REMINDER PHONE CALLS

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Will direct physician to patient telephone call reminders 24 hours prior to scheduled appointments decrease primary care no show rates in a predominantly Afro-Caribbean underserved population in Brooklyn, NY?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To decrease “no-show” rates by 10% from our practice’s usual care (37%) over two months (October-December 2019)

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : No- show is defined as a patient who does not appear for their scheduled appointment. Lower socioeconomic status, income, and unemployment are associated with higher missed appointment rates. Patients with higher no show rates are more likely to suffer from poorer chronic disease control, higher rates of hospital admissions, and substandard cancer screening. Our practice uses Medical Assistants (MA) to make live patient reminder telephone calls 48-hours prior to scheduled appointment date. Our no-show rate was 37% compared to national average of 23-34%.

Resident primary care providers (PCP) called their patients 24-hours prior to the scheduled appointment. Patients were reminded about their scheduled appointment time and date using a standardized script. Appointment adherence rate was recorded following the completion of each clinic day.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The absolute decrease of no show rates following the intervention.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): A total of 301 patients were given reminder calls, PCP (n=143); MA (n=158). The no show rate among the PCP group was 22% compared to the MA group's 37%. The association between reminder calls and appointment keeping (attendance) was statistically significant, $\chi(1) = 7.969$, (p=.005). The intervention reduced the practice's absolute no show rate by 15% (p=.005).

Of the 143 patients called by their resident PCP, 49% of patients were successfully reached. For patients that spoke with their PCP, 96% presented for their scheduled appointment, the remaining 4% notified that they were unable to attend their visit.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Despite studies showing that no- show rates can be reduced by telephone reminders by administrative staff, no prior studies have examined the impact of PCP-led personal reminders.

Using a typical Medicaid reimbursement of $90 per visit and a 15% increase in show rate, the value to the practice is $1350 per 100 calls, without accounting for lost productivity or other costs.

Direct PCP reminder calls seem to be more effective than MA reminder calls. Strategic use of PCP reminder calls in high risk patients could have added benefit.

MENTORING INTERPROFESSIONAL CO-LEADERSHIP DYADS: BUILDING EMPATHY AND MOMENTUM FOR IMPROVEMENT

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Decisions that affect healthcare providers in our hospital are often made without key stakeholder involvement.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Establish inpatient interprofessional (IP) co-leadership dyads to partner key stakeholders and prioritize multidisciplinary projects.

2. Mentor co-leadership dyads to design effective methods for implementing system changes that improve patient care.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : After a facility move, the inpatient services at our 133-bed Veterans Affairs Medical Center (VAMC) faced significant structural barriers to integrating across professions, including professionally segregated and limited workspaces, and lack of an organized communication structure. Literature suggests that IP co-leadership dyads can create a shared mental model of care, and have a creative approach to problem solving due to complimentary skillsets. After a pilot RN/MD unit co-leadership dyad created and implemented an IP bedside rounding model that improved communication and teamwork, VAMC leadership supported the creation of IP co-leadership dyads to improve teamwork and identify areas for quality improvement.

Based on previous experience with co-leadership in several care settings and concepts from quality improvement and organizational change, we created a curriculum for IP co-leadership dyads that included topics of shared mental model, intentional pairing, vulnerable leadership, Human Centered Design, and IHI- inspired tools for creating project charters and stakeholder registries. In addition to the curriculum, the co- leadership dyads receive mentoring in quality improvement projects. Two co-leadership pairs started the curriculum in 2019, developed shared mission/vision/values statements, and are currently working on IP quality improvement projects that align with our facility goals.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Interprofessional co-leaders with shared mission/vision/values & interprofessional projects that engage stakeholders.

Long term, we will measure dyad engagement and empathy and use dyad projects outcomes as measures of success.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Two IP co-leadership dyads are participating in the mentorship program at our facility, in addition to the pilot dyad: a Hospitalist/RN Unit Manager dyad, Hospitalist/Physical Therapist dyad, and Hospitalist/Pharmacy dyad. All dyads have completed mission/vision/values statements together.

Current mentored projects pursued by IP co-leadership dyads are: 1) creation of a standardized process for appropriate and informed PT/OT consultations, and 2) a trial of discharge pharmacist to decrease late patient discharges. Paired co-leaders describe a deeper understanding of each other's roles and more effective advocacy for each other.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Despite being a very new program, IP co-leadership dyads at our VA generated IP curiosity and better understanding of each other's professional roles. The dyads had immediate ideas and enthusiasm for quality improvement projects that impact daily care and embarked on meaningful projects early in the mentoring process.

MOBILE LOW THRESHOLD BUPRENORPHINE PLUS PATIENT NAVIGATION PROGRAM: IMPACT ON TREATMENT INITIATION AND RETENTION AMONG PATIENTS WITH OPIOID USE DISORDER IN NEW LONDON, CONNECTICUT

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New London, CT; [3]Alliance for Living, New London, CT; [4]Internal Medicine, Yale University School of Medicine, New Haven, CT. (Control ID #3391103)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Despite availability of clinic-based buprenorphine, many people with opioid use disorder (OUD) do not receive treatment due to administrative, transportation, and cost barriers.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) Create engagement between patient navigators and people with OUD who are not receiving buprenorphine, methadone, or naltrexone treatment.

2) Among patients who interact with a navigator and report interest in buprenorphine, facilitate connection to a mobile prescriber for low threshold buprenorphine.

3) Successfully link mobile buprenorphine patients to a clinic-based buprenorphine prescriber.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : A small New England city, New London, experienced nine drug overdose deaths and 91 non-fatal overdose events in 2018. In response, Ledge Light Health District (regional health department) and Alliance for Living (harm reduction organization) started the Coordinated, Access, Resources, Engagement, and Support (CARES) project in partnership with the mayor's office, police and fire departments, and emergency medical services. With funding from the University of Baltimore Center for Drug Policy Research, four navigators with lived OUD experience engaged community members with OUD and assisted with needs such as housing and transportation, offered harm reduction services, and connected interested patients to treatment services.

In response to difficulty accessing clinic-based buprenorphine, the CARES program partnered with Yale School of Medicine in April 2019 to pair a buprenorphine prescriber with navigators to provide low threshold, mobile buprenorphine initiation three times per month. In October 2019, through a partnership with a federally qualified health center, a second prescriber joined once per week. When a patient interested in buprenorphine was identified, the navigator and prescriber team completed a medical evaluation at the patient's preferred location and scheduled a visit with a clinic-based prescriber. A buprenorphine self- initiation prescription was provided to facilitate same day initiation with enough medication to bridge to the clinic visit. The navigator assisted with prescription pick up and clinic visit attendance, covering medication and transportation costs when indicated.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We included the following measures: 1) number of unique patients engaged with navigators, 2) number of unique patients who picked up a mobile buprenorphine prescription, 3) number of patients who attended a continuity clinic-based visit within two weeks.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): During the first six months, 234 unique patients engaged with a navigator and 60 were prescribed buprenorphine, of whom 58 (97%) picked up their medication and 53 (88%) completed the continuity visit.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A mobile buprenorphine prescriber embedded within a navigation program can increase initiation and retention in buprenorphine treatment. Key innovations included empowering navigators with lived experience to engage with patients not currently receiving treatment and connecting patients with a prescriber outside of the traditional healthcare system.

MODELING AND MANAGING ACCESS TO PRIMARY CARE SERVICES IN THE VETERANS HEALTH ADMINISTRATION

Susan Kirsh[2]; Steven D. Pizer[1]; Taeko Minegishi[1]; Kyle Barr[1]; Elsa Pearson[1]. [1]PEPReC, Department of Veteran Affairs, Boston, MA; [2]central office, veterans health administration, Pepper pike, OH. (Control ID #3385887)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Based on criteria mandated by the MISSION Act of 2018, VHA researchers assessed gaps in access to VHA primary care by identifying underserved VHA medical centers (VAMCs) struggling to meet their enrolled Veterans' demand for care.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Analyze the relationship between Veteran demand for and the supply of primary care in the Veterans Health Administration (VHA) to estimate the impact on access metrics.

Inform policy decisions around resource allocation using evidence-based methodologies.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Researchers developed a statistical model to identify VAMCs as underserved for primary care. 128 VAMCs providing primary care between FY14 and FY16 were included. The model included 19 variables to measure Veteran demand for and VAMC supply of care. To characterize Veteran reliance on VHA care, researchers included Veteran demographic characteristics, average drive time, and the local Health Provider Shortage Area score. To characterize the supply of VHA care, researchers included capacity and productivity measures.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Researchers measured success through the adoption of underserved scores as a way to guide resource allocation aimed at improving access.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): For each VAMC, the model estimated an adjusted predicted waiting time based on the 19 included variables and used this to calculate an underserved score. The 128 VAMCs were then ranked in relation to each other, by underserved score, to identify the facilities with the highest need. The top seven underserved VAMCs were highlighted by VHA leadership to receive national resources. The top twenty were required to submit action plans to VHA leadership demonstrating how they plan to respond with local resources.

The MISSION Act requires that VHA submit to Congress an annual report of the year's most underserved VAMCs and their action plans. The top seven VAMCs underserved in primary care were included in the June 2019 congressionally mandated report.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Statistical modeling demonstrated that access to VHA primary care can be estimated based on the relationship between Veteran demand for and VAMC supply of care. The underserved model is meant to guide VHA operational decisions. Several VHA offices are targeting new programs or resources based on our findings in an effort to improve Veteran access to primary care.

Annual reporting provides an opportunity to continually improve the model. We have done this ahead of the June 2020 congressionally mandated report, including more granular data sources and time trends. We also plan to expand this kind of statistical modeling to both primary care at VHA's community-based outpatient clinics and specialty care at VAMCs.

Other learning health care systems can use a similar methodology to identify areas of need among their facilities or served populations. Using an evidence-based approach for resource allocation allows for equitable distribution, constant refinement, and measurable success.

MODERNIZING CARE THROUGH PATIENT EMPOWERMENT: USE OF CONTINUOUS GLUCOSE MONITORING FOR UNDERSERVED PATIENTS WITH UNCONTROLLED TYPE 2 DIABETES

En-Ling Wu, Nathaniel E. Pena, Gabriela Alvarez, Roberto George, Elvira Carrizales, Rachel Cheung, Paola E. Seguil, Brenda Rodriguez, Carrie Kindleberger, Veronica Galvalisi, Andrew J. Van Wieren, Gillian Connolly, S. M. Yacht, Axa M. Anaya Noubleau, Sara B. Hunt, Maria Silva, Blanca Iriarte-Oporto, Sylvia A. Shokunbi, Maximiliano Luna, Marialuisa Doubek. Esperanza Health Centers, Chicago, IL. (Control ID #3369792)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Can CGM be accessible and efficacious for low-income adult patients with insulin-dependent diabetes and A1C > 9.0?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To determine impact of CGM on diabetes control, engagement in care, and qualify of life.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Esperanza Health Centers is a federally qualified health center with four clinics in Chicago's southwest side. In 2019 we served 16895 adults, of whom 46% were uninsured and 87% identified as Hispanic/Latino. As 1 in every 6 adult patients has type 2 diabetes, we are constantly developing new programs to help improve glycemic control. With increasing CGM use in the US, we decided to build upon our pre-existing registered nurse (RN)-led insulin titration program for patients on basal or mixed insulins. Managing insulin is especially difficult for patients and providers alike. Few patients are able to perform self-monitoring of blood glucose (SMBG) as frequently as desired due to busy schedules, discomfort with lancets, and cost of supplies. Without this information, providers struggle with how best to adjust insulin doses.

We therefore set out to study whether CGM use would be feasible, beneficial (and eventually cost-effective). RNs were trained in sensor placement, reader navigation and uploading/interpretation of reports. A qualifying patient with uncontrolled diabetes (A1C > 9.0 per Uniform Data System) requiring multiple daily insulin injections interested in CGM is referred by PCP to RN for additional education. Once CGM is approved (either via insurance prior authorization or clinic's CGM assistance program for patients who are uninsured or who have high-deductible private plans), patient has a non-billable office visit with RN for sensor placement and reader use instruction, followed by an additional visit within 10-14 days to review glucose trends.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We are examining change in mean A1C pre- and post-intervention (and whether change is sustained at 12 months), change in weight and rate of uncontrolled hypertension (proxy markers of behavioral modification), number of provider or nurse visits over 12 months (estimate of patient engagement/retention in care) and subjective reporting on quality of life measures (working to standardize pre- and post-surveys).

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): To date we have enrolled 28 patients and seen a mean reduction in A1C of 1.5%. The opportunity for patients and RNs to review glucose trends has helped tailor behavior modification and insulin doses, as well as provided insights into stressors affecting patients' health:

"She realized that she is missing her second injection of the day. We set alarms throughout the day that will help her with adherence."

"We figured out she was not injecting her insulin at all. I asked her how she was injecting and I noticed she was not removing the inner insulin pen cap."

"I spoke to them about safety concerns at home with son who is schizophrenic. It seems like he may have stopped medication and fell out of care."

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Innovations in medical technology can be accessed by and benefit underserved, low-income communities.

MODERNIZING PATIENT-CENTERED SCHEDULING THROUGH TEXT MESSAGE PRIMARY CARE APPOINTMENT REMINDERS FOR A LINGUISTICALLY DIVERSE PATIENT POPULATION IN THE NATION'S LARGEST URBAN HEALTHCARE DELIVERY SYSTEM

Amanda Johnson[1]; Jordan Berman[1,2]; Lynnette Mercado[1]; Kaushal Challa[1]; Theodore G. Long[1]. [1]Ambulatory Care, NYC Health + Hospitals, New York, NY; [2]Boost Services, Epic, New York, NY. (Control ID #3390764)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Missed primary care appointments lead to care gaps, lost revenue, resource underutilization, & decreased access.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Empower patients to cancel & reschedule appointments they can no longer attend

2. Empower practices to make informed decisions regarding same-day accommodations

3. Expand language access to reflect the population served

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : New York City Health + Hospitals (NYCH+H) is the public healthcare delivery system serving New Yorkers regardless of national origin or ability to pay. Its primary care footprint encompasses 11 essential hospitals & a 60-site federally qualified health center. On 7/22/2019 NYCH+H deployed a 3rd party automated appointment reminders solution to deliver SMS reminders to adult patients at Coney Island Hospital three days & one day before primary care appointments. Primary care is broadly defined, including visits with providers, nurses, financial counselors, & other team members. Patients without mobile numbers or who opt out of SMS reminders receive reminders through interactive voice response (IVR) or email if such details are available. The reminder prompts the recipient to confirm, cancel, or reschedule the appointment. SMS reminders are published in our system's top 14 languages, with 8 languages for IVR. Patient responses are integrated into the medical record & displayed to frontline staff. On 12/9/2019 the solution was expanded to include adult, adolescent, & pediatric primary care in three additional hospitals & one community health centers.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION):

- Missed appointment rate
- Patient engagement rate
- Language reminder concordance
- Opt-out rate

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED):

95,483 automated reminders were sent between 7/22 & 12/26/2019 (SMS=86.2%, IVR=12.61%, email = 0.13%). 24% of reminders received a response (confirmations=82.5%, cancellations=10.9%, reschedule or other help=5.2%, opt-out=0.5%). 96.4% of reminders were delivered in the patient's preferred language; 53.1% of messages were sent in a language other than English. Of the help requests, 77.2% required outreach from our centralized contact center; contact center agents were successfully able to reach the patient within two attempts 76% of the time. In Coney Island adult primary care, the missed appointment rate decreased from 26.9% to 20.8% between comparable 21-week time periods in 2018 & 2019.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Patients who receive primary care in large, urban public delivery systems overwhelmingly provide mobile phone numbers, which can be used to deliver interactive, automated SMS appointment reminders. This implementation coincided with fewer

missed appointments in the initial pilot practice. Accidental cancellations were the most common patient error. Providing language-concordant, gender-affirming reminders is essential to serving a diverse patient

population, though the cost & operational complexity of managing multiple languages is not yet adequately compensated in our current healthcare system or in the telecommunications industry at large.

NAVIGATING YOUR WAY TO TREATMENT: RESULTS FROM AN EMBEDDED BUPRENORPHINE CLINIC IN PRIMARY CARE

Irina Kryzhanovskaya, Valeria Gutierrez. Intern Medicine, UCSF, San Francisco, CA. (Control ID #3391247)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): With a high burden of opioid use disorder (OUD) in the area and difficulty accessing OUD treatment for our clinic population, we launched an embedded and navigator-managed buprenorphine clinic to streamline linkage of patients to evidence-based addiction treatment in primary care.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) To

increase access to treatment for patients with OUD in primary care

2) To enhance primary care capacity to treat patients with OUD in a timely manner

3) To expand the workforce to ensure clinic sustainability

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : We implemented a twice-monthly half-day buprenorphine clinic designed specifically to treat patients with opioid use disorder (OUD) and embedded it in a General Internal Medicine (GIM) outpatient practice. A patient navigator manages the clinic as the primary point of contact for referrals from the emergency department (ED), urgent care, inpatient teams, and outpatient practices. The clinic is staffed by a faculty primary care physician who has an x-waiver from the US Drug Enforcement Agency to prescribe buprenorphine for OUD. Outreach efforts are predominantly focused on patients already receiving their primary care at the GIM clinic housing the buprenorphine clinic. The buprenorphine clinic thus functions as an extension of the patients' care, encouraging them to seek addiction treatment in a known setting. To increase the number of clinicians who can follow patients evaluated in the buprenorphine clinic, a free and gift-card incentivized x-waiver training was organized for GIM faculty, nurse practitioners, and resident trainees.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): In the first year of the clinic, we aim to

-Improve access to buprenorphine consultation as quantified by filling two-thirds of appointment slots (i.e. 4 of 7) and ensuring an average reasonable time (<14 days) from referral to evaluation

-Increase the number of patient initiations on buprenorphine for OUD by 50% (from 8 to 12+/year)

-Double the number of x-waivered GIM clinicians (from 15 previously to at least 30)

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): In the first three months of launching the clinic, we made progress on all measures. We filled 70% of appointment slots (above target), scheduled patients on average 17 days from referral (30% scheduled <14d, approaching target), and evaluated 22 total patients for buprenorphine. Fifteen patients were either initiated or maintained on buprenorphine (at target). Seven residents, two nurse practitioners, and four faculty physicians have received their waiver since the clinic and trainings launched (28 total x-waivered, approaching target).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The creation of an embedded buprenorphine clinic in primary care, managed by a patient navigator, increases access to treatment for OUD. In the clinic's first three months, we have made significant progress toward our appointment and treatment goals and expect all numbers to ramp up to targets in upcoming months. Additionally, incentivizing clinicians to attend waiver trainings increases the likelihood that they will complete their certification and expand the pipeline of buprenorphine providers.

OPEN ACCESS IN A PUBLIC SYSTEM: USING ROLLING TEMPLATES TO IMPROVE CONTINUITY, ACCESS, AND NO-SHOW RATE

Hannah Jackson, Kaushal Challa, Njeri Micheu, Theodore G. Long, Andrew B. Wallach. Ambulatory Care, NYC Health + Hospitals, New York, NY. (Control ID #3390877)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Continuity is tantamount in providing quality and effective primary care; in such a large health system with 70 sites and more than 5 million ambulatory care visits each year, how do we improve access and increase the proportion of time that a patient is seen by their own primary care provider?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Improve continuity between patient and primary care provider (PCP) as measured by the percent of patients a provider sees in a day that are assigned to them as PCP

2. Lowering wait times to increase access for patients to see their PCP

3. Increase efficient utilization of provider's time by decreasing no-show rate.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : NYC Health + Hospitals is the largest public health system in the country, consisting of 11 hospitals and more than 60 community health centers serving more than one million patients and delivering more than five million ambulatory care visits each year. The majority of patients have public or no insurance. Using Bellevue Hospital as a pilot, we initiated a new scheduling system that utilized time-released appointment times, including a certain proportion of appointment slots that are saved for open access scheduling within a week. These appointments would become available for patient booking at pre-determined time points before an actual appointment date. Using access data, we established best-practice guidelines for the percentage of appointment slots that should become available at these different time points. We then measured continuity, access, and no-show rates before and after this initiation, all of which improved substantially with these changes. With the success time-release slots at Bellevue, we have expanded rolling template use to all 11 hospitals and 7 large community health centers across the city.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 1. Percent of patients seen by a provider that is part of their continuity panel every month

2. Wait time to appointment / Third-Next Available Appointment (TNAA)

3. No-show rate

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 1. Continuity – The frequency at which a patient saw their assigned primary care provider increased from 50% to 87%, with improvement being sustained for more than 14,000 visits over a six month time period.

2. Access – Appointment wait times decreased from 52 days to less than 14 days between January 2018 and January 2019. Wait times for follow-up visits are now less than one week.

3. No-show Rate – Relative decrease of 16% for no-shows for revisits.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): 1. Moving toward open access scheduling with rolling templates can work in a complex public healthcare system and, therefore, can also likely work in other ambulatory care settings

2. Improving continuity has a dramatic effect on decreasing wait times

3. Appointment templates should not be static and improving show rates through letting patients schedule appointments closer to when they want to be seen can vastly improve daily clinic utilization

OPTIMIZING AN EHR-BASED CONSULTATION PROCESS VIA DEVELOPMENT OF A "CONSULT COMMITTEE" AND CONSULT EVALUATION TOOL: A QUALITY IMPROVEMENT INITIATIVE

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): A major challenge in electronic health record (EHR) use is optimizing information exchange during the consult ordering process

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Describe implementation of an interdisciplinary "Consult Committee" to review and revise consult ordering menus and templates in the VA Connecticut Healthcare System (VACHS) EHR

Introduce a novel objective review tool to revise consult templates in accordance with best practice recommendations

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : An interdisciplinary committee was established to optimize the EHR based consult ordering process.

The "Consult Committe" consists of representatives from primary and specialty care and medical informatics. The committee convened monthly to review templates before and after re-design.

An 18-item "Report Card" was developed with elements based on best practice recommendations around EHR-based consultation ordering, to objectively evaluate and revise consultation templates. The consultation template is scored before and after revision, with components geared towards facilitating ease and time of entry and optimizing the quality of information conveyed.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): It was hypothesized that poor consult template design resulted in high rates of discontinued consults (baseline average discontinuation rate for our facility was 18.6%). Discontinuation rates per service were obtained for a ±60-day window around the revision go-live date for seven specialties.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Seven specialty consult menus and templates have been successfully modified. The discontinuation rates varied greatly for the 60-day period before (range: 7.0%-47.3%) and after (range: 8.0%-37.5%) revision. Individual specialties demonstrated mixed results, with only two specialties showing a reduction in consult discontinuation.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): It is likely that additional factors affect discontinuation, such as policy mandates on management of consult requests and scheduling. Most consultation requests are reviewed by a single designated specialty provider, resulting in significant inter-user variability. A 60-day window may also be insufficient to capture meaningful change in behavior. A broader set of outcomes should be used to measure the impact of this intervention.

The concept of consult optimization is likely to become more salient as healthcare systems shift toward capitated models and EHR-based ordering. It is well known that EHR generated administrative tasks contribute significantly to provider burn out, and optimizing information exchange can have a significant effect on efficiency of care and work-load.

Further study is needed to identify meaningful outcomes associated with consult redesign, including time- motion studies, accuracy and completion of pre-consult work-up, and qualitative analysis of provider satisfaction.

Use of a standardized tool to grade components of EHR ordering in accordance with best practice is generalizable to other healthcare systems and EHR platforms, although additional evaluation of the psychometric properties of the standardized review tool is needed.

OVERCOMING BARRIERS TO SCREENING FOR SOCIAL DETERMINANTS OF HEALTH: IMPLEMENTING SOLUTIONS IN HEALTH CARE

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Screening for social determinants of health is challenged by a lack of standardized tools, as well as increasing time and resource constraints in caring for patients with complex clinical, social, and behavioral needs.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Identify the challenges associated with implementing SDoH screening in health settings

2. Broaden knowledge of SDoH resources and available solutions for implementation

3. Apply resources available for SDoH screening in a case-based and practice-based learning approach

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Within our safety net hospital in an urban, academic center, we conducted PDSA interventions aimed at (1) exploring whether SDoH are being assessed by residents in the primary care clinic (PCC); (2) Identifying barriers to SDoH screening; (3) Comparing patients' reported adverse SDoH to resident physician perceptions of them.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Our SDoH initiative introduces and addresses common challenges to initiating SDoH screening in health care settings, while presenting useful solutions and a tool kit for implementation. Attendees will leave the session with: A written assessment identifying barriers to SDoH screening at their institution(s), including identified possible solutions (based on case presentations and generative discussions with small and large group members). A personal written SDoH action plan to overcome identified barriers.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): We utilized an SDoH screening tool adopted from Health Leads ToolKit administered to a convenience sample of all patients attending primary care appointments between 9/10/18-11/23/18. Written patient responses to the survey were shared with providers during the clinic visit, for review and action at the discretion of the resident PCP.

Of the 1,061 patient surveys completed, written SDoH resource-related handouts were provided to 26 patients (2.5%). Top 3 SDoH for patients: food insecurity, access to care, unemployment. Physician SDoH Perceptions Surveys were administered as an online survey. 54 of 98 surveys were completed (55.1% response rate). Per Residents: top 3 SDoH most commonly affecting their patients: lack of trasnportation, access to healthcare and housing instability. Comparing patients responses to residents, there is a massive discrepancy between what residents believe are patient's top SDOH and what patients believe are the top SDOH. Patient's #4 concern - social isolation, was not even ranked by residents. The most common reasons for not screening patients: include insufficient time (85.2%), not having the resources or tools to address barriers (70.4%), and not knowing how to screen effectively (48.1%). 77.8% of residents reported screening less than half of their patients for SDOH during clinic visits.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Understand challenges to SDOH screenings through our screening initiative to help identify key tools/solutions on how to start and/or scale SDoH screenings in their respective healthcare settings.

Attendees will form of an action plan equipping them with the tools to integrate SDOH screening within their healthcare system.

PATIENT SELF-TRIAGE AND DIRECT SCHEDULING FOR EXPEDITED INFLUENZA CARE

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): The cold and flu season leads to increased demand for appointments, resulting in delays in care for all patients, and difficulty in providing timely antiviral treatment to patients with influenza.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): We implemented a patient self-triage and direct scheduling module titled "Do I have the flu?" with the goals of providing personalized online triage recommendations to patients, and expediting care for patients with a high flu likelihood.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The Flu module was built using Epic Decision Tree and accessible through the patient portal. The symptom questions and triage algorithm were adapted from an influenza prediction model (Afonso et al. in 2012), and included questions related to complications and competing diagnoses. Upon completing the questions, patients are provided estimates of their likelihood of influenza (low, moderate, high), and care recommendations (self-care, immediate care, scheduled visit, advice nurse). Eligible patients can directly schedule in-person or video visits.

The Flu module was introduced to patients at two primary care clinics in San Francisco in December 2019, at the beginning of increased influenza activity. These clinics combine to provide ~1000 visits per month for flu-like symptoms. Clinic patients were sent two messages via the patient portal informing them that the module was available. Other patients in the health system could see the tool on the patient portal but were unable to use it.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Key metrics include access rates, completion rates, rates of antiviral treatment and visit rates. We also monitored the percentage of patients triaged into each category.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Between Dec 18th and Jan 10th, 393 patients attempted to access the module, of which 237 were part of the pilot group. Of these 95 (40%) completed the module. Seventy (72%) were female. Median age was 52 years (IQR 38-66). Forty-seven patients (49%) were low likelihood, 42 (44%) were moderate likelihood, and 4 (4%) were high likelihood of having the flu. Nineteen (40%) low likelihood, 29 (69%) moderate likelihood and 4 (100%) high likelihood patients were recommended to seek care immediately. In total, 56 of 95 patients (59%) followed the recommendations provided. The percentage of high, moderate and low likelihood patients who were diagnosed with influenza and received antiviral treatment were 75% (3/4), 12% (5/42) and 0% (0/47) respectively.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): First, with little advertisement, this module was accessed by an approximately 30% of patients with flu-like symptoms at these clinics, suggesting interest in getting triage advice through patient portals. Second, a large proportion of patients were triaged to seek care immediately, highlighing the tension between being conservative to avoid false negatives and recommending care only to those who really need it. This approach may lead to a lower percentage of patients following recommendations. Third, the algorithm was able to differentiate patients based on flu likelihood, allowing for specific patients to be targeted for expedited care.

PEELING BACK THE LAYERS: THE ROLE OF MASSAGE AND ACUPUNCTURE IN AN INTEGRATIVE PAIN MANAGEMENT PROGRAM IN A SAFETY NET CLINIC

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): While there is strong evidence to support the use of multimodal integrative chronic pain management, programs providing this service can be particularly complex to implement in resource-limited settings.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES):

Objective 1: To examine how each component of a multimodal, integrative program changed patients' pain- related outcomes in a public safety net clinic.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Data for this study were derived from the Integrative Pain Management Program (IPMP) at a community-based primary care clinic in San Francisco. IPMP is a 12-week core program that provides pain education, movement, and tools for pain self-management with optional additional sessions of acupuncture and massage.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Patients completed validated quantitative surveys about pain-related outcomes at the program's initiation, at the end of the program, and 3 months following the end of the program. We used mixed linear models to compare IPMP participants who received acupuncture and massage treatments during the program with those that did not.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Data were collected for 105 patients with initial surveys, 75 patients at the end of the study period and 28 patients at the three-month follow-up. For patients who received acupuncture and massage (n=88), scores of pain self-efficacy and pain catastrophizing trended down over the study period and reached significance prior to the three-month follow-up. Between group analysis indicated a statistically and clinically significant decrease in pain interference (Δ4.08, p=0.02) and increase in pain self-efficacy (Δ5.14, p=0.023) among patients who received massage and acupuncture. Although there were decreased scores for depression, anxiety and sleep disturbance, they did not meet our threshold for clinical significance. No significant improvements were observed for global physical health, physical functioning, or social satisfaction among patients who attended acupuncture and massage sessions.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): While the core integrative pain management program provided benefit to patients in an underserved setting, participation in additional acupuncture and massage sessions was associated with improvement in the domains of pain catastrophizing, pain interference and self-efficacy.

PERCEPTIONS AND FEASIBILITY OF HOSPITAL-LEVEL CARE AT HOME IN RURAL AMERICA: A QUALITATIVE AND SIMULATION ANALYSIS

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Rural hospitals are closing in record number. Hospital-level care at home in urban areas delivers low-cost, high-quality, safe care, but could similar "home hospital" care can be delivered in rural areas?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Determine how home hospital care is perceived by patients and clinicians in rural America. Determine the preliminary feasibility of delivering acute care at home that would traditionally be delivered in a hospital.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : We performed semi-structured interviews of rural clinicians throughout America, focus groups with clinicians experienced with care in rural Utah, and semi-structured telephone interviews with patients living in rural Utah. We performed "mock admissions" in rural Utah with chronically ill patients who had previous hospitalizations. These patients were asked to feign acute illness and were "admitted," "rounded on," and "discharged," multiple times to allow for iterative rapid cycle improvement. The rural home hospital (RHH) model included a remote physician guided by a nurse or specialized paramedic, advanced point-of-care testing, and continuous biometric monitoring, all facilitated through mobile satellite connectivity as needed.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Elicit patient and clinician perspectives surrounding RHH. Correct operation of workflows, technology, and personnel during RHH mock admissions.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Patients expressed challenges when accessing acute care including lengthy travel, lack of reliable transportation, and concerns with the quality of care at their local hospital. Most rural clinicians and patients had a positive perception toward the RHH model. Rural clinicians felt it could deliver much more timely care; rural patients were open to receiving acute care in their homes. Potential barriers included rural hospital and physician politics, cost, safety issues surrounding drug abuse, and the availability of skilled human resources.

Several iterative improvements were made to the RHH model during the mock admissions. For example, the use of a tablet arm was introduced and data transfer limitations were noted for the portable satellite connection. Clinicians and patients that participated had positive experiences and said they would recommend RHH. A clinician noted, "when you can get the patient in their environment and can see how they live…I just think this is better. The environment tells me a lot about the patient beyond what them sitting in a clinic can tell me." A patient noted, "…you're in familiar surroundings…and that makes a difference when you're really sick."

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Pending further study, the RHH model could represent a response to America's struggling rural hospital system. Rural

communities with closed or threatened hospitals could adopt a RHH model to deliver care, potentially allowing for lower-cost, high-quality acute care.

PHYSICIAN PERSPECTIVES ON HOSPITALIST CO-MANAGEMENT ON AN INPATIENT PSYCHIATRY UNIT

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Patients with serious mental illness have a higher burden of common medical conditions and there is no "best practice" model for management of co-morbid medical illness on inpatient psychiatry units.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES):

Widely used hospitalist co-management models for surgical inpatients have proven to decrease complications and improve provider satisfaction. We developed a similar co-management model for our inpatient psychiatry unit. We gathered qualitative data from hospitalists and psychiatrists working on the psychiatry unit with the objective to refine our co-management model, assess provider satisfaction, and ultimately improve patient safety.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The hospitalist service has provided a co-management physician for the inpatient psychiatry unit at the VA Medical Center in Philadelphia since November 2018. The hospital is an academic-affiliated, urban, regional referral center for a VA Integrated Service Network and has a closed, inpatient psychiatry unit with a typical census of 20-35 patients. Patients can be admitted to the unit through the Behavioral Health Emergency Care Unit, from an outside hospital, or as a transfer from medicine. Since its inception, this co-management role included evaluating all new admissions to the psychiatric floor and responding to consult questions from the four inpatient psychiatrists. There has been considerable practice variation among hospitalists.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Form interviews were conducted with eight physician stakeholders. Questions were designed to elicit provider perspectives on changes in patient safety, provider satisfaction, and delineation of roles and responsibilities for providers on the unit since the inception of the co-management model. The interviews were de-identified, transcribed, and the responses analyzed.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): There was universal agreement that the establishment of this hospitalist co-management model improved medical care on the unit and provider satisfaction. Moving forward, all providers desired hospitalist ownership of medication reconciliation, order entry, specialist consultation, and triage decisions. Psychiatric providers voiced a need to define standard practice for documentation and communication of hospitalist interventions. There was improved comfort with managing patients with greater medical complexity at the physician level, but concern that medical acuity could overburden nursing resources. Lastly, all respondents supported shared ownership of patient care, rather than a strictly consultative model.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): This hospitalist co-management model was intially developed in response to a perceived increase in medical complexity among patients on our psychiatry unit. By responding to stakeholder feedback, we are moving towards true co-management and away from a consultative attitude. This model is applicable to hospitals with inpatient psychiatry units. However, as physician co-management services expand, the practical limits of nursing and psychiatry unit resources must also be considered.

PHYSICIAN TO PATIENT COMMUNICATION USING A PATIENT-CENTERED AUDIT SYSTEM

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): We aim to improve physician- patient communication by using a patient-centered audit system that evaluates physician-patient communication and provides physicians feedback in real time.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) To improve the overall quality of communication between patients and physicians in real time

2) To improve performance in the *Communication with Doctors* domain on the HCAHPS survey to >90% "Top Box" by June 30, 2020

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : We developed a framework for physician-patient communication, called iSPA, (I-introduce yourself, S-sit down, P-explain the plan for the day and for discharge, A-ask what questions the patient has). We are currently training all physicians in the iSPA technique with plans to implement the framework hospital-wide by end of 2020. To assess the efficacy of iSPA on the quality of communication perceived by patients, we created an audit tool completed by the patient. This form asks patients to indicate if their provider completed the four iSPA behaviors during an encounter, and to rate their overall satisfaction with physician communication. We randomly select hospitalized patients to complete a paper-based audit form after the physician encounter occurs.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We are measuring the percentage of physician-patient encounters in which all four iSPA elements are successfully completed. In addition, we are measuring the average patient satisfaction rating of physician-patient communication. We will also measure the *Communication with Doctors* domain on the HCAHPS survey.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): We collected baseline communication data via the patient audit tool in October 2019 on the medical-surgical units in our public teaching hospital. At baseline only 56.4% of audited patient encounters had all four iSPA elements present (Table 1). With the intervention, we saw that 69% of audited patient encounters included all elements of iSPA in December 2019 (Table 2). Similarly, there was improvement in reported patient satisfaction with physician communication; the rate went from 4.16/5 in October to 4.69/5 in December (Table 1 and 2).

We anticipate an increase in HCAHPS over time as we continue the iSPA intervention towards the end of June 2020. Our initial HCAHPs top box score in the *Communication with Doctors* domain was 89.4% in October 2019, and given lag in return of surveys for our institution, we plan to trend over time.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): We developed a patient audit tool to evaluate the use of the iSPA communication technique, and the overall quality communication between patients and physicians in real time. Preliminary results of our project show how the combination of structured communication and consistent, real-time audit and feedback over time can improve patient satisfaction. We hope that over time this improvement in the audit data translates to improvement in our top box score in the *Communication with Doctors* domain. If successful, this project illustrates both a successful model of patient-patient communication, and a method of engaging patients in patient satisfaction improvement efforts.

POINT-OF-CARE DIABETES MONITORING REDUCES CLINICAL INERTIA

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Lack of hemoglobin A1c results at clinic visits can lead to clinical inertia in diabetes care.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Improve reliability of diabetes monitoring by medical assistant-ownership of hemoglobin A1c testing at the point-of-care.

2. Increase frequency of appropriate intensification of diabetes therapy.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : In our urban academic primary care clinic during a one-year baseline, our physicians failed to appropriately order 30% of A1c labs for patients with diabetes at clinic visits. We implemented point-of-care A1c (POC A1c) testing by medical assistants (MA) at visit check-in, triggered by electronic medical record (EMR) reminders.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We tracked the rates of MA ordering of POC A1c and physician medication intensification or referral to diabetes support programs in response to elevated A1c values. We compared the rates pre- and post-POC A1c implementation.

Unstructured interviews with clinicians were used to determine barriers to treatment intensification pre- and post-POC A1c implementation.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): MA POC A1c testing at clinic visit check-in improved rates of diabetes monitoring to greater than 95% over four months. Prior to POC A1c, physicians received A1c results after the clinic visit and attempted to communicate recommendations to patients via phone call, which posed many barriers. Availability of test results during the visit facilitated meaningful discussion of diabetes management and treatment intensification or referral. Rates of appropriate treatment intensification or referral following traditional A1c versus POC A1c in 397 patients showed 46.2% and 64.0% ($p < 0.0005$), respectively.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Implementation of POC A1c required coordinated leadership and infrastructure. Our laboratory certified the POC A1c equipment to comply with regulations and trained staff in daily calibration and testing procedures. Health system technology specialists facilitated immediate upload of results into the EMR. Staff leadership created a standing order to allow MAs to test A1c's by protocol. To engage MAs in the new process, competitions for highest rates of A1c testing completion were held between clinics. A multidisciplinary workgroup determined the most efficient workflow and standardized communication of results in the EMR. Though POC A1c is approximately four-times as expensive as lab A1c testing, the clinic's diabetes control rate has improved substantially due to improved reliability of monitoring and reduced clinical inertia in treatment.

PRELIMINARY FINDINGS FROM A PILOT OF AN EMBEDDED IMMIGRATION ATTORNEY WITHIN A PRIMARY CARE SETTING FOR IMMIGRANT AND REFUGEE PATIENTS

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): We seek to evaluate the impact of an embedded immigration legal clinic in a safety net hospital in Boston on immigrant patients' understanding of their immigration legal options, psychological distress, and general health status.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The goal of the legal clinic is to connect immigrant patients with resources to address immigration legal needs within a healthcare setting. The primary objective of this pilot study is to assess change in participants' knowledge of their legal options, in their reported psychological distress and in reported general health status.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The immigration legal clinic is embedded within a clinic that primarily serves immigrant and refugee patients. This clinic has a full-time navigator with expertise in immigration legal issues, who provided referrals to community-based immigration legal resources. Despite this intervention, only 37% of patients referred to community resources were able to secure legal representation. Therefore, we introduced a pilot intervention of embedding an immigration legal clinic staffed by an attorney, who took on cases for pro bono representation or pro se support.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Patients who received consultation were recruited to participate in an evaluation study that included demographic information, a K6 distress scale, self-rated understanding of immigration legal options and self-rated general health status. Following the consultation, participants rated their level of understanding of immigration legal options. Between 60-90 days after participation in the legal consultation, participants again rated their level of understanding of their immigration legal options and completed the K6 psychological distress scale.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Between June and December 2019, 30 participants consented to participate, and 7 reached their 60-90 day follow-up. Participants were from 18 different countries, with the highest proportions hailing from Haiti (18%) and Guatemala (14%). Of those who provided their immigration status, 33% were undocumented, 19% were on a visa or temporary work permit, 24% had a green card, 19% were citizens and 4% had temporary protected status. Following their legal consultation, 3 participants (13%) were taken on for full representation, 1 (4%) was taken on for pro se support, and 20 (83%) received general advice and counsel around their immigration legal concerns and the remainder had a brief service provided during the clinic. We found a significant improvement in participants' understanding of their legal immigration options between before the consultation and immediately

after (Mean score pre-consult=5.21, Mean score post-consult=8.5, p<0.0001). We anticipate that we will obtain 60-90 day follow-up data which will be presented in this Abstract if accepted.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): This study shows that embedding immigration legal services in primary care can lead to a significant increase in patients' understanding of their immigration legal options through one meeting with an immigration attorney.

PRIMARY CARE PATIENTS' PERCEPTIONS OF CHAPLAINS AND THEIR POTENTIAL IMPACT IN THE OUTPATIENT CLINIC

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): What role do patients perceive a chaplain can play in a hospital-based outpatient primary care clinic?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Beginning in August 2019, the Duke Outpatient Clinic began an outpatient chaplain pilot with a clinical pastoral care (CPE) intern working part-time in the clinic. The aims of the program were to (1) provide an effective outpatient learning CPE experience, (2) better identify patients' and staff members' needs for spiritual care, and (3) Establish a protocol for outpatient chaplaincy

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The Duke Outpatient clinic is an urban, hospital-based teaching clinic that provides primary care for many low- income patients. Clinic services include social work, pharmacy support, and care management for medically and psychiatrically complex patients.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We designed and implemented a survey of patients, Surveys were collected electronically on tablets in the waiting room during several clinic sessions. Patients were asked about (1) perception of the level of spiritual support from the medical team (2) prior experiences with chaplains, (3) factual knowledge about a chaplain's role, and (4) perception of chaplains' assistance

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 102 individuals responded (78 % were patients and 22 % were caregivers). While 81 % of patients reported feeling supported by the medical team, only 17 % said that the team had asked about their spiritual needs. A significant minority of patients (23 %) had previously met with a chaplain and all but one reported positive experiences. Patients had significant gaps in their understanding of a chaplain's role. Fewer than 20 % of patients were aware that a chaplain is not primarily present for giving last rites, inviting people to their religion or "saving people." Patients did see chaplains as generally a positive presence. 77 % agreed that health care team member may call a chaplain for any patient. A plurality of patients (40 % or more) stated that they would want a chaplain to assist them with grieving, provide a listening ear, or pray with them.

Fewer than 20 % of respondents said they would want a chaplain to help with making decisions about mental health, physical health, or help them resolve an interpersonal conflict. We are currently gathering similar survey input from residents, attendings and all clinic staff. Since August, our chaplain intern has designed and led a grief support group, and been conducting provider-triggered one-on-one interventions with patients.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Chaplains provide spiritual support to patients from a full range of religious and non-religious backgrounds and do so in support of the medical team. The outpatient clinic offers a unique opportunity to help patients navigate medical care. Based on our findings, key targets are: (1) educating staff and providers on ways to invite discussions about patients' spiritual needs, (2) clarifying misconceptions about chaplains' role and training and (3) develop protocols for common triggers for chaplain care in the outpatient setting.

PRIMARY CARE PROVIDER UTILIZATION OF EMBEDDED AND ELECTRONIC CONSULTATION IN A LARGE, INTEGRATED HEALTH SYSTEM

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Primary care providers (PCPs) manage increasingly complex panels. Implementing co-management infrastructure to support specialty access can help ensure timely care.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Our large integrated health system implemented both embedded and electronic consultative services within our practices to facilitate timely access and support co-management between specialty services and PCPs.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Electronic consultations to 21 specialties were implemented in the electronic medical record across 47 outpatient community and academic primary care sites within the Cleveland Clinic Health System in 2018, enabling providers to obtain specialty guidance without the long wait times frequently associated with in- person appointments. In the same timeframe, additional embedded primary care consultative resources—social work, behavioral health, and pharmacy became accessible telephonically or during primary care visits.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We included PCPs in our sample if they placed >10 consult orders in 2018. For each clinician, we identified the number of electronic and embedded consult orders. Providers were identified as adopters if they ordered >1 electronic or embedded consult and "sustained users" if they ordered >2 consults across two quarters. We used mixed- effects logistic regression models to estimate the association between adoption and sustainment of electronic and embedded consults and provider and panel characteristics, accounting for clustering by practice site.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Our study population included 267 physicians and 55 nurse practitioners/physician assistants, with 38% from Family Medicine and 61% from Internal Medicine. The majority of providers were female (56%), with a mean 16 years since training and an average 1332 empanelled patients. Fewer physicians adopted electronic onsults than other embedded consultative services. Almost half (44%) adopted all consult services. In the adjusted regression model, the odds of adopting all consult services increased 7% for every additional 100 patients in a provider's panel (95%CI: 1.02-1.12) and increased twofold for Family Medicine vs Internal

Medicine providers (95%CI: 1.09-3.83). Among adopters, 70% sustained electronic consult use, 69% sustained pharmacy, 74% sustained social work, and 29% sustained all consults. In the adjusted regression model, the odds of sustaining all consults increased 7% for every additional 100 empanelled patients (95%CI: 1.01-1.13) and increased twofold for female vs male clinicians (95%CI: 1.03-5.33).Panel complexity was not significantly associated with provider adoption or sustainment.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A majority of physicians adopted electronic or embedded consultative resources in the first year, with variation in uptake by department type, panel size and provider gender. There remains substantial room for growth. Future work will further define effects of provider panel characteristics and team composition on uptake of these panel management resources.

PROACTIVELY MANAGING SOCIAL DETERMINANTS OF HEALTH: USING A MOBILE TECHNOLOGY PLATFORM TO SCREEN FOR SOCIAL NEEDS AND REFER PATIENTS TO COMMUNITY RESOURCES

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Can a community Health Information Exchange (HIE) use mobile technology to screen patients for social determinants of health (SDoH) needs and connect those in need with community resources?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Establish a protocol for collecting protected health information (PHI) from patients through their smartphone. Develop a technology infrastructure based on an HIE for SDoH needs screening.

Deploy a mobile screening workflow to identify SDoH needs, connect patients with community resources to meet identified needs, and provide a feedback loop to clinicians

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : In 2016, the Centers for Medicare & Medicaid Innovation (CMMI) awarded 32 cooperative agreements for the Accountable Health Communities (AHC) nationwide, with the goal of assessing the impact of widespread screening and intervention on 5 specific SDoH needs, including housing instability, food insecurity, transportation needs, utility needs, and safety/interpersonal violence.

In Oklahoma, the Route 66 AHC Consortium led by MyHealth, a local non-profit HIE, found that clinicians struggled to incorporate SDoH screening into their workflow. We developed a novel solution that leveraged HIE and mobile technology to screen patients during clinical intake. The local electronic health record (EHR) sends an automated message to MyHealth, which, in turn, sends a text message to the patient's phone. The message includes a secure link to the AHC Health-Related Social Needs (HRSN) screening tool.

Patients with needs receive a follow-up phone message with a community resource summary (CRS) and tailored referrals to local resources. The CRS typically provides the patient three options: (1) a resource vetted by local partners; (2) a state or national resource; and (3) a resource near the patient. Medicare and Medicaid patients with at least two ER visits in the preceding year are also assigned a personal healthcare navigator. Providers receive secure online reports about their patient panels. This SDoH program qualifies practices for their CMS Merit Incentive Payment System (MIPS) requirement and is an approved methodology for the Comprehensive Primary Care Plus (CPC+) Program.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We use several process metrics to assess the program: (1) practice participation rates; (2) message delivery rates; (3) patient response rates; (4) positive screening rates; and (5) patient acceptance rates.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Between August 2018 and December 2019, MyHealth enrolled 90 Oklahoma practices. MyHealth sent 541,813 SDoH screening messages to 265,487 unique patients; 450,156 (83%) were successfully delivered. 58,480 (13%) patients completed the SDoH screening and 24% of those screened positive, which varied by payer source.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Patient-facing smartphone-based screening is a workflow-compatible innovation to efficiently screen large populations. The HIE provided a platform to automate steps, reduce staff workload, and accelerate clinician adoption. To maximize patient response rates, it is crucial to engage providers and staff in the process.

PROSTATE CANCER SCREENING: IMPLEMENTATION OF A SHARED DECISION-MAKING TOOL FOR PATIENT CONVERSATIONS

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Conversations regarding risks and benefits of prostate cancer (PCa) screening are important in delivering optimal patient care but providers need guidance to cover the salient points of PCa screening discussions.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): -To embed a previously created PCa conversation tool into the electronic medical record (EMR) in our health system to improve PCa screening discussions in primary care.

-To create a best practice alert (BPA) with a link to the conversation tool for men presenting for a primary care office visit who would be eligible for a PCa screening discussion

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Embedding the BPA into outpatient EMR for any man age 55-69 years visiting an internal medicine or family medicine clinic for an annual physical examination within the Cleveland Clinic Health System (CCHS) without a PSA within the last five years. If patients meet the criteria, a best practice alert prompt is activated during the office visit with a link to a conversation tool for PCa screening, as well as the US Preventive Services Task Force PCa screening infographic.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The Shared-Decision Making (SDM-9) 9 questionnaire for patients and clinicians was used to score the engagement in the decision-making process (score 0-45). Tracking with the EMR for BPA use will be performed to analyze conversation tool adoption. The number of prostate specific antigen (PSA) screening tests ordered will be tracked at 6 and 12-months after rollout to all primary care practices to analyze impact.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Creating the BPA and implementing the conversation tool required work with multiple health system informational technology teams. The implementation process required over a year before becoming fully functional. The conversation tool and BPA are now live within one pilot primary care site in the CCHS. A pilot study has currently recruited 13 patients utilizing the conversation tool at the implementation site and 4 patients at a comparison site. Surveys of both patients and clinicians regarding shared decision making have been completed and show both providers (mean=37.2) and patients (mean=38.9) score above the mean regarding engagement in a shared decision when using the conversation tool.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Implementation of an EMR based BPA and PCa screening conversation tool is feasible but requires a lengthy process of internal approvals. Utilizing an EMR based BPA can prompt the use of a conversation tool to improve patient-clinician communication around PCa screening.

EMR BPA alerts for PCa screening discussion when coupled with a conversation tool demonstrate benefits for engagement in shared decision making for both providers and patients.

PROVIDERS ARE PATIENTS TOO: PRIMARY CARE APPOINTMENTS FOR INCOMING INTERNS

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): A hole in the resident wellness movement—lacking a residency program-based initiative to standardize and exclusively schedule time for interns to receive primary care.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): -The PCPAI (Primary Care Provider Appointment Initiative) arranged an initial primary care appointment for interns during orientation week, prior to the inception of clinical responsibilities.

-Sought to directly address the healthcare needs of residents and also explicitly signal to them that their own health is important to the residency program.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : At one academic hospital residency program, all 144 incoming interns (representing 17 specialties) were invited to participate. Interested interns attended individual PCP appointments held at predesignated times during orientation and did not conflict with other orientation or learning activities.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): An electronic survey was administered to all incoming interns and the participating PCPs approximately two weeks following the scheduled PCP appointment date.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Among the 71/144 (49%) interns who responded to the survey, 52% purposed their visit as an important introduction for future appointments, while 15% primarily requested prescription refills. Ninety-nine percent recommended that the initiative be offered again in the future. Seventy-one percent stated that participating in the PCP Initiative definitely/probably led to improvements in their self-care and 76% indicated that participating definitely/probably made them more conscious of their health and well-being.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): PCP visits arranged by the residency program during protected time was met with majority intern participation, positive survey comments, and strong support to continue the initiative. A majority of respondents recommended expansion into services such as mental health, especially relevant for a physician resident population. Primary care is of value and those who care for others must also be cared for themselves.

PROVIDING MEDICATIONS AT HOSPITAL DISCHARGE DECREASES READMISSIONS

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Medication nonadherence at hospital discharge is a huge driver for readmissions and poor health outcomes, however, there are limited studies evaluating if providing medications prior to discharge will help readmission rates.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Our study aims to analyze how healthcare systems providing medication at discharge can help readmission rates by eliminating the financial and travel barriers to obtaining medications. We also analyze the effect of readmission rates by diagnosis such as COPD, CHF, pneumonia.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : We implemented a multidisciplinary "Meds to Beds" program at Emory University Hospital Midtown. The "Meds to Beds" program provided medications to patients prior to discharge and enrollment was determined by physicians and social workers. In addition, our social services program paid medication copays for under- or uninsured patients for 30 to 90 days using social services funds. This retrospective study compared outcomes of hospital medicine service patients discharged home from Emory University Hospital Midtown between June 2018-May 2019 enrolled in "Meds to Beds" and social services program (n=531) to those who were not (n=6528).

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Primary outcome was 30-day readmissions and secondary analysis was of 30 day readmissions by admitting diagnosis. Measure of success was a statistically significant decrease in 30 day readmission rates.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Of 7059 HMS patients hospitalized, 739 participated in Social Services program, 714 were in Meds to Beds program, and 531 participated in both. Thirty-day readmissions decreased from 15.5% for patients with no intervention to 11.7% for patients receiving both Meds to Beds and Social Services interventions (p=0.02). Thirty-day readmissions were 12.9% for patients in the Social Services program only (p=0.07 compared to patients with no intervention). Thirty-day readmissions significantly increased between patients with no

intervention and patients in the Meds in Hands program only (15.5% to 18.6%, p=0.03). Secondary analysis by admission diagnosis showed non-significant differences in readmissions.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our study demonstrates that healthcare systems paying for and delivering medications to bedside in uninsured/underinsured patients decreased readmission rates with a relative risk reduction of 3.8%.

QUALITY IMPROVEMENT OF HYPERTENSION MANAGEMENT WITH SINGLE-PILL COMBINATION ANTI-HYPERTENSIVE MEDICATIONS IN INTERNAL MEDICINE CLINIC

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Only 68% percent of internal medicine clinic patients' most recent ambulatory blood pressure (BP) measurement was within goal, in spite of available effective therapies.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Develop a standard workflow to identify patients with uncontrolled hypertension (HTN) who may be appropriate for single-pill combination (SPC) anti-hypertensive medication therapy.

2. Promote SPC medications as a HTN management option.

3. Improve HTN control at the population level within clinic.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The Internal Medicine Clinic (IMC) cares for over 12,000 patients. The practice includes attendings, residents, and advanced practice providers. The IMC HTN registry includes 4790 patients. HTN control is defined as having the most recent BP <140/90 with the exception of BP <150/90 for patients age 60-85 without diabetes. This intervention was based on a program at the Kaiser Permanente Northern California Health System involving development of an evidence-based practice guideline and promotion of SPC therapy. Multiple Plan-Do-Study-Act (PDSA) cycles were conducted.

We developed standard work using a report from the HTN Registry to identify patients scheduled in clinic who may be appropriate for SPC therapy. A care coordinator was trained to use the HTN Registry report to identify SPC-appropriate patients on a weekly basis and to flag them on the schedule.

We educated providers in person and via email. We collated a list of SPC regimens covered by common insurance formularies and made it available in provider workspaces for reference.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Process measure: Number of SPC prescriptions per month.

Outcome measure: Percent of patients in the HTN registry at blood pressure goal.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): In the year prior to implementation of the program, September 2018-August 2019, the average number of SPC prescriptions was 16/month. Post-implementation in September 2019-December 2019, the average number of SPC prescriptions increased to 39/month. To date, 278 patients have been flagged for SPC therapy with 159 new SPC prescriptions during this time. The percent of patients in the HTN registry at goal has remained unchanged so far at 68%. However, not all patients started on SPC therapy have had follow up visits to date. Feedback was collected from stakeholders with a survey. Forty IMC clinic providers responded. Most providers (74.4%) had seen the SPC notifications, and 42.5% found them helpful to their clinical decision making. The most commonly identified barriers to prescribing SPC medications were concerns about insurance coverage/cost and limited flexibility of available doses of SPC medications.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): This quality improvement project with multiple PDSA cycles showed an increase in SPC prescriptions via provider education, spread of information on cost and insurance coverage, and visit-based prompts to consider SPC therapy. So far HTN control has remained flat in the population. This likely reflects that many of the patients have not yet had follow up, and that multiple other drivers impact population HTN control.

REDUCING INAPPROPRIATE PPI USE AT LOCAL VA

Roger D. Struble[1,3]; Carly Kuehn[2,3]; Iiro Honkanen[1,3]; Behnam Laderian[1,3]; Syndey Bowmaster[1,3]; Amanda Heuszel[1,3]; Noah Williford[1,3]; mackenzie hines[1,3]; Leslie Brettell[3]. [1]Internal Medicine, University of Iowa Hospitals and Clinics, Coralville, IA; [2]Internal Medicine, University of Iowa, Iowa City, IA; [3]Iowa City VAMC, Iowa City, IA. (Control ID #3392020)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Adverse outcomes from polypharmacy are pervasive in medicine with growing concern about adverse events with inappropriate long-term PPI use

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Decrease the number of inappropriately prescribed PPIs in the Internal Medicine (IM) Resident Continuity of Care (COC) clinic at the Iowa City VA Medical Center (VAMC) from 12.9% to below 10% over 3-month period.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : All patients in the IM resident COC clinic at the Iowa City VAMC with active PPI prescriptions were identified. Patients with appropriate use of long-term PPIs on their problem list based on American College of Gastroenterology approved conditions (included 54 ICD-10 codes) were then excluded. Interventions included an educational presentation and a detailed email of de-prescribing strategies sent to all COC residents (N=2,700 patients). Secondly, over 3 months, eligible patients' charts were reviewed weekly and if a patient had a clinic appointment, PPI prescriptions were "flagged" in the CPRS system. The flag prompted a push alert to the provider with expectations to discuss de-prescribing strategies that week. At the end of the 3-month period, medical records were reviewed. This study was deemed HSRD exempt by the VAMC IRB.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The project was evaluated pre and post-intervention by percent of COC patients on PPI without an appropriate indication for PPI use. A secondary measure of success was the number of patients on a decreased dose of PPI. A balancing measure was the number of patients placed back on PPI after attempted deprescribing.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 350 patients of 2,700 were identified without an appropriate indication on their problem list. 101 patients were flagged over a 3-month period before a clinic visit. Of those 101 patients, 15 met appropriate criteria with documentation adjusted by provider. 46 patients were attempted on a de-prescribing strategy, 10 were unsuccessful and placed back on full dose PPI. At the end of the study period, 29 were off a PPI completely, 11 were on a reduced dose which accounted for 42% of patients targeted. Our percentage of potentially inappropriate PPI prescriptions reduced from 12.9% to 11.6%.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The number of inappropriate PPI prescriptions was reduced via a targeted approach of patients most likely to benefit from de-prescribing strategies. We were not able to reach our aim, but 42% of targeted patients had doses reduced and started on de-prescribing process and providers with increased awareness may decrease PPI use in future. Limitations of the study were finding the right way to 'alert' the providers and ability to target only 101 of 350 eligible patients during the 3-month period. Next steps may be to involve pharmacy as they are doing a similar project in a neighboring clinic CBOC inspired by this PPI de-prescribing work, or to roll out a similar project with another medication target for de-prescribing.

REDUCING MISSED APPOINTMENTS IN PATIENTS WITH LIMITED ENGLISH PROFICIENCY

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2**STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE):** Work by our group previously showed a higher percentage of missed appointments in patients with limited English proficiency(LEP) than in English speaking patients, and we identified a salient gap in practice as current automatic appointment reminders to all patients are in English.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Using evidence from several studies demonstrating personal reminder calls are effective in increasing attendance, we proposed a quality improvement project with an aim to reduce missed appointments for patients with LEP using personal reminder calls instituted by language congruent interpreters.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Missed appointments were defined as those neither attended by the patient nor previously canceled. During the 1 year intervention period, interpreters called patient using language congruent services the day before their primary care appointments. When calling patients, they informed the patient of location, date, time of their appointment.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Outcome measures were attended appointments. Total number of no shows, and attended appointments were calculated one year prior to and one year post intervention.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Our preliminary results (data over 6 months) show an increase in attended appointments after interpreter reminder calls. Prior to the intervention, 80.5% of patients attended their appointment, and after the intervention 90.6% ($p<0.00001$). The no-show percentage decreased from 19.5%, to 9.37% percent of total appointments.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A targeted phone-call in a patient's preferred language can increase appointment attendance for patients with LEP. We believe this work is critically important to improve language-congruent services and increase access to care for the LEP population and will benefit other clinics with similar patient demographics.

REDUCING UNNECESSARY INSULIN USE FOR INPATIENTS WITH WELL-CONTROLLED TYPE II DIABETES

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): There is unnecessary inpatient insulin use in patients with well-controlled type II diabetes.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Evaluate the implementation of a novel inpatient diabetes management order set for well-controlled Type II diabetics with A1C of ≤ 8 and only prescribed oral hypoglycemics.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : It is common practice to discontinue oral diabetic medications when patients with type II diabetes are admitted to the hospital. Traditionally these patients are treated with either sliding scale insulin (SSI) or basal bolus insulin (BBI) regimens. Despite the American Diabetic Association guideline recommendation to withhold initial insulin use on type II diabetic patients with a hemoglobin A1C of ≤ 8 who are on oral antihyperglycemic agents alone (cohort group), most of these patients admitted to the Salt Lake City Veterans Affairs Medical Center (SLC VAMC) were prescribed insulin on admission. A retrospective review at the SLC VAMC from November 2018-January 2019 evaluated patients in this cohort. Approximately 25% (23/91) used zero units during their entire inpatient stay. Additionally, 4% (4/91) of these patients used 1 unit of insulin during their stay and 32% (21/91) did not have one blood glucose level >180.

These findings led to the initiation of an updated order set that attempted to limit unnecessary SSI or BBI for well-controlled type II diabetic patients. Implemented in July 2019, the new order set directed providers to order only finger stick blood glucose checks (FSBG) before meals and at bedtime in this cohort. SSI or BBI was only initiated after two readings of >180mg/dl or one above 250mg/dl. This is a post-implementation analysis of that intervention.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 1. Average daily units of SSI for cohort in the pre and post intervention.

2. Unnecessary SSI ordered for cohort pre and post intervention.

3. Average daily hyperglycemic events (FSBG values >180 mg/dl per length of stay) for cohort pre and post intervention.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Average daily SSI use per cohort patient decreased from 2.60 (65.02/25) pre intervention to 1.65 (106.9/64) post intervention. Unnecessary SSI initiation for cohort decreased from 68% of admissions (17/25) to 32% (21/64) post intervention. Average number of times patients had hyperglycemic events over their length

of stay was .88 (22.19/25) pre intervention group vs .75 (48.36/64) post intervention. A difference that is not statistically significant with a Z score of 1.34 with subsequent p-value of 0.177.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Although common practice to start SSI on admission, patients with well-controlled diabetes can be managed safely with FSBG on admission and then SSI or BBI if needed. The brief analysis of this intervention demonstrated decreasing insulin usage without an increase in hyperglycemic events.

RESIDENT-LED GROUP ANNUAL WELLNESS VISITS IN AN UNDERSERVED, PRIMARY CARE CLINIC

Elizabeth Bloemen, Meara A. Melton, Matthew Minturn, Benjamin Trefilek, Cara E. Saxon, Anjali Dhurandhar. Internal Medicine, University of Colorado, Denver, CO. (Control ID #3361687)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): How can an underserved primary care clinic with resident providers implement a group-style annual wellness visit (AWV)?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) Determine the feasibility of implementing a group-style AWV adherent to Medicare reimbursement criteria in a resident primary care clinic; 2) Improve patients' access to preventative care; and 3) Foster an enriching opportunity for patient education focusing on health promotion and disease prevention.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Our group-style visit was developed and piloted by resident physicians in an urban, underserved internal medicine outpatient clinic. Patients aged 65 and older who were eligible for a subsequent Medicare AWV were identified.

Prior to the visit, our team reviewed the available literature on shared medical appointments for the AWV, established a process map outlining the visit flow, and developed a novel health risk assessment. We gathered evidence-based education materials on cancer screening, immunizations, diabetic care, and advance care planning for the visit. We reviewed the participants' records prior to the visit to identify preventative care needs and prepare individualized health maintenance plans for each patient.

A diverse group of patients were invited to participate in the group AWV. Initially, patients completed the HRA. Next, residents provided interactive presentations on disease prevention and advance care planning. Then, patients had individual testing of vision, hearing, and mobility. Finally, patients met with the provider to review an individualized healthcare plan and identify areas for further discussion. Documentation was completed using a template to meet reimbursement requirements. Patients completed a feedback form.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The success of this novel group-style visit was measured by assessing participant diversity, attendance rates, and patient satisfaction ratings. We plan to assess patient completion of identified preventative care interventions.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): We had 100% attendance for our pilot group-style AWV with a patient group representing varying racial, ethnic, socioeconomic, and health literacy backgrounds. The mean group satisfaction ratings were 4.8/5. Patients rated their individualized care plans with a mean satisfaction score of 5/5 and the likelihood of patients attending the session again received a mean rating of 5/5.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our novel, group-style AWV is generalizable to many primary care clinics, including those with highly complex, underserved patients facing barriers to care. Shared preventative visits offer the opportunity to improve access to care by providing a dedicated opportunity for identifying health risks, enriching patient education, and increasing patient-to- provider ratio to maximize provider efficiency.

RESOLVING CONFLICT AND PROMOTING CONTINUITY BETWEEN PATIENTS AND PROVIDERS: A QUALITY IMPROVEMENT PROJECT AT AN ACADEMIC PRIMARY CARE CLINIC

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Conflicts can lead to a patient's request to change their Primary Care Provider (PCP); changing a PCP is disruptive to continuity of care.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): We aimed to develop a system for conflict resolution that would reduce the number of Change of Provider (CoP) incidences in our clinic from an average of 27 per month to <20 per month over a 6-month period.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : We piloted a change in the CoP process at a large, academic primary care clinic in the San Francisco Veterans Affairs Healthcare System. The clinic is staffed by 23 staff and 43 trainee PCPs caring for >9000 patients. We rebranded the process as a "Request for Resolution" (RfR) to highlight the core value of conflict resolution and continuity rather than simply changing PCPs. We standardized the process for patients, staff, and PCPs to align expectations and increase efficiency and comfort in managing these requests. We created a Communication Tips Sheet to aid staff and providers in conflict resolution. For requests that resulted in a change of PCP, we also created a PCP Best Practices for Handoff Sheet to aid in the transition of patients and a booklet of PCP profiles for patients to pick a best-fit provider up front to reduce future conflicts.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We measured the number of RfR per month and tracked the reasons and outcomes of each RfR.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): We reduced the number of CoP requests from an average of 27 per month over the preceding 14 months to an average of 11 RfR per month in the last 8 months. Analysis showed that 13% of RfR were resolved with the patient staying with the same PCP, 67% resulted in a CoP to a PCP in the same clinic, and 7% led to a CoP to a VA PCP in a different clinic. Less than 6% were unresolved due to inability to reach the patient. The top reasons for a RfR were a scheduling conflict (22%), reported poor relationship/communication skills (22%), and trainee status of the PCP (12%). A portion of RfRs involved opioids (7%) and a minority were due to PCP degree (MD vs NP) (1%).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our pilot successfully reduced the number of CoP incidences in our clinic. We attribute success to intentionally taking a step back and addressing the root causes of why patients request a CoP and creating processes that align with the value of continuity. We learned that standardizing the process and training staff and providers to work collaboratively in the new process are critical. Our current process is still time intensive. A study limitation is coding the primary reason(s) for RfR based on patient disclosure and chart review. Next steps include collecting patient and provider satisfaction data on the RfR pilot and evaluating efficiency metrics in our process. We plan to iteratively improve and share best practices with other primary care clinics that are struggling with high CoP requests.

RESPONDING TO HOUSING NEEDS IN PRIMARY CARE: DEVELOPING A TIERED APPROACH USING QUALITY IMPROVEMENT

MaryCatherine Arbour[3]; Christin N. Price[1]; Charline Gay[4]; Lipika Samal[2]; Richard S. Gitomer[3]. [1]Psychiatry, Brigham and Women's Hospital, Brookline, MA; [2]Brigham and Women's Division of General Internal Medicine, Harvard Medical School, Boston, MA; [3]Internal Medicine, Brigham Health, Boston, MA; [4]Brigham and Women's Physician's Organization, Boston, MA. (Control ID #3392794)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): In the Brigham Health Medicaid ACO, 20% of patients have housing-related needs and resources exist to address those needs; the Brigham Social Care Team (SCT) needs to define a strategy to allocate those resources and refine processes to maximize impact.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. To determine criteria for classifying types of housing needs and define for each: the best obtainable outcome, the intensity and duration of support needed to obtain that outcome, and the appropriate team member to provide that support.

2. To test and refine processes for responding to housing needs, including a process to triage housing cases to the appropriate member of the SCT and a process for consultation between members of the team that facilitates appropriate escalation of complex cases.

3. To describe the prevalence of housing needs by type, the SCT response, and housing outcomes.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The Brigham Health SCT supports 14 primary care practices to address health-related social needs. The team includes community resource specialists (CRS) who provide information to patients about available resources telephonically, community health workers (CHWs) who provide practical, emotional, motivational and system navigation supports over 6 months, and housing advocates with the expertise to accompany patients in court or negotiate with landlords. All members participate in biweekly case review with a lawyer, who provides consultation on complex cases. In November, 2019, the team launched a quality improvement project and defined criteria to classify six types of housing needs: homeless, displaced, eviction with a notice to quit, at risk of eviction prior to notice to quit, housing conditions insufficient, and housed with friends or family. Testing is ongoing of centralized CRS triaging all housing referrals, of different triage questions and role assignment and a 'rapid consult' model for CRS to receive real-time coaching from a housing advocate.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Percent of patients with housing needs that were contacted. In addition, we plan to review these referrals to determine appropriateness, frequency of housing needs by type and percent of cases in which the best obtainable outcome was obtained, via chart review. We also plan to measure SCT team member satisfaction, as measured by a survey (under development).

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): From April to December, 2019, different clinics tested two processes. One process sent all housing cases directly to the housing advocate: of 463 referrals, 21% could not be reached, 37% needed housing application support, 8% needed shelter, 1% needed eviction prevention. The other process sent housing cases to centralized CRS for triage. Of 231 referrals, 49 were triaged to the housing advocate, 4% of those could not be reached, 38% needed support with housing applications, 2% needed shelter, 29% needed eviction prevention.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A tiered approach with clear processes for triage and escalation across roles should reduce waste and improve impact of existing resources on patients' housing needs and health.

RN-PERFORMED MEDICARE ANNUAL WELLNESS VISITS: A PILOT IN A GENERAL INTERNAL MEDICINE PRACTICE

Claudia Berger, Cristine Gay. Medicine, University of Vermont Medical Center, Burlington, VT. (Control ID #3367417)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Can RN-performed Medicare Annual Wellness Visits be integrated into a GIM practice with patient acceptance and maintenance of quality?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Integrate RN-performed Annual Wellness Visits (AWVs) into an outpatient GIM practice

2. Increase the total number and rate of patients receiving Medicare AWVs

3. Maintain or improve the quality of AWVs

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : While registered nurses are able to perform AWVs in outpatient primary care clinics, within the University of Vermont Medical Center system, these exams were being conducted only by primary care providers (PCPs). The AWVs were not getting full attention because they were frequently done at the same time as chronic care follow-up visits. At one outpatient GIM academic practice, we piloted an RN conducting AWVs 2 days per week. The RNs (whose primary role is in phone triage and phone care) were trained to perform the AWV and document in our EHR. Training included how to administer a falls risk assessment and a cognitive screen. Patients were scheduled with their PCP ideally the same day after the RN-performed AWV or within a few weeks of the AWV.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): 1. Total number of RN- performed AWVs

2. Total number of AWVs completed

3. Percentage of RN- versus PCP-performed AWVs

4 Patient satisfaction and provider satisfaction

5. Completion of health maintenance endpoints in patients receiving RN-performed AWVs versus PCP- performed AWVs

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 1. Total number of RN-performed AWVs

a. First year of pilot (3/1/2018-2/28/2019): 127 AWVs

b. Second year of pilot to date/9 months (3/1/2019-12/15/2019): 175 AWVs

2. Total number of AWVs completed during pilot phases a. First year of pilot (3/1/2018-2/28/2019): 1,156 AWVs

b. Second year of pilot to date(3/1/2019-12/15/2019): 877AWVs

3. RN-performed AWVs as a percentage of the site's total AWVs:

a. First year of pilot (3/1/2018-2/28/2019): 11%

b. Second year of pilot to date (3/1/2019-12/15/2019): 20%

4. Patient satisfaction via surveys

a. 23 of 23 respondents rated their RN AWV as being "Great"

b. 23 of 24 respondents were not concerned with seeing an RN versus an MD/APP

c. 23 of 24 respondents felt the nurse had more time to talk with them about their health and wellness than their doctor

5. Provider satisfaction via written feedback shows high degree of provider satisfaction

6. Completion of Health Maintenance Endpoints in patients receiving RN-performed AWVs versus PCP- performed AWVs: Health Maintenance Endpoints data not available at time of abstract submission

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): 1. RN-performed AWVs can be successfully integrated into a GIM primary care practice

2. There is a high degree of patient and provider satisfaction

3. Educating scheduling staff about AWVs and how to schedule is important

4. Educating patients about AWVs is important

5, Our patients seemed to appreciate having an office visit with their PCP after their AWV, ie they were happy to see a nurse as long as they could see their PCP as well

6. Complaints and concerns from patients about being billed for their provider visit after a "free" AWV were minimal

SERVING HEALTH ON MYPLATE: VISUAL TOOLS GUIDE HEALTHY EATING

Chetan Virmani[4,2]; suzette tan[4]; Jessica Perez[4,2]; Zeeshan Sattar[4,2]; Christon Grant[4,2]; Evan Botti[4,2]; Sandra Joseph[4]; Andrew A. Chang[4,3]; David L. Stevens[4,2]; Nadia A. Williams[1]; Melissa S. Lee[4,2]. [1]Ambulatory Medicine, Kings County Hospital, Brooklyn, NY; [2]Internal Medicine, SUNY Downstate Health Sciences University, Brooklyn, NY; [3]Internal Medicine, Internal Medicine Residency Program, SUNY Downstate, Brooklyn, NY, United States, Brooklyn, NY; [4]Ambulatory Medicine, NYC Health + Hospitals/Kings County, New York, NY. (Control ID #3392083)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Will a brief nutritional counseling intervention during the primary care visit impact patient confidence and motivation around choosing healthy foods?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To increase satisfaction in dietary counseling, as well as confidence and motivation to make healthier food choices, among patients in our adult primary care clinics.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : New Yorkers living in our Afro-Caribbean Flatbush/East-Flatbush Brooklyn community have a high incidence of diet-related illnesses such diabetes (15.6%), obesity (34.3%), and hypertension (30%). In 2017, 18% of Brooklyn adults reported consuming less than one fruit or vegetable daily. The current strategy includes referral to a dietician, however in 2018 there was a 39% no-show rate. Access is limited by social determinants of health including transportation, cost, and employment scheduling conflicts.

From July to November 2019, a team of primary care providers (PCPs) counseled patients during scheduled visits using "MyPlate," a standardized visual 9-inch tool recommending the following meal proportions: 50% fruits and vegetables, 25% starch, and 25% protein. This team included an interdisciplinary group of residents and nurse practitioners, formally trained in motivational interviewing and patient-centered communication techniques. These techniques were used in delivery of "MyPlate," and to aid patients in choosing specific diet change goals.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): We used a quasi- experimental design with a pre- and post-intervention survey that utilized a 5-point Likert Scale to assess patient insight into the importance of diet to their health, confidence in their ability to choose a healthy diet, and their motivation to make these dietary changes.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 64 patients were included in the study; 63 answered all questions. Using a paired sample t-test, a statistically significant increase was observed across all patient factors (insight, satisfaction, confidence and motivation). Post-intervention, questions measuring insight increased the average Likert scale from 3.09 to 3.95 ($p<0.001$). Average Likert scales improved for questions assessing satisfaction 3.79 to 4.56 ($p<0.001$), confidence 3.91 to 4.34 ($p=0.020$), and motivation 4.28 to 4.66 ($p=0.004$) after MyPlate counseling.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Utilization of "MyPlate" for brief, directed nutrition counseling during primary care visits is effective in populations where social determinants of health impact viability of traditional methods. When delivered using clinical communication techniques, such as motivational interviewing and patient centered communication, patient confidence and motivation to change increases.

SKILLED NURSING FACILITY CARE AT HOME FOR ADULTS DISCHARGED FROM THE HOSPITAL: A PILOT RANDOMIZED CONTROLLED DELIVERY INNOVATION

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Given rapidly accelerating skilled nursing facility (SNF) costs and mixed post-acute care outcomes, can SNF services that would normally be delivered at a facility instead be delivered in a patient's home with the right personnel, technology, and workflows?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Pilot randomized controlled trial of SNF delivery in the patient's home vs usual care in a SNF. Determine feasibility of recruitment and measurement of cost, quality, safety, and experience.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Inpatients on a medical service likely to return to community dwelling status with capacity to consent were assessed for enrollment after inpatient physical therapy (PT) determined necessity for SNF. Exclusions included the need for blood transfusion, IV controlled substances, and significant durable medical equipment not already in the home.

Staff included 24-hour home health aide assistance (tapered following the first 3 days), daily visits from a certified nursing assistant (CNA) for assessment and plan of care check-in, a visit on admission from a nurse to perform medication reconciliation and guide the CNA as needed remotely, and a visit on admission from a physician to establish care and guide the plan of care remotely. Core technologies included remote PT (avatar-directed sessions), automated medication dispensing, and continuous biometric monitoring of vital signs and activity. Patients were discharged when their functional status improved to community dwelling status.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Primary: cost of the SNF episode. Secondary: length of stay (LOS), 30-day readmission, functional status change, and patient experience.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): We randomized 10 patients (2 arms: 5 home; 5 control). Many eligible patients were SNF-averse and therefore could not be enrolled. At baseline, home patients were median age 88, 80% female, 80% White, frail (PRISMA 4), could perform a median of 2/6 ADLs and 3/8 IADLs, and 80% had been admitted within 6 months. Control patients were similar, except for median age 80. Home patients' episode cost a median $11,147 (IQR, $8099) vs $11,360 (IQR, $9490) for controls. LOS for both arms was 14 days. Home patients' median Picker satisfaction score was 12/14 (IQR, 2) vs 7/14 (IQR, 3) for control patients. One home patient was readmitted once vs 2 control patients were readmitted twice each within 30-days of SNF discharge. Zero home patients vs 1 control patient died within 30-days of discharge. Home patients' ADLs improved between admission and 30-days post-discharge by a median of 4 (IQR, 5) vs 1 (IQR, 2) for controls. One home patient was returned to the hospital due to orthopedic hardware malfunction.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A SNF-at-home pilot compared favorably to traditional SNF, with similar cost, greater improvement in functional status, and better patient experience. This SNF delivery innovation could reimagine how we deliver rehabilitative care, although it requires replication in a larger cohort.

SOCIAL DETERMINANTS OF HEALTH SCREENING AND REFERRAL ACROSS A MEDICAID ACCOUNTABLE CARE ORGANIZATION (ACO)

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): How can a Medicaid ACO identify and address social determinants of health (SDOH) across a large and diverse provider network?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To develop workflows to screen all patients in a Medicaid ACO for SDOH using a standardized tool. To provide patients who screen positive with printed resources or navigator referral to assess the availability and capability of social service organizations to address the identified needs. To improve health outcomes and reduce medical spending by collaborating with social service organizations to address SDOH as part of value-based healthcare.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Partners HealthCare Inc. is a large network of hospitals and outpatient practices including both academic medical centers and community providers. Partners implemented SDOH screening for all Massachusetts Medicaid ACO patients in March 2018. There are over 113,000 patients enrolled in the Partners ACO across 9 Regional Service Organizations. In the intervention, primary care patients are screened using a standardized tool that includes 13 questions in 10 domains. Practices may administer the screen with an iPad that populates responses in the Electronic Medical Record (EMR) or on paper and enter responses into a secure database. If a need is identified, the clinical team may offer a resource tip sheet or refer to a community resource navigator who collaborates with social service organizations to address the need.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Measures of success include metrics of implementation, process, and outcomes. Implementation metrics include the number of practices screening and the number of patients who received screeners. Process metrics include the proportion of patients who completed the screen and who indicated a social need, the prevalence of social needs, and the response to needs with printed resource materials or referral to navigation. Finally, analyses are underway to identify outcome metrics such as resolution of identified social needs, chronic disease control (eg HbA1c, BP) and total costs of care.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): The SDOH screener was adopted by 168 practices across the Partners network. Since March 2018, 43,054 patients completed the screener, or 60.1% of those eligible. 33,553 (78%) indicated at least 1 social need. The most common social needs reported were interest in more education (26%), food insecurity (18%), help with utilities (12%) and housing insecurity (11%). Overall, 15% of patients with a positive screen received a tip sheet or referral to resource navigation that was documented in the EMR. The most frequently referred needs were education, food, and housing.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Screening for SDOH can be implemented in a Medicaid population across a large and diverse provider network. Administering the screening tool using an iPad allows direct flow of data to the EMR and tracking of subsequent responses to identified social needs. Following implementation, additional follow-up work is needed to optimize completion of the screening tool by eligible patients and facilitate connection to social resources.

SPECIAL OPERATIONS: THE OPERATIONS HOSPITALIST AS A BRIDGE BETWEEN FRONT- LINE PROVIDERS AND INSTITUTIONAL RESOURCE STEWARDSHIP

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Can incorporation of a dedicated Operations Hospitalist (OH) role reduce length of stay (LOS) without increasing readmission rates on the inpatient medicine service at a VA medical center?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) To build an OH role to support the clinical mission of the inpatient medicine service at a VA medical center

2) To reduce LOS on the inpatient medicine service at our VA medical center without a concomitant increase in readmission rates

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : All medical providers experience the tension of balancing the utilization of resources across a population against advocacy for their primary patients. Hospitalists experience this tension as they attempt to be stewards of institutional resources who also deliver patient-centered care within the same care system. We hypothesized that by separating institutional priorities from primary provider clinical responsibilities that we could decrease LOS without increasing readmission rates on the inpatient medicine service at our VA medical center. We created a dedicated Operations Hospitalist (OH) who is responsible for the longitudinal progress of medicine inpatients through the hospital. The OH is responsible for facilitating admission flow from the emergency department; reviewing inpatient charts for unrecognized, time-sensitive discharge barriers; leading our face-to-face interdisciplinary workgroup (nursing leadership, social workers, case management and direct care providers) to effectively navigate hospital resources; and serving as the clinical lead for daily follow-up on patient progress toward discharge.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Measures of Success: LOS and readmission rates on our inpatient medicine services were monitored during the year after the implementation of the OH role and were compared to an analogous timeframe from the year prior to implementation.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): During the year prior to implementation of the OH role (2/1/2017 - 1/31/2018) there were 3,139 admissions to our general medicine ward services totaling 14,685 bed days, generating an average LOS of 4.68 days with a readmission rate of 11.8%. During the year after the implementation of the OH role (2/1/2018 - 1/31/2019) there were 3,034 admissions totaling 9,909 bed days, generating an average LOS of 3.27 days with a readmission rate of 12.5%. This represents a total decrease of 4.776 patient bed days, or a 32.5% reduction in bed days, over a 12-month period with a stable readmission rate.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Incorporation of an OH into the interdisciplinary care team can lead to a significant reduction in LOS without negatively impacting readmissions rates on the inpatient medicine service at a VA Medical Center. Providers in the OH role must have deep institutional knowledge of care systems, facilitate a collaborative approach to problem-solving, and maintain positive working relationships across the hospital system.

STANDARDIZING CERVICAL CANCER SCREENING RESULT NOTIFICATION AND FOLLOW UP AT THE VA THROUGH EMR MODIFICATION AND AUTOMATION

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): The Veterans Health Administration (VHA) requires each hospital to maintain a standard workflow for addressing abnormal cervical cancer screening results. At James J. Peters (JJP) Veterans Affairs (VA) Medical Center in the Bronx existing processes are varied, time-intensive, and unconducive to population health management.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Create a standard workflow for report and follow up of cervical cancer screening results.

2. Create an eletronic medical record (EMR) tool to streamline this workflow and code data to automatically set due date for next cervical cancer screening.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : We convened stakeholders in outpatient cervical cancer screening at JJP. The working group included Primary Care, Gynecology, Informatics, Prevention, Nursing, and System Redesign. The group identified a need to create a standard EMR workflow for reporting Pap smear results, documenting communication of results, setting next cervical cancer screening due date in response to Pap smear results, and ordering referral to Gynecology for colposcopy. We drafted note language in monthly meetings and designed the Pap smear result notification dialogue box through close, frequent collaboration between an internist/preventive medicine resident and an informaticist.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The Pap smear result notification tool is evaluated on simplicity relative to the prior process (fewer mouse clicks and dialogue boxes), inclusion of all required steps in the existing process, and accessability to all providers, standardizing the workflow.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Our intervention met the aim of streamlining the Pap smear result reporting and follow up process, acheiving the utility of the previous process in 1 to 4 mouse clicks, within a single dialogue box. Added benefit includes coding of data for population health management.

The previous steps of the process, though unique to each provider, included drafting a result note, drafting a patient letter if not reached by telephone, setting an EMR due date for next Pap smear in a separate dialogue box (some providers did not complete this step and due date would default to 3 years), and ordering Gynecology consultation in a separate dialogue box, as needed.

The new tool comprises single-click, modular, coded options for each test finding (ie, insufficiency of sample, ASCUS, dysplasia, and HPV) and for next Pap smear due date or follow up with Gynecology for colposcopy. Clicking all that apply generates an EMR result note and a patient letter, sets the EMR due date for next Pap smear, and places a Gynecology consult, as needed.

This tool is accepted by Primary Care and Gynecology and has replaced the previous process, standardizing Pap smear result reporting and follow up at JJP VA medical center in the Bronx.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Multidisciplinary collaboration between physicians and informaticists can yield elegant EMR modifications that reduce complexity while meeting the needs of physicians in a changing primary care landscape. Informatics tools including automation are particularly promising.

TARGETED INPATIENT MAMMOGRAPHY TO REDUCE DISPARITIES IN BREAST CANCER SCREENING RATES

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): There are significant disparities in breast cancer screening rates among commercially insured, Medicaid and dual-eligible (Medicare/Medicaid) patients.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. To test the feasibility of performing screening mammograms during hospitalizations

2. To perform screening mammograms for Medicaid and dual-eligible patients during hospitalizations, in order to reduce disparities in breast cancer screening rates.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The intervention was performed among patients admitted to the Medicine service at a large, urban, academic medical center. Patients were eligible for the program if they met all of the following criteria: 1) has a primary care physician who is affiliated with the academic medical center, 2) is overdue for breast cancer screening (i.e. age 50-74 and never had a screening mammogram or >2 years since last mammogram), 3) does not have an outpatient mammogram that is already scheduled, and 4) is insured by Medicaid or both Medicare and Medicaid. Exclusion criteria included any of the following: 1) inability to complete mammogram due to physical disability (e.g. paraplegia), critical illness or altered mental status, 2) admitted involuntarily under Section 12 for psychiatric emergency, or 3) unlikely to benefit from breast cancer screening due to limited life expectancy. Up to three emails were sent to each eligible patient's inpatient providers, asking them to consider completing a mammogram prior to hospital discharge.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Primary measure of success was the number of patients who successfully completed breast cancer screening during hospitalizations.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Between March and December 2019, 43 potential intervention candidates were identified based on chart review. Emails were sent to the inpatient providers caring for these 43 patients. 33 out of 43 (77%) of providers responded to the emails. 19 patients were deemed appropriate candidates while 8 patients were deemed inappropriate and 6 patients refused. Of the 19 appropriate candidates, 14 patients successfully completed inpatient mammograms. Remaining 5 patients were discharged before inpatient mammogram could be coordinated. Characteristics of patients who completed the mammogram were: mean age 60 years, 10 (71%) on Medicaid, 6 (43%) non-White, and 2 (14%) non-English speaking. All screening mammogram results were negative (BI-RADS Category 1 or 2) except for one where additional imaging evaluation was recommended (BI-RADS 0).

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Improving population health outcomes among those who are difficult to engage in the outpatient setting will increasingly become important as the healthcare system transitions from fee-for-service to value-based payment models. Implementation of an inpatient screening mammogram program can be a valuable tool for improving breast cancer screening rates among vulnerable patient populations and reducing disparities in care.

TELEMEDICINE ENHANCED COMMUNITY PARAMEDICINE: IMPLEMENTATION ACROSS A HEALTHCARE SYSTEM

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Medicare mainly allows payment for emergency ambulance services when individuals are transported to emergency rooms and hospitals. Most patients who call 911 with an emergency are thus transported to these facilities, even when a lower-acuity home intervention may more appropriately meet an individual's needs.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To effectively and safely assess and treat acutely ill patients in the home through the use of telemedicine enhanced community paramedicine (CP) in partnership with a physician from the medical system. To reduce unnecessary transportation of patients to the ER through the use of CP.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : As we move toward value based models, health systems look toward new multidisciplinary models to improve quality, reduce costs and reduce burden in emergency rooms and hospitals. Community paramedicine (CP) is an emerging field in which paramedics operate in expanded roles in conjunction with a physician. Mount Sinai Health System in New York implemented a telemedicine enhanced CP program servicing a variety of outpatients in NYC, including primary care practices, a heart failure group, as well as those active to home care nursing and hospice programs. Patients call in with an acute issue to their outpatient practice or nursing agency and a CP call can be initiated. CP Trained paramedics from a private ambulance company work in partnership with physicians, either from the primary practice or an emergency department physician through the aid of video conferencing to provide acute care, assessment and triage in the home.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Data on number of calls per program, mean response time, mean paramedic and physician times and frequency of chief complaints was collected. Number of patients transported, 3 day ED visit and 30 day admission rates for those not transported was also collected.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): From 2017 to 2019, 522 CP encounters were recorded. The largest number were initiated from the house calls primary care practice (48.7%), followed by calls initiated from home care nursing for recently discharged patients (18.6%). The remainder came from home hospice (8.2%), other primary care practices (9.2%), the home hospital program (3.4%) and heart failure practice (1.9%). The mean EMS response time was 50min, and the average time on scene was 1hr 27min, with physicians on average spending 40min facilitating the call. The most common chief complaint was shortness of breath (27%), followed by generalized weakness (9.4%) and altered mental status (7.1%). Of CP encounters, 29.5% resulted in transport to the ED. Of those that stayed

home an encounter, 6.9% went to the ED within 3 days and 6.3% who stayed home had a 30 day hospital admission.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Telemedicine enhanced community paramedicine can be a useful tool to outpatient practices to provide effective and urgent evaluation and care in a patient's home and can be a useful model for reducing the burden of overcrowded emergency rooms. Reimbursement models need to change to allow for further implementation and evolution of community paramedicine.

THE DEVELOPMENT OF A NOVEL ED 'SOCIAL MEDICINE' PROGRAM

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): On average, 10-15% of short-stay ED admissions (~550/year) are requested to manage complex health-related social needs in low medical acuity patients, resulting in negative impacts across our hospital system.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Reduce social needs related short-stay hospitalizations by 50%, or ~20/month. Increase averted admissions from zero per month (at the program's inception) to nine per month. Improve scores across all domains for Lencione's 5 Dysfunctions of a Team for multi-disciplinary team members.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : As a safety-net hospital, Zuckerberg San Francisco General (ZSFG) Hospital cares for a patient population with complex medical, psychological, and social needs. Over one-third of patients admitted through the ED have ≤2-day hospital length-of-stay, with many of these patients being low medical acuity with high social complexity (e.g., homelessness, mental illness, substance use). A lack of an integrated medical-social model of care in the hospital system results in missed opportunities to coordinate care for these patients and decrease potentially preventable inpatient admissions. In response to this problem, we created the ZSFG Social Medicine multidisciplinary team (ED SM) comprised of physicians, social workers, utilization management nurses, and patient care coordinators. We have also developed a close partnership with community partners (e.g., shelter health, Department of Public Health transitions team, homeless outreach). The team meets daily to round, using standard work built collaboratively through regular tests of change. There is also a weekly team meeting to further develop the program and team by using process improvement tools with a data-based, standardized approach to problem-solving.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Success is defined by averted admissions and reduced readmissions. Success for efforts to develop the team are defined by improvements in the 5 Dysfunctions of a Team domains.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Since the program started in early 2018, admissions for a social need were decreased by 20 patients/month. Over 3,000 patients were referred to transitional and permanent supportive housing programs, food resources, case management, and protective services. The estimated cost savings from the over 230 averted admissions equaled over $870,000 in 2018. There have also been improvements in four of the five domains in the 5 Dysfunctions of a Team for all team members.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): This intervention creates alignment for all care providers in the ED and is widely accepted for this reason. The focus of the team is the patient's self-identified needs. We find it important to focus on what the patient feels is most urgent, which is often different than their presenting medical problem. Our project is successful due to the data-driven, standardized approach to process improvement. This engages all team members, removes barriers for executive support, and supports funding applications. Last, due to complexity, any similar project would require a multi-disciplinary team-based approach to function.

THE IMAGING LEARNING NETWORK: AUTHORING, BUILDING AND IMPLEMENTING IMAGING CLINICAL DECISION SUPPORT (CDS) FOR PAMA AND VALUE-BASED CARE DELIVERY.

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Beginning January 2021, the CMS PAMA mandate requires physicians ordering advanced imaging (CT, MR, nuclear medicine) for Medicare patients to consult appropriate use criteria (AUC) authored by qualified Physician Led Entities (qPLEs). AUC are authored by clinical experts using variable formats and limited consideration for interoperability and informatics resulting in unique challenges when translating AUC into CDS interventions.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The Imaging Learning Network (ILN), formed 2016, is a collaboration between nine health care institutions, six qPLEs, and a clinical decision support (CDS) mechanism seeking to advance the practice and use of imaging clinical decision support. ILN healthcare institutions are located in California, Texas, Utah, Ohio, New York and Illinois, The ILN has four major objectives: a) support the creation of high-quality appropriate use criteria (AUC), b) enhance the imaging CDS end-user experience, c) accelerate learning through benchmarking and evaluation, and d) enable semantic and technical interoperability.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The ILN meets monthly for 90 minutes and at a year retreat to discuss issues in imaging clinical decision support and the development of the ILN Indication Ontology and the ILN Comparative AUC Library. ILN members provide feedback to authoring organizations resulting in improved AUC. Starting in 2020, ILN members will receive provider

specific CDS activity reports, facilitating benchmarking and quality improvement activities.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Each ILN members collects baseline and prospective data enabling evaluation of the impact of CDS upon rates of imaging, alignment with AUC, and imaging order errors. Some ILN institutions also collect data to assess the impact of CDS upon end-user experience.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): The ILN has met for over 3 years leading to the development of two major conceptual frameworks - the ILN Indication Ontology and the ILN Comparative AUC Library.

THe ILN Indication Ontology consists of over 4,000 clinical concepts, conceptual relationships, and mappings to external ontologies to support the consistent and efficient authoring of semantically interoperable AUC.

The ILN Comparative AUC library makes use of a structured format enabling comparative review of AUC domains across 6 qPLEs inlcuding the clinical conditions and imaging recommendations.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): No internal medicine or family practice societies author imaging AUC though providers caring for older adults will be substantially impacted. This presentation will highlight the collaboration required between primary care providers, specialists, radiologists, informaticians, guideline authors and vendors to create useful and valid digitally executable interventions, b) the ILN conceptual framework for authoring AUC, and c) a suggested framework for evaluation of impact upon imaging utilization, clinical outcomes, and end-user experience.

THE IMPACT OF COMMUNICATION STRATEGY SESSIONS FOR DIVISIONAL LEADERSHIP ON FACULTY WELL-BEING

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Primary Care Providers (PCPs), physicians and nurse practitioners commonly cite communication issues as cause for frustration and fatigue at work, which can lead to burnout.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): To target the communication concerns of PCPs, divisional leadership attended educational workshops focused on communication, leading through change, and individual coaching sessions. The objective was to improve communication between the divisional leadership, nursing and faculty and decrease burnout and improve workplace wellbeing.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Based on feedback from PCP surveys, the Division of General Internal Medicine (DGIM) hired an external consultant (The New Group) to improve communication within the DGIM. The consultant had individual sessions and held 4 educational workshops for leaders: Stakeholder analysis & Communication, RACI: Responsible Accountable Consulted Informed, Change Management, and Leading Successful Change. She also held a flipped Faculty Meeting in which faculty were asked to come up with solutions to improve communication across the division; some of which were implemented. A 1 year follow up survey was administered, mirroring the pre-survey (modified Mini-Z, open-ended). An additional survey was given to leadership to assess the effectiveness of the workshops.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Primary outcomes are level of PCP burnout and wellbeing. Secondary outcomes among physicians include sense of control over workload, teamwork, and desire to cut down on clinical time and leader's uptake of training and implementation of strategies. The quantitative data of the pre- and post-survey was compared using the Chi Squared test. Likert scales were dichotomized.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Overall, 24 PCPs responded to the pre-survey (rr 57.1%) + 27 PCPs to the post-survey (rr 64.3%). There was no significant difference between PCPs reporting burnout in the pre-survey, 39.1%, compared to the post- survey, 42.3%, or in improvement in their wellness within the past 12 months, 29.2% and 15.4% respectively. There was also no difference in agreement with good teamwork in practice: pre 50.0% and post 69.2% and desire to cut down on clinical time: pre 16.7% and post 15.4%. There was a significant decrease in PCPs reporting control over their workload, from 70.8% (pre) to 38.5% (post). The leadership survey yielded a response rate of 27.3%. Two leaders reported the individual meetings to be "Somewhat helpful." One reported the three sessions they attended to be "Somewhat helpful." Another leader reported all six sessions to be "Not at all helpful."

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Contrary to our hypothesis, no significant difference was found among the primary outcomes of PCP's burnout and wellbeing after leadership sessions on communication strategies. In addition, PCP perception of control of their workload decreased significantly. Our data shows that education and training sessions may not be adequate to foster behavior change in leaders or to impact wellbeing in PCPs.

THE MOBILE MEDICAL AND MENTAL HEALTH CARE (M3) TEAM: AN INNOVATIVE, INTEGRATED MODEL OF CARE FOR INDIVIDUALS EXPERIENCING HOMELESSNESS IN AUSTIN, TEXAS

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Individuals experiencing homelessness suffer from complex medical problems, mental illness and substance use disorders, have unmet health-related social needs, and are served by an uncoordinated, facility-centric health care system that creates barriers to accessing care.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The M3 Team aims to:

1. Improve behavioral and physical health outcomes;
2. Meet health-related social needs;
3. Achieve a high level of primary care - behavioral health systems integration

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) :

The M3 Team is an integrated, multidisciplinary team from an academic institution, federally qualified health center, and local mental health authority, implementing a mobile, community-based, integrated care delivery model for adults experiencing chronic homelessness with trimorbidity (chronic medical condition, serious mental illness, and substance use disorder).

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): A mixed method evaluation plan will be undertaken using the following metrics:

1. SAMHSA-HRSA Center for Integrated Health Solutions Standard Framework for Levels of Integrated Healthcare – evaluate primary care - behavioral health systems integration

2. HEDIS measures – chronic medical conditions

3. Addiction Severity Index (ASI) – substance use

4. Behavior and Symptom Identification Scale (BASIS-24) - mental health

5. Sub-scale of SAMHSA's National Outcome Measures – patient satisfaction

6. Enrollment and maintenance in local and national social service programs (e.g., SNAP Benefits) as well as supportive housing – health-related social needs

7. Case Western's Center for Evidence-Based Practices Fidelity Scale – fidelity to integrated dual disorder treatment (IDDT)

8. Hospitalization and ED visits – health care utilization

9. Qualitative interviews, team observation, and process data – continuous quality improvement

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Level 4-5 (out of 6) integration has been achieved across multiple domains, including care delivery, communication, data sharing, team leadership and staffing, and operations (specific examples will be discussed). 56 patients have been referred and 30 patients have been enrolled to date, with 2-3 visits by team members weekly. HEDIS measures for preventive cancer screening, hypertension, and diabetes have been selected, as well as standard outcome measure from professional society guidelines for heart failure, chronic obstructive pulmonary disease, and cirrhosis. A baseline fidelity assessment of our care model has been conducted (results will be reported). A quality improvement process around enrollment is being undertaken. All enrolled patients have received help accessing or extending SNAP benefits. Seven patients have been successfully navigated into supportive housing.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Systems integration between primary care, behavioral health care, and social services, across academic and community partners, coupled with a mobile, high-intensity care delivery model is critical to providing comprehensive care for the most vulnerable populations in order to meet their needs and break down barriers to receiving equitable, just care.

THE PORT PRACTICES – CONNECTING INDIVIDUALS RELEASED FROM NYC JAILS TO MEDICAL CARE AND SUPPORTIVE SERVICES

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): People released from jail often struggle to access needed medical care and social services, causing preventable harms

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Assist patients in accessing health and social services during immediate post-release period.

2. Mitigate harms associated with incarceration

3. Transition patients to community-based primary care

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : For people incarcerated in New York City jails existing structural barriers to accessing community-based care and services are compounded by the effects of incarceration, including increased mortality risk in the immediate post-release period.

NYC Health + Hospitals/Correctional Health Services (CHS), in partnership with NYC Health + Hospitals/Office of Ambulatory Care, created the Point of Reentry and Transition (PORT) Practices to directly address the disruption of care in the immediate post-release period. PORT Practices operate in outpatient clinics at two NYCH+H hospitals, offering flexible schedules and walk-in appointments with minimal wait times and no penalties for late/no attendance. Patients can get medication regardless of insurance status and connect with insurance if eligible. PORT Practices are staffed by a team that includes a community health worker (CHW), nurse, medical assistant, and clinician. CHWs have lived experience of incarceration and are the point person to help patients navigate a complex medical system and connect them to social services. Clinicians can access jail-based electronic medical records and many also work in jail- based clinics, improving continuity of care between jail and community and providing additional understanding of the patients' recent clinical and personal context. People leaving NYC jails learn about the PORT Practices from CHS staff or through CHS' dedicated reentry support hotline (PORTline). Patients are also referred by clinicians elsewhere in the public hospital system.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Measures include, but are not limited to: number of appointments generated, number/proportion of appointments attended, average time from release to first PORT visit, quality metrics such as rate of avoidable ED visits, patient satisfaction, and proportion transitioning to general primary care.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): In the first six months after clinic launch, 114 patients scheduled or expressed intention to have a PORT visit, 109 of whom were released/in community. Fifty-three (49%) presented for care (122 appointments). Forty- two percent of patients had only one visit; 15% had 5 or more visits; 69% of patients seen missed at least one visit.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Key factors that appear to drive patient engagement and satisfaction with PORT Practices include

- Well-trained CHWs with lived experience who are able to connect patients to existing medical and social services
- Dedicated and informed care team
- CHS physicians incorporated into the outpatient care team
- Availability of jail-based medical records
- Appointment flexibility and low wait time
- Low/no-cost medication
- Access to care regardless of insurance status

THE ROLE FOR MONTHLY INJECTABLE BUPRENORPHINE IN A LOW-BARRIER SUBSTANCE USE DISORDER BRIDGE CLINIC

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Monthly injectable buprenorphine (MIB) is a new buprenorphine formulation that has the potential to mitigate some of the complex, multi-level barriers to sublingual buprenorphine/naloxone (SL bupe/nal) adherence faced by patients, but MIB use in bridge clinics has not been described.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Describe the early experience with MIB at a bridge clinic in Boston, MA. Characterize appropriate patients for MIB in the bridge clinic setting

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : This innovation took place at a substance use disorder bridge clinic in Boston, MA located within a large, urban, academic medical center. An early adopter of MIB, Provider A, who works in the clinic one session per week began offering MIB in March 2019.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Early analysis through qualitative interviews show that patients appreciate additional treatment options, though preference for care is highly individualized. Success metrics include administration of MIB to those patients that request it and transition of care to stable office based treatment programs.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): During the first 9 months of MIB availability (3/1/19 – 11/30/19), Provider A saw 173 patients, most of whom had OUD (n=154, 89%). Many (n=65, 42%) were offered MIB in the first or second visit with Provider A. Most (66%) declined, often citing that they did not want an injection. Concern for diversion and preference for the SL formulation was frequently documented in these cases. Among the 18 (27%) who were interested, 6 received one or more MIB injections. All reduced or continued to avoid illicit opioid use in the first month. Continuation of MIB has varied, with patients returning to SL bupe/nal or lost to follow up if not continuing MIB. There was one death that was unrelated to MIB.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): In our early experience, many patients with OUD could be identified as candidates for MIB. Many patients who were not offered MIB had not yet met clinical requirements of stability on SL bupe/nal. Systems interventions that support consistent MIB discussion during follow-up visits have the potential to increase its reach in this population. Concern for diversion was frequently documented in patients declining MIB. Patients struggling with limited resources may see SL bupe/nal – which has street value - as a financial safety net. However, the lack of daily administration and freedom from the task of keeping SL bupe/nal safe appealed to many patients.

Overall, MIB represents a promising new option for high risk patients with OUD, and our early experiences suggest an important role for MIB in the bridge clinic setting. These clinics are a growing setting of care and need advanced infrastructure and pharmacy collaboration to launch MIB services. Data and experience suggest that MIB is acceptable and well tolerated by a subset of patients presenting to a bridge clinic.

TO TEACH, PERCHANCE TO CHANGE: ANOTHER STEP CLOSER TO JOY IN RESIDENT PRACTICE THROUGH AMBULATORY INTERPROFESSIONAL UTILIZATION

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Can implementing an educational session on inter-visit work with additional administrative time reduce administrative burden on residents in ambulatory internal medicine and promote interest in primary care careers?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Improve resident ambulatory clinic experience by enhanced training in, and dedicated time for, inter-visit work.

2. Decrease administrative burden by educating residents to better utilize the interprofessional (IP) team.

3. Augment resident interest in primary care careers.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Northwell has completed a second year of resident ambulatory practice transformation to better meet learner needs and improve interest in primary care careers. Based on pilot data, interventions in 2017-2018 included implementation of IP teamlets (residents, medical assistants, and pharmacy students), teamlet huddles, and enhanced exposure to behavioral health, social work, and pharmacy staff members. Despite these improvements, residents reported no change in satisfaction with ambulatory training. In addition, 23% reported reduced interest in a primary care career from the prior academic year, citing administrative burden as a main detractor. Thus in 2018-2019 we set out to reduce the strain of administrative work by holding resident training sessions on efficient completion of inter-visit work and how to better utilize IP team members to complete non-physician tasks. We also allocated weekly dedicated time to complete administrative work.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Residents complete an anonymous battery of questions at the end of each academic year to evaluate their ambulatory training. Questions assess resident interactions with IP team members, perceptions of the training site, workflows, curricula, and interest in primary care.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Results were mixed. The number of residents reporting too much time spent on administrative tasks increased from 39.2% to 46% and those feeling like they were completing work that other team members could do increased from 24.3% to 29.8%. However, residents reporting "support staff provided excellent support with administrative tasks" improved from 24.3% to 28.4% and overall satisfaction with the ambulatory experience improved from 19% to 29.8%. Over one-third (37%) of residents were less interested in primary care, again citing administrative burden. Content analysis of open-ended items highlighted improved support of administrative tasks but also persistent strain from non-clinical work due to inefficient workflows and perceived inadequate staff support, though they also appreciated the protected administrative time.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): While we found clinic satisfaction slightly improved with additional time and support for administrative work, resident education around task management and IP utilization did not significantly lessen the administrative burden. Next steps will aim to make system-level workflow changes to ensure appropriate use of IP team members and decrease frequency of non-physician administrative work for resident providers.

TREATING HEPATITIS C IN HIGH-RISK POPULATIONS: SUCCESS FROM AN INTERNAL MEDICINE RESIDENT PRIMARY CARE CLINIC

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): The HCV epidemic is primarily driven by marginalized populations and subspecialists have traditionally treated HCV, but frequently require abstinence from drugs and alcohol for at least 6 months prior to initiating treatment, despite contrary evidence and guideline recommendations, which limits access to treatment and creating barriers to achieving HCV elimination targets.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Create a HCV treatement protcol for marginalized populations from an academic resident primary care clinic 2. Successfully treat hepatitis C in marginalized populations

3. Successfully treat patients who were denied by subspecialists

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : We implemented a HCV treatment protocol in our internal medicine resident primary care clinic, which largely cares for marginalized populations. The multidisciplinary team included a resident, attending physician, clinic pharmacist and medical assistant. HCV positive patients were identified through screening, enrolled in the protocol, evaluated, and treated for HCV.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Descriptive quantitative statistics were utilized to summarize our findings from the pilot project. Outcomes assessed included: success of treatment as defined by sustained virologic response at 12 weeks (SVR12), previous sub-specialist contact for HCV, and presence/absence of high-risk features including cirrhosis, ongoing alcohol or drug use, and use of MAT.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Currently, HCV treatment has been initiated in 21 patients. 18 have completed treatment with another 3 still on-going. Of those who have completed treatment, 11 are on MAT and 11 have active alcohol use. Of those 18 who have completed treatment, 9 (50%) achieved SVR12, 7 (39%) who are not yet 12 weeks post-treatment, and 2 (11%) who are awaiting lab results. Of the 21 patients treated in primary care, 12 had previously been referred to and seen by GI for HCV. The majority of those patients seen by GI (11) were not offered treatment for reasons including ongoing alcohol use, drug use, or uninsured status. Of those not offered treatment by GI and subsequently treated in primary care (n=11), 11 have completed treatment. SVR12 was achieved in 4 of these patients, 6 are not yet 12 weeks post-treatment, and 1 is awaiting lab results. There were no complications from treatment. The delay in treatment from the time initially seen by gastroenterology for HCV until being seen in primary care and subsequently treated was at a mean of 937 days and a median 974 days.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Initial results from our clinic suggest that HCV can be successfully and safely treated by a multidisciplinary team in an academic internal medicine resident primary clinic. Even in high-risk populations who lack access to treatment elsewhere or who are declined by GI specialists, SVR12 can be achieved. Patients should not be excluded from treatment due to ongoing alcohol use, drug use, or insurance status.

TREATMENT OF CHRONIC HEPATITIS C IN A PRIMARY CARE OPIOID TREATMENT PROGRAM: SUCCESSES, BARRIERS AND NEXT STEPS

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Patients with opioid use disorder (OUD) have high prevalence of hepatitis C (HCV) but experience barriers to treatment; treatment of HCV in a primary care opioid treatment program (OTP) may increase access and promote cure.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Enable OTP providers to treat patients with HCV in the primary care setting

2. Identify barriers to treatment in order to increase treatment rates and improve outcomes

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The Center for Opioid Recovery (COR) at the University of Pittsburgh Medical Center (UPMC) offers buprenorphine and injectable naltrexone treatment to patients with OUD in a primary care setting. The program is staffed by internists, nurses, social workers and peer specialists. In January 2019 the clinic began offering onsite treatment for HCV after recognizing that patients were experiencing difficulties and delays seeking HCV care from specialists. Two physicians and one nurse underwent community-based trainings on HCV treatment, created treatment algorithms, and helped to educate other COR providers.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): For all patients engaged with COR as of December 23, 2019, charts were reviewed for initial HCV

antibody screening, follow-up HCV viral load testing, and subsequent onsite treatment or referral to hepatology. For patients treated onsite, note was made of the treatment outcome as well challenges encountered during treatment. For patients with HCV who did not receive treatment, their COR provider was surveyed to identify barriers to treatment.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): The study sample included 218 patients actively engaged in COR. Most patients (93%) were screened for HCV Ab and had viral load testing if appropriate. Of the 202 patients screened, 82 (38%) were diagnosed with chronic HCV. Among patients with HCV, 57% received genotyping and 48% received fibrosis evaluation.

Thirty-two of 82 patients with HCV have received treatment. Of these,17 (53%) were treated by COR between November 2018 and December 2019. Patients treated by COR predominantly had genotype 1a (59%) and most had no fibrosis (82%) or early fibrosis (18%). All patients were treated with Mavyret or Epclusa. Currently, 9 patients have achieved sustained virologic response (SVR), and 8 patients are awaiting SVR confirmation.

Fifty of 82 patients with HCV remain untreated. COR providers identified lack of confidence/familiarity in treating HCV as the primary reason for failure to treat patients. For patients who were treated at COR, challenges included unstable housing, active alcohol and drug addiction, comorbid illness, and lack of reliable phone access.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): 1. Patients can be successfully treated in a primary care OTP, with the main barrier to treatment being provider knowledge and confidence.

2. A high rate of HCV screening was achieved through nurse-driven protocols. These protocols could be expanded in consult with experienced providers to assure that all patients with HCV are evaluated for treatment.

3. Patients in OTP experience many social barriers to HCV treatment which may be best addressed in primary care setting.

UNDERSTANDING MEASLES IMMUNITY IN AN URBAN FEDERALLY QUALIFIED HEALTH CENTER (FQHC)

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): At our urban Federally Qualified Health Center (FHQC), are Advisory Committee on Immunization Practices (ACIP) guidelines for measles vaccinations and immunity screens being followed?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1. Determine the percentage of patients non-immune to measles in our FQHC

2. Determine if ACIP measles guidelines were followed for measles vaccinations and screenings

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Current ACIP guidelines recommend that adults at high risk for exposure and transmission such as college students, healthcare personnel, and international travelers receive two doses of measles vaccine if non-immune, while other adults should receive one dose. Providers should not actively screen adult patients for immunity and should not check post-vaccine measles titers.

This is a retrospective chart review of patients over age 18 who had measles titers checked at a FHQC between January 2016 and July 2019. Patients who had titers checked due to concern for active measles infection were excluded. Our clinic is in the Lower East Side of Manhattan, which is in geographic proximity to the areas of Brooklyn affected by the 2019 measles outbreak that led to mandated measles vaccination for every person living and working in four Brooklyn zip codes.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Patients' country of origin, prior measles immunization status, and measles titer results were recorded. The reason for checking measles titers was also noted. For those found to be non-immune to measles, the number of vaccines subsequently received and whether a post-vaccine titer was checked was also recorded.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 607 patients fit the inclusion criteria with an average age of 37.5. 29.5% of these patients stated that their country of origin was outside of the US. 18.6% of patients were non-immune to measles, with an average age of 33. Of those not from the US, 16.8% were not immune to measles. When assessing the reasons that measles immunity was checked, 57.5% were adherent with ACIP recommendations. The most frequent reason for inappropriate evaluation of measles immunity was for pre-employment clearance for non- healthcare professions. 70% of patients who did not have presumptive immunity to measles received at least one subsequent vaccine, and 27.8% of these patients had post-vaccine titers checked. 59% of healthcare workers, students, or international travelers who were not immune to measles received only one subsequent vaccination, while 15.4% of them inappropriately received vaccination despite prior documentation of at least two vaccination doses.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Evaluating for measles immunity is often done unnecessarily per ACIP guidelines. Increased education of clinicians and patients can lead to increased compliance with these guidelines and reduce unnecessary procedures and financial cost, while also assuring that patients are vaccinated appropriately, especially in light of recent measles outbreaks. In the future, we plan to further analyze the financial cost of non-guideline based titer checking and vaccination.

USING ARTIFICIAL INTELLIGENCE TO IMPROVE THE DIAGNOSTIC ACCURACY OF SKIN CONDITIONS IN PRIMARY CARE SETTINGS

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Can an artificial intelligence (AI)- based, clinician decision support tool help primary care providers to be more accurate at diagnosing skin conditions?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The purpose of this study is to assess whether use of an AI-based, clinician decision support tool (DermAssist) can improve the accuracy of primary care physicians and nurse practitioners for diagnosing skin conditions.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : DermAssist is an AI-based tool accessible via a computer or mobile phone that provides a differential diagnosis to users based on photographs and basic information about a case (clinical history). DermAssist was developed using machine learning algorithms that trained on 14,021 de-identified cases from 17 clinical sites. In this study, primary care providers were asked to review and provide a differential diagnosis for up to 500

cases each of skin complaints seen in the outpatient setting: half the cases with access to the DermAssist tool and half without. Participants were all outpatient providers who were boarded in internal medicine, family medicine, or were independently-practicing nurse practitioners and varied in geographic location, practice setting (urban v. rural), and years of experience. Clinicians were instructed to approach these cases using any resources they normally would in clinic and provide a differential diagnosis for each case to the best of their ability.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): A reference standard (answer key) for each case was created by a rotating panel of 3 board-certified dermatologists. The DermAssist tool's AI model was blinded to the answer key for the 500 cases in this study. The primary care providers' answers were compared to the reference standard and segmented into cases where the clinician did not have access to the AI-based tool (unassisted) versus cases where the clinician had access to the tool (assisted). The accuracy levels of the unassisted and assisted arms were compared to one another by reviewing the fraction of cases where the top answer provided by the clinician matched the reference standard (top-1 accuracy) and the fraction of cases where one of the top three answers in the clinician's differential matched the reference standard (top-3 accuracy).

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): To date, six clinicians have reviewed 2,014 cases. On average, clinicians had a 9.5% boost in top-1 accuracy using the clinician decision support tool (assisted 0.632, unassisted 0.537, p-value <0.001) and a 9.6% boost in top-3 accuracy using the clinician decision support tool (assisted 0.720, unassisted 0.624, p-value <0.001). This study is ongoing and 34 additional primary care providers are expected to complete their case reviews by the end of March.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): The success of artificial intelligence to inform the differential diagnosis of skin diseases is highly encouraging of such a tool's potential to assist clinicians. Use of an AI-based clinician decision support tool may improve the accuracy of diagnosis at point-of-care for general practitioners who do not have dermatology specialty training.

USING INNOVATIVE PARTNERSHIPS TO IMPROVE BP CONTROL IN OHIO SAFETY NET PRIMARY CARE PRACTICES

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Improving blood pressure (BP) control in disadvantaged populations is challenging.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The program goals were to improve BP control for Medicaid patients within the state's safety net primary care practices.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : The Ohio Department of Medicaid partnered with all 7 Ohio Colleges of Medicine, all 6 Ohio Medicaid Managed Care Plans (MCPs), and 8 safety net primary care clinics to establish a statewide hypertension quality improvement (QI) project (kick-off October 2017). Clinic-level interventions included: 1) accurate/repeat BP measurement; 2) timely follow-up in staff-led visits if BP elevated (>140/90 mmHg); 3) a treatment algorithm promoting once daily BP medications; 4) outreach; and 5) promotion of effective communication. MCPs partnered with clinics to support BP improvement for their enrollees by: 1) assisting patients in obtaining and using home BP monitors; 2) addressing barriers to patient follow-up; and 3) changing coverage of BP medications from 30-day to 90-day supplies. We held monthly webinars with clinics and MCPs to share best practices, review data, and discuss barriers to project success. QI coaches assisted clinics monthly. We collected and displayed electronic health record (EHR) data from the 8 clinics every 2 weeks using run and control charts to support continuous QI.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Using cross-sections of EHR data from control charts, we describe the absolute changes in average BP control (<140/90) and selected process measures (i.e., repeat BP measurement if BP elevated and timely follow up) overall and by subgroup from the pre-intervention 1-year period (10/2016-09/2017) to the last 6 months of the intervention (04/2019-10/2019). Patients with a diagnosis of hypertension and seen at least once by their primary care provider in the last bimonthly reporting period at one of the 8 participating clinics from October 2016 to November 2019 (N=17,574) were included.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Patients were female (55%), on Medicaid (41%), and non-Hispanic black (50%) or non-Hispanic white (46%). The percent of patients under good BP control (<140/90 mmHg) increased from 52% to 60% overall (an additional 591 patients) with this intervention bundle. BP control improved among all measured subgroups: Medicaid (7%), non-Medicaid (7%), non-Hispanic black (6%), and non-Hispanic white (10%). The selected EHR clinic process measures of repeat BP, scheduled follow-up, and attended follow-up within 1-month if BP elevated had absolute improvements of 55%, 5%, and 7% respectively. Baseline disparities in BP control between non-Hispanic black and white patients existed at half the sites (range in absolute differences at these 4 sites: 4-10%) and did not substantially change over time.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Innovative partnerships among primary care clinics, payers, and academic medicine can lead to meaningful improvements in BP control across diverse regions within a state. Future interventions should explore ways of further reducing disparities at safety net clinics where disparities exist.

UTILIZING A HOSPITALIST RUN OBSERVATION UNIT TO COMBAT OPIOID USE DISORDER – AN INNOVATIVE MODEL IMPLEMENTING INTEGRATED CASE MANAGEMENT AND A HOSPITAL-BASED PEER RECOVERY TEAM.

Paul Long[1]; Cherisse Carlo[1]; Chris Manasseh[2]; Samantha Johnson[4]; Eileen Mullaney[3]. [1]Internal Medicine, Boston Medical Center, Salt Lake City, UT; [2]Family Medicine, Boston Medical Center, Boston, MA; [3]Case Management, Boston Medical Center, Boston, MA; [4]Project Trust, Boston Medical Center, Boston, MA. (Control ID #3392636)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Can opioid use disorder (OUD) be effectively and safely treated in an observation unit, and if so what innovative treatment models are available?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES):

Objective #1: To create an integrated case-management led team model to address OUD incorporating both Family Medicine and Internal Medicine providers

Objective #2: To augment treatment and patient compliance by implementing a substance use peer-recovery team.

Objective #3: To design a large observation unit with reduced limitations on inclusion criteria that can maintain quality and efficient care.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : To combat high patient volumes and bed shortage issues, in 2018 our hospital expanded our observation unit by 2.5-fold (28 bed) and transitioned to a hospitalist led, provider-based discretionary model for patient acceptance into the unit. This has allowed for treatment of non-traditional observation unit patients including patients with opioid use disorder (13.9% of patients accepted to our unit). Patient selection and care coordination has been enhanced, especially for patients with complex social issues and substance use disorder, by incorporating a model whereby case managers serve as team lead and work closely with providers in the same work area.

The observation unit setting provides a unique location for combating OUD allowing for intensive treatment and care coordination beyond what is typically possible in the emergency room setting, as well as access to hospital resources often not readily available in the ambulatory setting. We have designed a treatment team that incorporates case management, peer-recovery, addiction consult services, social work and respite care following discharge when needed (54% of OUD patients in our unit are homeless).

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Success of OUD treatment will be measured quantitatively through highlighting the following points: rates of MAT initiation in the unit, AMA rate, representation/readmission rate, length of stay, in unit overdose (highlighting safety: to date two overdoses with full recovery, no deaths). Qualitative success will be measured by key-informant interviews with select patients treated in our unit and highlighting stories from patients who were engaged with peer-recovery staff.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): Preliminary data shows a low AMA rate, taking into account the high-risk nature of this population, of 10% for patients seen by a peer recovery coach. 46.4% and 27.9% of patients were treated with methadone and buprenorphine respectively. Further findings and data will be discussed at time of presentation.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Lesson #1: Observation units can provide a great environment for safely and effectively treating opioid use disorder.

Lesson #2: An integrated team model with a case manager team leader augments patient care and allows for a broader selection of patients to an observation unit

Lesson #3: Implementing a peer-recovery program for patients with OUD yields a low AMA rate for a high-risk population and provides strong advocacy for patients.

UTILIZING COMMUNITY HEALTH COACHES TO IMPROVE CHRONIC DISEASE OUTCOMES AT AN URBAN RESIDENCY CLINIC

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Adequately addressing social determinant of health barriers during an office visit can be challenging for resident providers given the time constraints of a typical encounter. While a free community health coaching service is available to help identify and mitigate such barriers, referral to this service is underutilized by our resident providers. **OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES):** 1. To increase utilization of community health coaches for patients with uncontrolled chronic diseases.

2. To determine the impact of community health coaches on chronic disease outcomes.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : This project was implemented at the Ryan Adair Center, a federally qualified health center in Harlem that serves as a primary care training site for internal medicine residents. Resident surveys revealed that the major barrier for referring patients to the coaching service was the amount of paperwork required by the provider. To address this challenge, a multi-disciplinary group representing both the clinic team and the community-based organization convened to devise a streamlined referral process. Our intervention was the creation of a direct messaging function in our EMR to transfer information between resident providers and the community health coach supervisor.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The number of referrals to the health coaching service was assessed over a three-month period pre and post intervention. The impact on health outcomes was assessed through retrospective chart review by comparing blood pressure and/or HbA1c before and after the referrals. Results were compared between patients who were engaged with the health coaching service and those referred but deemed ineligible / declined services.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): The number of referrals increased from 5 pre-intervention to 15 post-intervention, an increase of 200 %.

59.2% of the referrals were for diabetes mellitus, 33.3% for hypertension and 7.47% for asthma and CHF.

55% of the referrals were inactive due to patients' refusal or ineligibility. The average A1c reduction was 1.3 in the group engaged with the health coach versus 0.6 in the group that was referred but deemed inactive. The average systolic BP reduction was 26.3mm Hg in the active group vs 1.6mm Hg in the inactive group.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): This project demonstrated that streamlining the referral process between a community-based organization and resident providers led to increased utilization of heath coaching services for this underserved urban population. We observed a trend toward improved health outcomes for our patients engaged with the coaching service. Future directions include longitudinal trending of outcomes, using the EMR for communication between health coaches and providers and incorporating feedback from coaches to improve documentation of social determinants of health.

WHY DO WE GET READMITTED? RECOMMENDATIONS FROM THE PATIENT PERSPECTIVE

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STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): As providers we assume that we know the factors that contribute to readmissions and poor health outcomes but we do not fully understand from a patient perspective how we can address these factors.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): The objective was to identify patient reported factors that contribute to readmissions by completing audio-recorded in-home interviews of patients with multiple readmission from our safety net internal medicine resident continuirty clinic. Once patient reported factors was identified our ultimate goal was to develop interventions in our primary care clinic to address these factors.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Strong Internal Medicine is a safety net academic primary care practice providing care to approximately 11,500 patients with a 30 day readmission rate of 21%. Our interdisciniplinary quality improvement team joined together to develop interventions to reduce our readmission rate. We came to the realization that as providers we do not truly understand what drives readmissions. Therefore our goal was to complete 10 in- home audio-recorded qualitivative interviews with our patients who had 3-9 readmissions during 2017 to improve our understanding of what really drives readmissions and poor health outcomes. The ultimate goal was to use this information to create future interventions in our primary care practice.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Our goal was to complete 10 audio-recorded in-home interviews with our patients who had recurrent readmissions during the year 2017 to gather qualitiative data to identify patient reported themes that contribute to readmissions. Once the themes were identified we implemented a project in our continuity clinic to address these concerns with the ultimate goal to reduce readmissions and improve patient-provider relationship as measured by HCAHPS.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): We identifed 5 major patient reported themes that contribute to readmissions including: patient-provider relationship (trust, respect, listening), patient factors (mental health, social stressors), medications (side effects, polypharmacy), discharge process (unclear, pushed out, waiting) and clinic/community factors (access to care, need for improved community awarenesss). Our continiuty clinic developed an agenda setting tool to address the patient-provider relationship with emphasis on the concern of "not listening". The agenda setting tool identifies the patient's medical concerns but also asks about social stressors that may be a barrier to good health. We conducted a pilot using this agenda setting tool and found that both patients and providers found this form very helpful.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): Our quality improvement project discovered that at the core of high quality care is patient centered care. Our agenda setting tool is unique as it does not only address patient's medical concern for the visit but also starts to explore social determinants of health. The key to this project is having a system in place to address the patient's concerns. We are fortunate to have embedded social work, psychiatry, dietician and medical-legal partnership.

"FROM NO SHOW TO ARRIVED": LEVERAGING MACHINE LEARNING TO BOLSTER PATIENT ATTENDANCE IN RESIDENT CONTINUITY CLINIC

Roma Bhatia[1]; Oscar Marroquin[4]; Zachary Lenhart[2]; Breann Sodini[5]; Janice A. Cunningham[2]; Dang Tran[3]; Gary Fischer[4]; Jaishree Hariharan[5]. [1]General Medicine and Primary Care, Beth Israel Deaconess Medical Center, Boston, MA; [2]General Internal Medicine, UPMC, Pittsburgh, PA; [3]Division of General Internal Medicine, University of Pittsburgh, Pittsburgh, PA; [4]Medicine, University of Pittsburgh, Pittsburgh, PA; [5]Medicine, University of Pittsburgh Medical center, Pittsburgh, PA. (Control ID #3391473)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Despite having an established automated phone reminder system in place for scheduled patients, in one urban academic resident primary care clinic, the annual patient no show rate (NSR) averages 27%.

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): Continuity clinic is a crucial component of internal medicine training. However missed appointments leads to fragmented and poor continuity of care, and also decreases learning opportunities for residents. The primary objective of this study is to determine the impact of a multidisciplinary, machine learning intervention on the NSR in resident primary care clinic.

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : Our study was conducted a busy academic primary care clinic in Pittsburgh, PA with 60 medical residents who see 3100 patients annually. Residents have one full clinic day weekly for 4-week periods, and see a fixed number of patients, typically 10-12 patients per clinic day. All scheduled patients receive an automated phone call/ text appointment reminder, 72 hours prior to their scheduled visit.

In July 2018, the clinical analytics department developed and validated a machine learning algorithm to identify resident clinic patients who were most likely to miss their appointments. Patients predicted to have $\geq 20\%$ risk of no show were contacted by a nurse 48 hours prior to their scheduled appointment in addition to usual care. The intervention took place between Oct 2018- July 2019.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): The primary outcome was annual resident clinic no show rate (NSR), pre and post intervention. We used chi square test to evaluate the impact of the intervention on the change in NSR. Additional secondary outcomes included: 'phone call' outcomes, change in the number of completed clinic visits, revenue value units (RVU), and clinic revenue.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): The overall no show rate decreased by 4%, from 27% pre-intervention to 23% post intervention ($p<0.01$, 95% CI 21.6%-25%), and correspondingly, patient completed visits increased by 4% from 73% to 77% resulting in 283 additional competed visits. Over the 9-month period, 2046 targeted patients at high risk of missing appointments were identified and called and 59% (n=1206) were reached. There was no significant difference observed between the number of scheduled patients in resident clinic annually pre and post intervention. RVUs subsequently increased from 8941.8 to 9658.8, generating an additional $40,000 in clinic revenue.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): A targeted, more personalized approach to appointment reminders using machine learning for patients at high risk of no-show, helped decreased the annual NSR by 4%, increased the overall

completed visits and clinic revenue, and correspondingly increased learning opportunities for the residents. A multi-disciplinary intervention leveraging technology to improve quality patient care is a valuable tool and can be implemented strategically in other ambulatory practices.

"MAKING A LIST AND CHECKING IT TWICE": A HIGH BLOOD PRESSURE ADVISORY IN PRIMARY CARE

Anuradha Phadke[1]; Amelia Sattler[1]; Shreya Shah[2]; Megan Mahoney[3]; Christopher Sharp[1]; Stanley Ng[4]; Michael Kim[4]; Yingjie I. Weng[1]; Nadia Safaeinili[5]; Cati Brown-Johnson[6]; Manisha Desai[1]. [1]Medicine, Stanford University School of Medicine, Palo Alto, CA; [2]Medicine, Stanford University, Mountain View, CA; [3]Medicine, Stanford University, Palo Alto, CA; [4]Stanford Healthcare, Palo Alto, CA; [5]Primary Care & Population Health, Stanford University, Stanford, CA; [6]Evaluation Sciences Unit, Stanford School of Medicine, Stanford, CA. (Control ID #3392167)

STATEMENT OF PROBLEM OR QUESTION (ONE SENTENCE): Can a real-world implementation of an electronic medical record best practice advisory (BPA) improve rates of adult high blood pressure (HBP) diagnosis and management, as seen in prior randomized controlled trials?

OBJECTIVES OF PROGRAM/INTERVENTION (NO MORE THAN THREE OBJECTIVES): 1) Implement a high blood pressure BPA

2) Assess the BPA's impact on the diagnosis and management of uncontrolled HBP

3) Assess care team and clinic-level barriers and facilitators to the BPA's impact

DESCRIPTION OF PROGRAM/INTERVENTION, INCLUDING ORGANIZATIONAL CONTEXT (E.G. INPATIENT VS. OUTPATIENT, PRACTICE OR COMMUNITY CHARACTERISTICS) : We address our aims in a prospective observational study that includes all adult patients presenting to 22 primary care clinics in a regional academic ambulatory care network. The targeted patient population is described as all adult patients presenting to clinic with an in-clinic blood pressure ≥140/90 mm Hg. The intervention includes medical assistant and provider electronic medical record clinical decision support and order set, team training, and audit feedback.

MEASURES OF SUCCESS (DISCUSS QUALITATIVE AND/OR QUANTITATIVE METRICS WHICH WILL BE USED TO EVALUATE PROGRAM/INTERVENTION): Using a variation on an interrupted time series design, we deploy the intervention in a staggered fashion across clinics. For each clinic, we will compare data in the 6-month pre-intervention period and in the 6-month post-deployment period from the same season. Our primary outcome is hypertension control in the clinic setting (<140/90).

Secondary outcomes relate to new hypertension diagnoses, blood pressure rechecks, and home blood pressure reporting. We will employ generalized linear mixed effects regression techniques to measure the impact of the intervention while accounting for other hypertension-focused initiatives ongoing in these sites. To understand barriers and facilitators to the intervention's impact, we will gather data from semi-structured interviews of providers and staff at select clinics.

FINDINGS TO DATE (IT IS NOT SUFFICIENT TO STATE FINDINGS WILL BE DISCUSSED): 19/22 primary care clinics have deployed the intervention. Managers at 13 clinics receive regular feedback regarding staff recheck of blood pressure. Rates of recheck of blood pressure in cases of initial elevated blood pressure have increased from 70 to 93 percent over 5 months in those 13 clinics. In preliminary interviews of 24 staff and providers, interviewees reported increased awareness of elevated blood pressure and adherence to the BPA's blood pressure check protocol. They also identified opportunities for process refinement including improved care team communication and medical assistant documentation templates. We plan to analyze our primary and secondary outcomes at the conclusion of our study in the summer of 2020.

KEY LESSONS FOR DISSEMINATION (WHAT CAN OTHERS TAKE AWAY FOR IMPLEMENTATION TO THEIR PRACTICE OR COMMUNITY?): 1) A high blood pressure BPA may improve adult hypertension diagnosis, measurement, follow-up, and home BP reporting

2) Partnership between quality improvement teams and statistical/evaluation teams allows for more rigorous analysis of real-world QI interventions

A CROSS-DISCIPLINARY APPROACH TO TEACHING DESIGN-THINKING METHODS TO HEALTHCARE LEARNERS

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NEEDS AND OBJECTIVES:

In their professional role, physicians may be expected to implement and evaluate quality improvement (QI) solutions including informatics or systems-based innovations. Design Thinking (DT) teaches unique skills such as requirements analysis, user-centered design, and interprofessional collaboration that could help future physicians find novel solutions to healthcare challenges.

We developed an informatics pilot elective for medical students and residents to study DT models and apply techniques to real-world QI projects. We expected learners to: (1) learn a framework for user-centered design; (2) use mixed methods research to identify user and program requirements; (3) participate on design-thinking teams to generate a wide range of solutions; and (4) use standardized rubrics to evaluate solutions.

SETTING AND PARTICIPANTS:

We chartered a formal collaboration between the University of Oklahoma-Tulsa School of Community Medicine (OUSCM) and the University of Kansas School of Architecture and Design (KUSAD). Using virtual classrooms, two medical students and two internal medicine residents worked with 38 design school students on a QI project developing an inpatient shift handoff tool.

DESCRIPTION:

We asked the OUSCM learners to draft a client brief for the KUSAD design students and then work with the design students to gather market research, complete a mini-ethnography, and write technology requirements. The KUSAD students engaged in iterative design work, ultimately producing high-fidelity shift handoff prototypes.

EVALUATION:

We evaluated our rotation in three ways: (1) rating the quality of DT deliverables; (2) assessing the knowledge of learners; and (3) identifying barriers to repeating and scaling the elective. To assess deliverables, we asked OUSCM learners and faculty to score each prototype using a modified usability scoring rubric. We calculated a composite score that ranged from 0-20. Each student gave a presentation on the topic of DT, which was well-received. Faculty members catalogued barriers to reproducing the curriculum.

DISCUSSION / REFLECTION / LESSONS LEARNED:

The OUSCM learners crafted 17 needs statements based on interviews and ethnography. The KUSAD students then produced 34 software designs. Design scores ranged from 13.3 to 19.4 (mean 16.2; mode 15.6). Faculty reported barriers to reproducing the curriculum including administrative support, obtaining IRB clearance, and the need for an online collaborative tool.

The pilot allowed learners to work on interdisciplinary teams, gain experience in systems-based practice, and exchange domain expertise. Barriers to scaling the rotation include securing additional faculty, leveraging team collaboration software, and developing a robust curriculum evaluation tool.

CAN YOU PUMP IT? TEACHING RESIDENTS TO ASSESS CORRECT PATIENT METERED DOSE INHALER USE

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NEEDS AND OBJECTIVES:

1) Evaluate resident ability to correctly use an and teach patients correct MDI use

2) Teach residents how to correctly use and teach patients correct MDI use

SETTING AND PARTICIPANTS: This exercise was conducted at an academic community hospital in New York City. Interactions occurred after change of shift and during night float rotations. Instructors were the residents who authored this exercise. Participants included internal medicine residents of all postgraduate years.

DESCRIPTION: Residents met one on one with an instructor in resident workrooms. They were provided an MDI and asked to teach the instructor how to use it as if the instructor was a patient. Resident performance was evaluated using a checklist of tasks based on the MDI manufacturer's instructions. The instructor then demonstrated the correct use of the MDI, reviewed the checklist of tasks with the residents and answered questions. The resident repeated the pre-intervention exercise and their post-intervention performance was recorded.

EVALUATION:

Of 91 residents, 32 participated in this study. Before the instructor education, residents performed well when explaining when to use an MDI (78.1%; n=25) and holding the MDI 1-2 inches in front of his or her mouth (n=16; 50%). Residents performed poorly on personal and MDI maintenance, with an average of 17.1% tasks being performed correctly. The task most often missed was instructing the patient to rinse the actuator weekly (12.5%; n=4). Residents also performed poorly at assessing patient understanding, with only 35.9% of tasks being completed, and only 31.3% of residents (n=10) asking if patients had any questions.

A subset of residents had who had prior education on MDI use (n=5) or who personally used an MDI (n=5) performed better overall on the pre-educational evaluation. They performed better in all categories except for assessing patient understating with few asking the patient to demonstrate the technique (n=3, 30%) and asking if the patient had any questions (n=3, 30%).

DISCUSSION / REFLECTION / LESSONS LEARNED:

The pre-education evaluation demonstrates a need for resident education on MDI use by showing that residents performed poorly when assessing and teaching correct MDI use. Residents who personally use an MDI or had prior MDI education are better equipped to educate patients as they performed better overall and were more likely to know how to use an MDI correctly before this exercise. After completing this short educational exercise, all residents demonstrated improved ability to assess and teach patients correct MDI use.

Residents poor education regarding MDI use is likely due to medical school and residency training focusing on diagnosing and treating illness, rather than equipping residents with skills needed to ensure proper use of medical equipment. Gaps in resident knowledge likely extend beyond MDI use and encompass other medical equipment. Further educational assessments and exercises should be employed to improve resident knowledge of medical equipment to ensure correct technique and improve patient outcomes.

PRIMARYCARECHAT: AN INNOVATIVE TOOL FOR LEARNING AND COMMUNITY BUILDING

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NEEDS AND OBJECTIVES: The community of Free Open-Access Medical Education (FOAMed) has blossomed into a rich world whose users regularly engage in internet-based learning sessions. Twitter has become a particular FOAMed hub, popularizing bite-sized learning via tweetorials and Twitter Chats. Unlike tweetorials, chats allow for a two-way exchange of ideas by posting questions and asking participants to tweet responses, thereby promoting peer-to-peer learning. To date, Twitter chats have largely been subspecialty focused or addressed more experiential/humanistic topics; few have centered around general medicine knowledge/practice. We created Primary Care Chat (PCC) to promote evidence-based medicine in primary care settings.

SETTING AND PARTICIPANTS:

In August 2019, we created the @PrimaryCareChat Twitter handle, hosting facilitated chats every other week. Participants varied by chat but included any Twitter user who logged on at the appointed time/date.

DESCRIPTION: Chat topics were selected by PCC moderators and announced by a tweet from @PrimaryCareChat. Some chats included an expert discussant who helped create chat questions and provided scholarly resources. Over the duration of the 1 hour chat, prepared questions were posted at set intervals, and participants were invited to respond and interact with others on each question thread. At the end, a summary of learning points was posted from the PCC account. In addition, a post-chat feedback survey was tweeted where participants rated how "useful" the chat was on a scale of 1 (not useful) to 4 (extremely useful). Users were encouraged to comment post-hoc if they were unable to take part in the "live" chat.

EVALUATION: We used the Twitter Analytics dashboard to characterize participant demographics and quantify the impact/engagement of chat topics. We used the "poll" feature to administer the post-chat surveys.

60% of our audience identifies as female and 40% as male. They are 80% American, 9% Canadian and < 2% from other countries. Sample topics include sleep disorders, LGBTQ+ care and trauma-informed care.

Our 10 chats have received an average of 23,384 impressions per topic, ranging from 8,273 (caring for patients with barriers to care) to 35,243 (LGBTQ+ care). N=53 respondents to the post-chat surveys rated chats an average of 3.66/4 (1 being least useful, 4 being most useful).

DISCUSSION / REFLECTION / LESSONS LEARNED:

Twitter chats are a valuable educational tool. They create a space for learning exchanges across multiple institutions, countries, training levels, and practice settings. Our chats have received tens of thousands of impressions (suggesting broad reach). Moreover, chat content was rated highly useful by participants. Together, these findings indicate that PCC facilitates dissemination and discussion of primary care-related knowledge, allowing for academic collaboration and engagement with low overhead and time investment.

ONLINE RESOURCE URL (OPTIONAL): www.twitter.com/primarycarechat

USING SIMULATION-BASED TRAINING TO IMPROVE RESIDENT EDUCATION IN DISCHARGE PRACTICES

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NEEDS AND OBJECTIVES: Hospital discharge is a complex process prone to medical errors. Our objective was to implement an effective simulation-based education intervention to improve transition practices in graduate medical education.

SETTING AND PARTICIPANTS: PGY-1 residents from the Internal Medicine and Transitional Year residency programs at West Virginia University completed a discharge simulation within the first two months of their residency.

DESCRIPTION: A lecture on a successful discharge was given prior to the simulation. Two patient scenarios listing a brief patient history, hospital course, and medication list were given to the residents. Case 1 used a patient with a new diagnosis of diabetes mellitus type II requiring insulin and coronary artery disease. Case 2 used a patient with infective endocarditis discharged on anticoagulation and MAT for opioid use disorder. These cases were designed to emphasize geographic healthcare disparities and lack of access to treatment. Residents were observed by a faculty member during the simulation, who completed a case specific discharge rubric.

A resident placed discharge orders in a practice EMR created specifically for this simulation. After completing discharge orders, an observing faculty would describe common pitfalls within the EMR and checks orders for accuracy.

EVALUATION: Participants were randomly assigned to case 1 (n=14) or case 2 (n=22); distribution was unequal based on simulated patient scheduling. Scores for each case were similar at 72% and 69%. Discussing medication obtainment for MAT in case 2 received the lowest score of all rubric categories with an average score of 50%.

Twenty-three residents responded to the post-simulation survey (63% response rate). Residents reported that their confidence in discharging a patient dramatically increased with 91.67% ($p < 0.05$) agreeing the simulation improved their confidence in safely discharging a patient. Eighty-three percent of residents reported increased confidence in using the EMR discharge navigator post-simulation.

DISCUSSION / REFLECTION / LESSONS LEARNED: Post-acute care transitions are a complex process that often leaves patients perplexed. Residents feel that they do not receive formal training in transitions practices and instead learn these processes by peer-to-peer instruction during patient care. We developed our stimulation-based educational intervention to teach a standardized discharge process to our residents. Our discharge rubric was enlightening in that we were able to identify future educational targets during the observed encounters. Discussing medication obtainment for MAT for OUD received the lowest score of all categories; many residents commented they were unaware of prescribing requirements of MAT. Residents also received lower scores when addressing other unique needs of OUD, which included community resources and access to behavioral medicine.

A CLINICAL-REASONING BASED INNOVATION: FERM ROUNDS (FACILITATING EXCELLENT REASONING IN MEDICINE)

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NEEDS AND OBJECTIVES: Based on feedback from residents about the low quality of inpatient education on the general medicine teaching service, a needs assessment was conducted and the following growth areas were determined:

- The intern presented the H&P without direct guidance on content selection and with the patient's ED course and data typically included in the "HPI"

- The culture to avoid interrupting the learner as they presented which was intended to convey consideration created barriers to on-the-fly/transparent feedback on medical decision making

- The supervising resident had the expectation of providing a 'teaching point' at the case's conclusion, but the content of the teaching and the integration with the discussion of the case were not clear

- While the night teams felt like they had the opportunity to learn directly in their role admitting and managing a patient for several hours prior to discussing the case, they did not feel successful in conveying the content of their experiential learning/overnight decision making, and as a result missed out on direct feedback on that decision making

Out of these needs were determined the following objectives:

- Provide a uniform structure for the presentation of the teaching case that identified roles for each participant

- Include interval pauses in the structure of case presentations to eliminate barriers to on-the-fly feedback and create a culture where discussion and questioning are incorporated in the dialogue rather than appearing intrusive

- Educate the residents and faculty on core concepts of clinical reasoning to ensure shared mental model for discussion of medical decision making

SETTING AND PARTICIPANTS: General medicine ward staffed by the residents and attendings of the YPC IM program

DESCRIPTION: FERM rounds was designed with the following structure: the night resident selected the teaching case and classified it according to the highest yield content as a case focusing on diagnosis, management or clinical concepts and pearls. The night resident coached the intern in presenting aliquoted data with structured pauses for group discussion according to predetermined scripts. We designed graphic organizers summarizing the key concepts in clinical reasoning and outlining the scripts for each type of case which were displayed as posters in the team space and provided on individual laminated pocket cards for the housestaff.

EVALUATION: Evaluation of the impact of the changes to the rounding structure was done on an ongoing basis by regularly attending FERM rounds and soliciting feedback directly from participants as well as periodic qualitative feedback from residents through the Program Evaluation Committee.

DISCUSSION / REFLECTION / LESSONS LEARNED: Overall, perception from the residents of the new structure was largely positive, with a substantial increase in the satisfaction ratings for the quality of medical education on the general medicine service. The housestaff and faculty's familiarity and use of clinical reasoning terminology and concepts increased and was reinforced in reports and other contexts.

A COMMUNITY BASED LONGITUDINAL ADVOCACY CURRICULUM FOR UNDERGRADUATE MEDICAL STUDENTS

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NEEDS AND OBJECTIVES: Undergraduate medical curricula traditionally train students to understand the pathophysiology, diagnosis and treatment of disease, with much less curricular emphasis on topics such the social determinants of health (SDoH), disease prevention and health advocacy. Recognizing this opportunity, a novel community based curriculum was developed with goals of teaching core public health and advocacy principles by engaging with community-based organizations.

A pre-curricular needs assessment survey was administered to past participants of a Longitudinal Integrated Clerkship (LIC) at an urban safety net hospital. Half of respondents reported "little/none" when asked about prior exposure to curricula related to advocacy. Sixty percent of respondents rated their knowledge/understanding of the legislative process related to health issues as "poor/very poor." Seventy-five percent rated their comfort/ability address a health related policy "somewhat/very uncomfortable

SETTING AND PARTICIPANTS: Based on this needs assessment, a novel curriculum was developed and implemented for a class of ten 3rd year medical students in an LIC at an urban safety net hospital. Students chose to collaborate with one of two community organizations: a harm reduction center/needle exchange or a shelter for homeless teens.

DESCRIPTION: The multi-modal curriculum consists of classroom and community components. Students engage in small group didactic content, engagement with a community agency, and reflection activities. Over six months students design and implement a collaborative advocacy project with their chosen community organization. Students present projects and participate in reflection at the end of the academic year.

EVALUATION: The curriculum will be evaluated for knowledge, attitudes, and confidence around advocacy topics, work with community organizations, service orientation, and leadership, using a survey published by Belkowitz et. al. The evaluation uses two pre-exposure LIC cohorts as controls, and will be administered as a pre/post curriculum survey for participating students. The impact on community organizations will be assessed as well as the advocacy projects themselves. Data from the exposure control group and the pre-curriculum survey from the current cohort was collected and pooled (n=20). Post- curriculum data will be collected and analyzed in March, 2020.

DISCUSSION / REFLECTION / LESSONS LEARNED: Incorporating a community engagement curriculum in an already busy LIC curriculum presents challenges related to student motivation and fatigue. The quality of the community relationships and projects is dependent on both student and organization engagement, and therefore depends heavily on mutual commitment and participation.

ADDRESSING SOCIAL DETERMINANTS OF HEALTH IN AN INTERPROFESSIONAL OUTPATIENT RESIDENCY TRAINING PROGRAM

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NEEDS AND OBJECTIVES: Within the US, many health care providers do not understand the full extent or nature of health disparities[i]. Current literature outlines the need for further education on social determinants of health (SDH) in graduate medical education, but there is little evidence on how to approach this within an interprofessional (IP) setting. We developed an SDH curriculum with an emphasis on an IP model of education.

Learning Objectives:

1. Define SDH and understand how sociocultural factors affect patient interactions within healthcare

2. Develop strategies to recognize gaps in care and utilize resources to individualize patient needs

3. Recognize personal bias and its impact on patients

SETTING AND PARTICIPANTS: The Center of Outpatient Education (COE) was developed at the VA to address the need to train future healthcare professionals using an IP team-based model. Trainees within the COE include residents and students from the following fields: Medicine, Nursing, Pharmacy, Psychology and Social Work. Participants of the COE program are educated in a variety of settings including IP didactics, VA clinics and offsite affiliations (i.e. local museums).

DESCRIPTION: IP faculty representing the above professions developed this curriculum by collaborating to create a vision statement along with ideas for relevant content.

Examples of developed lectures and goals:

1. Social Justice: Recognize the impact of legal involvement on patient care

2. Introduction to the US Healthcare System: Describe legal policies and historical events that led to the current insurance market

3. Climate Change and Health: Illustrate the impact of environmental changes on population health and migration

Plans for future content include: 1) A community mapping exercise to help learners understand the effects of community infrastructure 2) Healthcare related to vulnerable populations (e.g. immigrants, LGBTQ patients).

EVALUATION: Our current evaluation system comprises real time feedback after each lecture/activity with the COE chief resident and via minute papers. The minute papers are composed of three 5-point Likert scale questions to assess session usefulness, confidence in presented material and overall presentation. There are also 3 short-answer questions to address suggestions for improvement, remaining questions, and major take- home lessons.

DISCUSSION / REFLECTION / LESSONS LEARNED: The need for high-impact IP learning regarding SDH topics led to the development of this curriculum. As we progressed, it became clear that the content required thoughtful examination to develop an inclusive, manageable curriculum for learners. IP faculty involvement in development was key to ensure that each profession was appropriately represented. We felt it was prudent to cover content that would be relevant on both a local and national scale to prepare learners for their future career paths.

ONLINE RESOURCE URL (OPTIONAL): [1] Gregg J, Solotaroff R, et al. (2008). Health and disease in context: a community-based social medicine curriculum. Academic Medicine. 83 (1):14-9. 10.1097/ACM.0b013e31815c67f0

ADDRESSING THE ACHIEVEMENT GAP IN PRECLINICAL MEDICAL EDUCATION

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NEEDS AND OBJECTIVES: The disparity in academic performance between white and nonwhite students precedes kindergarten and worsens as students progress through the educational system. Medical education is not immune from this disparity. Underrepresented medical students are more likely to experience delayed graduation and failure even after accounting for science GPA and MCAT performance. Moreover, underrepresented medical students are more likely to earn lower scores on licensing examinations, which can have a significant impact on their career trajectory. Given the recent recommendations by the Invitational Conference on USMLE Scoring, there is an urgency in addressing this disparity as the current climate places underrepresented students at a disproportionate disadvantage regarding specialty choice and residency competitiveness. Due to the history of inequity in science education, minority students are at particular risk during the basic science portion of their preclinical curricula. Institutions should be proactive in mitigating those risks that many underrepresented students will face in their coursework. Although some medical schools have previously implemented interventions for at-risk and underrepresented students, none have developed a comprehensive, longitudinal approach. We propose a supplemental academic support program to close the achievement gap in medical education.

SETTING AND PARTICIPANTS: The target audience will be medical students in the preclinical period of their curricula.

DESCRIPTION: We have developed an evidence-based approach that includes a targeted pre-matriculation program, longitudinal tutoring and peer-teaching sessions, and innovative strategies to improve study hygiene and test-taking skills. We also incorporate wellness techniques that address the psychological stressors that are associated with academic underperformance among minorities, e.g. stereotype threat.

EVALUATION: Partial implementation of this program in a small cohort of underrepresented medical students (n=5) has shown initial improvement in preclinical courses and standardized test performance, i.e. NBME assessments. Moreover, a pilot study (n=1) showed significant improvement from Step 1 to Step 2 CK exams, suggesting a possibility of scaling up this program beyond the preclinical stage.

DISCUSSION / REFLECTION / LESSONS LEARNED: Preliminary results have indicated that a longitudinal, integrative support program can significantly improve academic performance among underrepresented medical students when other methods, e.g. basic tutoring, have not been sufficient. Future studies in a larger cohort over a longer period of time are needed to assess the efficacy of the full intervention.

ADDRESSING UNMET NEEDS IN WOMEN'S HEALTH EDUCATION FOR VA CONTINUITY CLINIC RESIDENTS: A HANDS-ON, RESIDENT-TAILORED CURRICULAR INNOVATION

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NEEDS AND OBJECTIVES: ACGME requires women's health education, but access to hands on women's health clinical skills is low for residents with a VA continuity clinic. To address this gap in resident education, we created women's health (WH) sessions that are embedded within an existing, required ambulatory block. The objectives are to (1) practice pelvic and breast exam using "Limbs and Things" models through a case- based curriculum; (2) engage in evidence-based women's health preventive care including cervical and breast cancer screening, intimate partner violence, family planning, sexually transmitted infections, and menopause; and (3) employ gender and culturally sensitive skills in clinical practice.

SETTING AND PARTICIPANTS: The setting is an academic center affiliated VA primary care clinic. The participants are all internal medicine residents with VA continuity clinic on required ambulatory block. Internal medicine attendings lead the sessions with curriculum called Core Topics in Women's Health.

DESCRIPTION: The WH session is a half-day, 1-on-1 workshop. The case-based and hands-on session is tailored to residents' unique gaps in women's health education, including cervical and breast cancer screening, intimate partner violence, family planning, sexually transmitted infections, and menopause. Pelvic and breast models from Limbs and Things LTD Medical Training Models demonstrate a variety breast, cervical, uterine, and vaginal pathologies. Residents engage in case-based learning, developing a plan of care for the patient, choosing diagnostic testing and treatment based on their exam of the pelvic model.

EVALUATION: All residents evaluated the WH sessions within a larger survey for the ambulatory block. Sessions were rated on a scale of 1-5, with 1 as not valuable at all, 2 as somewhat valuable, 3 as valuable, 4 as very valuable, and 5 as extremely valuable. Future evaluation will focus on the impact of the model/simulation-based learning component on resident self-efficacy in women's health clinical practice.

DISCUSSION / REFLECTION / LESSONS LEARNED: After a year of implementation and evaluation, the WH sessions are highly rated with 75% of residents rating the sessions as "extremely valuable." The sessions fill a crucial gap in resident education. The hands-on portion is key, given this may be the first time residents feel an ovarian cyst, determine uterine position, or correctly identify an abnormal breast mass, especially in VA residents with limited exposure. The biopsychosocial model is applied when discussing cases of intimate partner violence, allowing residents to practice trauma informed care in the pelvic exam. The 1 on 1 nature of the sessions are meaningful as sessions are tailored to each resident's unique learning needs. For example, for male residents, the hands-on portion may be one of few learning opportunities for pelvic exam. It is rare for residents across the country with VA continuity clinic to have dedicated and required women's health curriculum that enables them to feel self-efficacious in the clinical care of women.

A GOOD FIT: INTERPROFESSIONAL, TEAM-BASED LEARNING AND CARING FOR VETERANS EXPERIENCING HOMELESSNESS

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NEEDS AND OBJECTIVES: Homeless Veterans often have complex and intertwined medical, psychological and social needs. Interprofessional, team-based care models are beneficial in meeting these needs and offer valuable clinical training opportunities across health professions. Formal learning opportunities while caring for homeless patients, supported by well-staffed clinical teams and coupled with interprofessional education, remain rare.

SETTING AND PARTICIPANTS: Since 2011, the Veterans Health Administration (VA) has supported Centers of Excellence in Primary

Care Education (CoEPCE) to advance innovations in interprofessional education (IPE). We evaluated two CoEPCE programs that aim to deliver quality care to homeless Veterans while also providing team-based learning within VA's Homeless Patient Aligned Care Team (H-PACT) clinic model.

DESCRIPTION: Shared COEPCE curricular practices include interprofessional case conferences, expanded team huddling, and alignment of trainee schedules. One CoEPCE employs humanism as an explicit training concept and is composed exclusively of H-PACT teams; the other provides care for both homeless and non- homeless Veterans.

EVALUATION: We conducted a constant comparative analysis of verbatim transcripts of semi-structured interviews with 15 interprofessional learners and 14 interprofessional faculty from advanced practice nursing, internal medicine, psychology, psychiatry, pharmacy, and social work.

DISCUSSION / REFLECTION / LESSONS LEARNED: Perceived benefits and challenges of IPE while caring for homeless Veterans were largely consistent across sites. Faculty and trainees reported that interprofessional teams decreased barriers to care and offered more efficient and higher quality of care, due to the presence of multiple experienced team members to meet more patient needs in one visit with reduced administrative burden. Trainees' confidence in managing complex scenarios in real time was cultivated by the team. Both faculty and trainees described more satisfying professional experiences resulting from patient needs being more likely to be met. Trainees described how caring for these patients created ease and familiarity in applying a Social Determinants of Health (SDH) lens. Enhanced team huddles were emphasized as a particularly useful care and educational tool. Trainees from several professions experienced growth in recognizing their inability to "fix" patients' challenges, and that provider-patient priorities don't always coincide. High no-show rates hampered educational needs; clinics developed context-dependent strategies to address this. Some trainees expressed anxiety that they were not learning enough "medical" management. Faculty described trying not to overwhelm trainees with too many complex cases early on, while ensuring all patients had their care needs met.

A GRADUATE MEDICAL EDUCATION ELECTIVE ON HEALTHCARE FINANCE

Vanneta Hyatt. Internal Medicine, Lewis Katz School of Medicine, Drexel Hill, PA. (Control ID #3392410)

NEEDS AND OBJECTIVES: increase knowledge of health care financing in our Resident physician in a large academic institution

SETTING AND PARTICIPANTS: PGY2 and PG Y3 in the IM residency program

DESCRIPTION: A healthcare finance elective was created to give resident physicians a better understanding of different areas of the financing of a healthcare organization and tools to help them as they complete their training to practice independently. This is a 1-week elective during which the resident physicians meet with several administrative staff to discuss their role in the financial management of the institution. Several topics were covered during these meetings which includes: utilization review/denials and appeal management, the complex relationship between the Health System and the payers, both private and governmental, coding and billing, specific policies on reimbursement for visits and procedures, and physician recruitment to name a few. One of the highlight of this elective was the unique opportunity to spend a day at a major Health Maintenance Organization in city of Philadelphia to gain insight into the management of healthcare expenses from a payers' perspective. Some topic covered were contract negotiation with providers, appeals process, quality improvement initiatives, and the effect of government regulations and the law in delivering health care.

EVALUATION: Resident physicians were required to write an essay on the health care topic of their choice and the impact of the rotation on their training. Qualitative analysis of lessons learned was obtained from the essays

DISCUSSION / REFLECTION / LESSONS LEARNED: Overall the resident physicians reported increase in their general knowledge regarding the role of third party payers such as HMO and government program (Medicare Medicaid,) and their responsibilities as providers of care in the current healthcare system. Their comfort level with various health finance topic also improved and inspired some to seek out other opportunities to continue to build on this knowledge. This elective successfully increased the knowledge of our resident physicians regarding healthcare finance, which in turn gave them a better understanding of the delivery of healthcare in the United States.

A HEALTH LITERATE CARE CURRICULUM: LEVERAGING A PUBLIC-ACADEMIC PARTNERSHIP TO ADDRESS SOCIAL DETERMINANTS OF HEALTH

Lauren Block[1]; Samara Ginzburg[2]; Cindy Brach[3]; Terri Ann Parnell[5]; Marie Petrizzo[2]; Linda Harris[4]. [1]Medicine, Northwell Health, Lake Success, NY; [2]Zucker School of Medicine at Hofstra/Northwell, Hempstead, NY; [3]Agency for Healthcare Research and Quality, Washington, DC; [4]U.S. Department of Health and Human Services, Washington, DC; [5]National Academies of Sciences, Engineering, and Medicine, Washington, DC. (Control ID #3390051)

NEEDS AND OBJECTIVES: While health literacy is a key social determinant of health, over one third of US adults have limited health literacy. Training to address health literacy by adopting a 'universal precautions' approach is necessary to ensure healthcare professionals meet the needs of patients. A set of knowledge, skills, and attitudes have been proposed to prepare physicians to work with patients of all health literacy levels. To our knowledge, no medical school has adopted this comprehensive approach. Through a public-academic partnership, we leveraged the expertise of government officials to integrate a Health Literate Care Model throughout the curriculum at one medical school.

SETTING AND PARTICIPANTS: Health literacy experts from the US Department of Health and Human Services' Office of Disease Prevention and Health Promotion, the Agency for Healthcare Research & Quality (AHRQ), the National Academies of Sciences, Engineering, and Medicine's Roundtable on Health Literacy, and medical school faculty collaborated over two years.

DESCRIPTION: Through conference calls and a site visit, health literacy experts learned about the curriculum and educated the curricular team about the AHRQ Health Literacy Universal Precautions Toolkit (AHRQ Toolkit). Together they evaluated and aligned the curriculum with the AHRQ Toolkit. The curriculum was mapped to the AHRQ Toolkit. Fourteen of the twenty-one health literacy tools, including 'form a team,' and 'make action plans,' already existed in the curriculum and were enhanced. Seven tools and corresponding assessments were added to the first, second, or third year curriculum. Tools to promote clear communication were incorporated in the quality improvement curriculum. Students reflected on navigation challenges of their own patient portals and critiqued written patient education materials. Students practiced skills to communicate with standardized patients declining vaccination. Students practiced connecting patients to literacy resources. An interprofessional education session focused on interdisciplinary collaboration.

EVALUATION: The curricular enhancements are being implemented with 300 first, second, and third year students during the 2019-20 academic year. Each tool was mapped to a corresponding student assessment. Assessment components include completion of clinical learning

objectives in clinical preceptorships, formative and summative exam questions, and clinical skills encounters.

DISCUSSION / REFLECTION / LESSONS LEARNED: Collaboration between public and academic health literacy experts and faculty from one medical school yielded a Health Literate Care Curriculum integrating each tool from the AHRQ Toolkit. Feedback from health literacy experts ensured each tool was integrated into the curriculum, coupled with an assessment focused on skills and knowledge acquisition. Ongoing collaboration and a site visit ensured health literacy experts understood curricular framework and guiding principles, in order to provide tailored feedback and recommendations.

ALL EARS: WHO IS LISTENING TO INTERNAL MEDICINE PODCASTS?

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NEEDS AND OBJECTIVES: A recent trend in both graduate and undergraduate medical education is the incorporation of asynchronous learning and "flipped classroom" pedagogies. Podcasts, in particular, have grown exponentially relative to other medical education resources. Many residents use and prefer podcasts for their medical education. One survey found that 88% reported listening to medical education podcasts at least once a month while another identified podcasts as the most popular form of extracurricular education and as the most beneficial learning resource compared to textbooks, journals, and Google. But who is listening to these podcasts and what episodes are the most popular?

SETTING AND PARTICIPANTS: Individuals from any country can download episodes of The Curbsiders without cost using any podcast player (Apple Podcasts, Spotify, CastBox, Sticher).

DESCRIPTION: Self-reported data were collected from a short questionnaire provided when an individual subscribes to "The Curbsiders" internal medicine podcast mailing list. Internal download data was collected. Statistical analysis was used to fit a model to understand download growth. We then assessed which episodes were above the 95% confidence interval of predicted downloads (i.e. received more downloads than predicted by the model); these were identified as Top Performing Episodes.

EVALUATION: Using self-reported data from a survey of 10,089 subscribers, approximately 38% identified as internists, specialists, faculty, or post-training physicians, 23% as residents or fellows, 20% as advanced practitioners (e.g. physician assistants or nurse practitioners), and 15% as students. Our growth rate suggests we receive 300 more regular downloaders with each episode. Top Performing Episodes that outperformed the model were: #48 Hyponatremia deconstructed, #137 Hyperkalemia, #138 Inflammatory Bowel Disease, #159 Atrial Fibrillation Review, #161 Rash approach.

DISCUSSION / REFLECTION / LESSONS LEARNED: Our data demonstrate that medical education podcasts are being adopted at all levels of training. Our growth rate suggests a linear growth rate of 300 more downloads per each episode is a reasonable fit (R = 0.77). The Top Performing Episodes include Nephrology topics that were recorded with a prominent social media influencer. Perhaps more surprisingly, an episode on rashes: a topic generally thought of requiring visual pedagogies was a Top Performing Episode.

ONLINE RESOURCE URL (OPTIONAL): https://thecurbsiders.com/

AN AMBULATORY NUTRITION CURRICULUM TO ADDRESS CARDIOVASCULAR RISK REDUCTION FOR INTERNAL MEDICINE RESIDENTS

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NEEDS AND OBJECTIVES: Despite increasing rates of chronic diseases for which dietary intervention is a core component of management, only a minority of office visits for these patients include dietary counseling. A major barrier is the lack of nutrition education for physicians in training. We created a curriculum for internal medicine residents in order to improve the delivery of nutrition counseling to patients with hypertension, hyperlipidemia and body mass index (BMI) ≥ 25. We aimed to teach residents to initiate personalized nutrition counseling using behavioral change assessment and to refer appropriate patients for ongoing nutrition counseling.

SETTING AND PARTICIPANTS: Seventy-six internal medicine residents of a single residency program participated in the curriculum, delivered by faculty preceptors and given over two consecutive sessions in small group settings.

DESCRIPTION: Using a scaffolding of patient cases, we discussed nonpharmacologic management of patients with hypertension, hyperlipidemia, and BMI ≥ 25 and reviewed evidence for relevant dietary patterns. We provided resources for dietary referrals available in our health system and illustrated examples of appropriate provider responses based on the stage of behavioral change of the patient.

EVALUATION: We delivered electronic surveys to residents prior to curriculum implementation, immediately after, and 2 months after completion of the curriculum. Aggregate percent correct scores of knowledge questions significantly improved from 67% to 85% in the immediate post survey compared to baseline (n=24 paired responses, p=0.004). For patients with obesity, hypertension, and hyperlipidemia, 75% of residents in the delayed post survey reported providing nutrition counseling to appropriate patients always or most of the time for all three conditions compared to 25% of residents at baseline (n=12 paired responses). We also reviewed electronic health records (EHR) of patients with BMI ≥ 25, hypertension, or hyperlipidemia who were seen in our university resident clinics 2 months prior (n=503) and 2 months after (n=473) curriculum delivery. Documented nutrition counseling provided by residents increased from 35% to 41% in this time period (OR 1.27, 95% CI 0.97-1.67, p = 0.085). Referrals made for dietary counseling did not change in frequency (8%).

DISCUSSION / REFLECTION / LESSONS LEARNED: After delivery of this curriculum, trainee knowledge of nutrition interventions for reducing cardiovascular risk improved. More residents reported providing nutrition counseling for appropriate patients and we observed a trend towards increased EHR documentation of nutrition counseling provided by residents. Further evaluation is warranted to investigate the low rates of dietary referrals made by residents.

A NARRATIVE MEDICINE APPROACH TO MENTAL HEALTH, IDENTITY, AND TRAUMA- INFORMED CARE

Hannah Beaman[1]; Sarah Watanaskul[1]; Archna Eniasivam[2]; Louise Aronson[3]. [1]School of Medicine, UCSF, San Francisco, CA; [2]Internal Medicine, Pediatrics, UCSF, San Francisco, CA; [3]Geriatrics, UCSF, San Francisco, CA. (Control ID #3390852)

NEEDS AND OBJECTIVES: Student evaluations at UCSF show that traditional case-based small groups are inadequate when discussing the intersection of patient and clinician identities with health and healthcare. Students identified emotional gaps and expressed a desire for the integration of personal experience in the course. Considering the effectiveness of storytelling in conveying emotion and experience, we redesigned one seminar using a narrative medicine approach as a pilot for addressing low learner satisfaction and enhancing learning about identity and disparities.

SETTING AND PARTICIPANTS: Two hour small group on "Mental Health, Identity, and Trauma- Informed Care" attended by 12 first-year medical students and facilitated by 1-2 faculty members.

DESCRIPTION: The seminar centered around three excerpts of contemporary first-person narratives:

-"My Mental Illness Did Not Prevent Me From Succeeding, But The Stigma Nearly Did" by Michelle Yang

-Citizen: An American Lyric by Claudia Rankine

-NEJM Perspective: "Resistance and Surrender — Remembering to Bow to Strength, Not Power" by Jennifer Tsai

Selected narratives highlighted intensely individual experiences of mental illness and trauma while also acknowledging the impact of sociocultural factors such as stigma, the experience of discrimination, and clinician bias. Discussion was guided through tailored questions and supplemented by a reader chapter about trends in mental healthcare and associated disparities.

EVALUATION: Student pre/post-seminar surveys were analyzed via paired t-test (n=13). Post-session surveys showed statistically significant increases in student confidence in avoiding biased language (p=0.009) and applying trauma-informed care (p=0.015). Students felt that the narrative-based format helped them meet the session's learning objectives. One student commented: "The narrative-based format of the small group session was so effective at keeping everyone not only educated on the topics discussed, but also actively engaged the entire time on several different levels: mentally, emotionally, etc. I wish the rest of the small group sessions for H&I were run in the same way."

DISCUSSION / REFLECTION / LESSONS LEARNED: Narratives packaged didactic information in an emotionally engaging format and created space for students to share personal experiences. It was difficult to isolate the effect of the narrative approach on student learning since multiple aspects of the seminar changed (format, learning objectives, reader chapter). Furthermore, our likert scale questions may not have captured some aspects of the narratives' impacts (e.g. increased engagement and emotional connection to learning), which may have been better evaluated with qualitative research methods.

Key to this approach is the involvement of students in narrative content curation. Students may be best attuned to their class's needs and well-suited to the time-intensive process of identification of appropriate narratives, creation of tailored discussion questions, and development of facilitator guides.

ONLINE RESOURCE URL (OPTIONAL): https://ucsf.box.com/v/NarrativeSmallGroup

A NARRATIVE MEDICINE WORKSHOP ON END-OF-LIFE CONVERSATIONS: HELPING JUNIOR RESIDENTS TO ENGAGE IN EMOTIONAL PROCESSING

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NEEDS AND OBJECTIVES: Junior residents are asked to take care of critically-ill patients, whether in the intensive care units or on the general medical wards, and often are assumed the *de facto* provider with whom these patients and their families have goals-of-care and end-of-life (EOL) conversations. Physicians, even at the faculty level, express discomfort and avoidance of these conversations, with one perceived barrier being distress with the emotional intensity around these conversations. Narrative medicine, which uses literature as a source for reflective practice, may provide emotional distance that then allows providers to identify and process their own emotional responses to patients at EOL. We aimed to assess whether a narrative medicine workshop around EOL could facilitate emotional processing in junior residents.

SETTING AND PARTICIPANTS: Junior residents in the primary care track of the internal medicine residency program (PGY2, n=10) at an urban academic medical center located in the Bronx, NY.

DESCRIPTION: A two-hour workshop was created around primary texts on death and dying narratives, which included patient, provider and family perspectives. Written and oral prompts were created around these texts, drawing from available literature on narrative medicine and EOL curriculum. Prompts were open-ended to allow for broad interpretation and discussion.

EVALUATION: Preliminary evaluation suggests high engagement, with high participation in the written exercise (8/10), and in discussion with peers (9/10), although sharing written responses to prompts was low (2/10). Specific patient encounters were shared (4/10). Notable emerging themes included perceived barriers to having EOL conversations (lack of EOL teaching in 3/10, lack of time in 2/10), expression of difficult emotional states (uncertainty in 4/10, guilt in 3/10 and feeling coercive in 2/10), and expression of coping strategies (individual strategies in 2/10, systems strategies in 2/10). Follow-up focus group interviews around perceived effects of the workshop will be conducted in March 2020 with qualitative analysis to be complete by May 2020.

DISCUSSION / REFLECTION / LESSONS LEARNED: Our workshop suggests that within a narrative medicine workshop around EOL, junior residents do engage in discussion of patient encounters and challenging emotions around these encounters. We therefore posit that narrative medicine workshops, using literature as a source of emotional distance, can serve as a powerful and distinctive educational tool to assist in the emotional processing of EOL encounters in junior residents. Subsequent evaluation in focus group interviews may inform whether this narrative medicine workshop can furthermore affect perceived emotional self-regulation, with implications for effective non-judgmental and non-directive EOL counseling.

A NEW TRIPLE AIM FOR RESIDENT QUALITY IMPROVEMENT CURRICULA: ALIGNING RESIDENT EDUCATION, INSTITUTIONAL PRIORITIES AND MEANINGFUL CLINICAL IMPROVEMENT

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NEEDS AND OBJECTIVES: Internal medicine residents are required to participate in quality improvement (QI) activities as part of their training. However, lack of alignment between learner needs and institutional priorities often leads to poor learner engagement and lack of sustainable systems level changes or meaningful improvement in patient outcomes.

Curriculum Goals:

Identify gaps in care and partner with clinical stakeholders to design systems-based interventions Identify at least one quality metric relevant to patient care that can be tracked over time Demonstrate ability to use core QI skills

Design a test of change with the goal of clinically significant improvement

SETTING AND PARTICIPANTS: This curriculum was designed and implemented at the Center of Outpatient Education (COE) at the Louis Stokes Cleveland VA. This interprofessional primary care training program includes learners from medicine, nursing, pharmacy, psychology and social work. Each team consists of 3-4 interprofessional learners and a faculty coach. Projects lasted 12-18 months.

DESCRIPTION: Clinical faculty and facility leadership identified hypertension (HTN) control as a clinical improvement priority. After literature review, we identified MAP (Measure BP accurately | Act rapidly to manage uncontrolled HTN | Partner with patients, families and communities) as an evidence-based population health framework for scoping our improvement efforts. Four projects were selected:

1. Improving BP measurement in clinic
2. Improving HTN treatment
3. Increasing rapid follow-up for uncontrolled HTN
4. Improving home BP measurement

Residents completed Lean Six Sigma Yellow Belt training and were given an additional twelve hours of dedicated time with their QI coach over a year to work through Define, Measure, Analyze, Improve, Control (DMAIC) methodology. Each team identified and approached clinical stakeholders including nurse managers, scheduling managers, providers, prosthetics personnel and pharmacists to include in project teams. Lead clinical faculty (AH) met with QI coaches weekly, and primary care leadership bi-weekly, to address barriers to project implementation. Projects were phased in over time with launch of the initiative in July 2018.

EVALUATION: Twenty-one residents obtained Lean Six Sigma Yellow Belt certification. Each project team developed systems-based interventions and completed one change cycle. The percentage of HTN patients with blood pressure < 140/90 improved from 61% in July 2018 to 72% in January 2020.

DISCUSSION / REFLECTION / LESSONS LEARNED: We present a successful model for a longitudinal ambulatory QI curriculum that aligns resident educational needs and institutional priorities leading to significant, sustained improvement in clinical outcomes. Key success factors include: faculty facilitating bidirectional alignment of learner and clinic operational needs; dedicated curricular time; and project coaching. While appropriately scoping projects is an oft-cited barrier succesful resident QI projects, using an established evidence-based framework such as MAP can be effective.

AN EXPERIENTIAL APPROACH TO NUTRITION EDUCATION IN MEDICAL SCHOOL - A CULINARY MEDICINE CURRICULAR INTERVENTION

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NEEDS AND OBJECTIVES: Poor nutrition and physical inactivity are the second leading causes of death in the U.S. However, in Undergraduate Medical Education, nutrition education emphasizes biochemistry and not nutrition-based skills for health promotion. While physicians manage comorbidities of poor nutrition and patients believe physicians should provide nutritional counseling, many physicians do not. Less than half of primary care providers report advising patients about nutrition. A local needs assessment of UCSF students showed deficits in nutrition skills despite nutrition didactics. Our objectives were to implement a culinary medicine curriculum in order to bridge the gap between existing foundational science teaching of nutrition and medical students' perceived deficits in practical nutrition skills.

SETTING AND PARTICIPANTS: We implemented a one day culinary medicine intervention in the UCSF School of Medicine. Participants were medical students in clinical clerkship rotations.

DESCRIPTION: The course was delivered over a four hour session: a one and a half hour hands-on cooking session, one hour lunch, and one and a half hour small group case discussion that related cooking methods and materials to diseases and their underlying biochemical processes. For example, encouraging high fiber and low glycemic load foods while avoiding high fructose corn syrup for patients with pediatric obesity and nonalcoholic steatohepatitis.

EVALUATION: The evaluation was a validated questionnaire developed by Tulane Goldring Center for Culinary Medicine given before and after the intervention to assess beliefs, attitudes, and self-efficacy regarding providing nutritional education to patients. 96 (N=180) students completed both pre- and post- surveys. Statistically significant changes were seen in attitudes and beliefs that physicians should include nutrition counseling during appointments (p=0.000) and physicians can affect patients' dietary behaviors (p=0.001). Perceived efficacy to educate patients about nutrition increased in 23 of 25 topics, including: serving size (p=0.001), Mediterranean Diet (p=0.000), DASH diet (p=0.000), and diabetic diets (p=0.001). Intention to improve students' own dietary habits increased in 9 of 13 areas, including increasing intake of: vegetables (p=0.000), lentils/beans (p=0.000), and fruits (p=0.001), and decreasing intake of: red and processed meat (p=0.002), baked products (p=0.001), and calorie-containing beverages (p=0.002). Students reported a 67% increase in likelihood to provide nutrition assessment and counseling to patients (p=0.000).

DISCUSSION / REFLECTION / LESSONS LEARNED: The results of this intervention demonstrate that a one day session in culinary medicine is effective in addressing important gaps in medical education, including self-efficacy, which physicians site as a primary obstacle to nutrition counseling with patients. Future studies are required to examine whether a short-term intervention such as this can have a long term impact on students' clinical practices and/or health outcomes in students and their patients.

A NOVEL ASSESSMENT TOOL FOR SITUATIONAL AWARENESS

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NEEDS AND OBJECTIVES: Situational awareness (SA) is the perception of environmental elements and events, comprehension of their meaning, and projection of their future status (Endsley et al, 2000). SA has been recognized as critical for successful decision-making in health care. (Andreatta et al, 2011) We developed the Situational Awareness Assessment Tool (SAAT) to evaluate SA in Post-Graduate Year 1 (PGY-1) residents. Our objective was to describe PGY-1 SA using the SAAT and assess inter-rater reliability (IRR) of the SAAT in simulated acute care scenarios.

SETTING AND PARTICIPANTS: Internal Medicine PGY-1s at Washington University School of Medicine were invited to participate in acute care scenarios at our simulation center and be assessed using the SAAT. Senior residents directly observed and rated the PGY-1s using the SAAT; attendings assessed resident performance using videos of these encounters.

DESCRIPTION: Participating PGY-1s completed up to six unique simulated critical care scenarios. The SAAT is scored from 0-4: 0(Unable to Assess), 1(Required Complete Guidance), 2(Able to Perform Some Tasks), 3(Mostly Independent), 4(Independent) across six discrete domains: acquires information(AI), comprehends situation(CS), projects needs(PN), prioritizes information(PI), takes actions(TA), and summarizes / re-evaluates(SR). Senior residents provided scores in real time. Attendings provided scores after watching recorded sessions. PGY-1s were evaluated by at least one senior resident and two attendings. Descriptive statistics were used to describe resident performance. IRR was calculated using Spearman's Correlation and Krippendorff's Alpha. Scores of 0 (unable to assess) were excluded from analysis of IRR.

EVALUATION: A total of 53 of 56 PGY-1s participated (94.6%). Residents gave higher mean scores across all 6 domains compared to attendings (Mean +/- SD): AI= 3.1 ±0.8 vs 2.69 ±0.94, CS= 3.1 ±0.83 vs 2.76 ±1.01, PN= 3.0 ±0.79 vs 2.6 ±1.07, PI= 3.2 ±0.75 vs 2.61±1.0, TA= 2.8 ±0.8 vs 2.5 ±1.17, SR= 2.99 ±0.86 vs 2.5 ±1.05. Statistical analysis revealed significant correlation between resident and faculty assessments only in the domain of AI (r_s=0.53) but IRR via Krippendorff's Alpha was non-significant (α = 0.34). Attending within-group measurements were significantly correlated for all domains except TA (r_s = 0.37 to 0.68), and approached significance for IRR using Krippendorff's Alpha (α = 0.451).

DISCUSSION / REFLECTION / LESSONS LEARNED: The correlation results indicate that residents and attendings rank PGY-1 performance similarly across domains, i.e. from less to more independent. However, the ratings do not satisfy a more rigorous standard for acceptable IRR for summative assessment. The differences between resident and attending scores may reflect different standards for competence or differences between real-time and video-based scoring. However, the overall low IRR both between and within groups reinforces the need for enhanced rater training and raises concerns about whether the SAAT should be adopted as a summative assessment tool.

A NOVEL INTERACTIVE TEXT-MESSAGING CURRICULUM FOR INTERNAL MEDICINE BOARD REVIEW

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NEEDS AND OBJECTIVES: Many internal medicine (IM) residency programs use board review conferences with question banks to guide resident preparation for the American Board of Internal Medicine (ABIM) exam. However, duty hour restrictions, patient care responsibilities, and other conflicting priorities often limit attendance at these conferences. Mobile technology, including smartphone applications and text messaging programs, have shown promising results in education and may enhance ABIM preparation. Our aim is to develop a text messaging curriculum, that would be available to all the residents and to help IM residents better prepare for the ABIM exam.

SETTING AND PARTICIPANTS: This curriculum is designed for the IM residents at Tufts Medical Center in Boston, Massachusetts. After IRB clearance was obtained, all the 74 IM residents were approached with this curriculum proposal.

DESCRIPTION: We have developed an interactive online curriculum for IM residents to assist in their exam preparation, which can be accessed by text-messaging or through a smartphone application (Remind). Three relatively underperformed sub-specialties were identified based on a retrospective analysis of in- training exam scores. A pre-test with 12 multiple-choice questions (MCQ) from these subjects was completed by residents. Subsequently, they were added to a text messaging group to receive one MCQ per day (five days per week), to which residents can respond via text messaging or the smartphone application, Remind. They receive the correct answer with an explanation twelve hours after receiving the question. Frequent responders are mentioned in a weekly resident appreciation email. At five months, residents will complete a post-test and a survey gauging participant satisfaction, perceived educational value, and effect on IM board preparation. We will compare the results of the pre-test and post-test to assess the effect on test scores.

EVALUATION: Of 74 IM residents, 64 (86%) responded to the pre-test and 62 (84%) joined the texting group. The interim analysis shows that they received a total of 60 questions over three months. Participation has been variable, with 15-25 (24%-40%) residents responding to the questions on a daily basis. Further data (participant satisfaction survey results and post-test performance) will be available by February 2020.

DISCUSSION / REFLECTION / LESSONS LEARNED: Our smartphone-based board review curriculum has been well-received by IM residents. Participants prefer questions at 6 AM instead of 9 AM, as they can answer the questions during their commute to the hospital rather than answer them during prime rounding time. Preliminary data shows that they find this curriculum useful not only for self-preparation but also as an educational tool for small group learning, especially during morning work rounds with the in-patient team.

APRENDE! A MEDICAL SPANISH CASE BASED CONFERENCE

Yadis M. Arroyo, Elimarys Perez-Colon, Kellee Oller, Marijesmar Gonzalez-Valle. Internal Medicine, University of South Florida, Tampa, FL. (Control ID #3391557)

NEEDS AND OBJECTIVES: Linguistic barriers between Spanish-speaking patients and non-Spanish speaking health care providers is a major issue in the health care system. Such barriers interfere with the quality of care, patient satisfaction and medical compliance. Residencies serving the Hispanic/Latino populations need to enhance communication effectiveness and cultural competency to improve outcomes. The purpose of this project is to increase internal medicine residents' and medical students' confidence when communicating and establishing rapport with Spanish-speaking patients in hopes to diminish barriers in communication and improve overall medical care.

SETTING AND PARTICIPANTS: The conference takes place in the resident didactic/conference room at one of our main teaching sites, Tampa General Hospital. Participants include internal medicine residents, internal medicine-pediatrics residents, internal medicine faculty and medical students.

DESCRIPTION: A one-hour didactic session was allotted for a Spanish case conference presentation. This occurred in place of a traditional "case-based conference," and consists of a simple case presented entirely in Spanish. There is a resident facilitator who acts as the patient and a faculty facilitator who acts as a moderator. Participants are divided into groups and given medical Spanish to English handouts. Participants then craft questions to ask the resident facilitator regarding the patient's history of present illness. The resident facilitator would respond in Spanish. After obtaining the full history, the participants would practice verbalizing common instructions during the physical exam. The conference would finish with a short didactic on a Spanish language or cultural competency topic.

EVALUATION: A post conference survey was used to assess the efficacy of the training session and the interest of medical trainees in future didactic sessions. A total of 28 residents completed the pilot survey. Based on the survey, 89% of the respondents (25/28) believed that discussing Spanish based cases would expand their Spanish vocabulary and 82% (23/28) believe that the Spanish case discussion would increase their confidence when speaking to a Spanish-speaking patient. 17% (5/28) remained neutral.

DISCUSSION / REFLECTION / LESSONS LEARNED: Per preliminary data results, most of the trainees were motivated to improve their Spanish vocabulary and speaking abilities and would welcome further interventions to maximize their language skills. Incorporating Spanish language and cultural competency into residency training has an overall beneficial effect not only to the program and the resident, but it increases patient satisfaction and quality of care. Creating a case-based conference in Spanish was a fun way to integrate such learning during inpatient didactics.

A PROGRAM-SPONSORED ONLINE CURRICULUM IMPROVES RESIDENT ENGAGEMENT WITH DIDACTIC EDUCATION AND ASSESSMENT

Amreetpal Sidhu, Katie Zechar, Geetha Krishnamoorthy. Graduate Medical Education, Internal Medicine, St Joseph Mercy Oakland, Troy, MI. (Control ID #3391879)

NEEDS AND OBJECTIVES: Graduate Medicine Education (GME) programs struggle to establish and maintain adequate levels of learner engagement with didactic activities. With lectures being demonstrated as ineffective towards positive educational outcomes in literature, web and software-based tools have emerged as promising modalities of evidence-based learning but are not commonly used. We aim to evaluate and improve both perceptions of and engagement with online learning environments while clarifying the requirements of effective online curricular interventions, thereby providing a framework for wider implementation.

SETTING AND PARTICIPANTS: PGY1, 2, and 3 residents (n=50) at a community Internal Medicine program during the 2019-2020 academic year.

DESCRIPTION: Learners were surveyed at the start and midpoint of the year regarding study habits, relative value of self-directed study materials, and engagement with program-sponsored didactics hosted online. Throughout the intervention period participants are notified of new monthly interactive content and self-testing tools leveraging evidence-based learning strategies (e.g. active recall, testing effect). Learner engagement is tracked by post intervention surveys, participation in self-assessments, didactic attendance and website traffic analysis.

EVALUATION: Survey data shows overall 102% improvement in learner-reported use of the platform (average 1.4 hrs/week to 2.9). Improved platform use is corroborated by an increase in cumulative tracked online viewing hours (0.65 hrs to 5.8) and participation with assigned monthly assessments (from 77% to 83%). Daily conference attendance remained stable and residents' perception that online learning discourages in-person attendance decreased (2.2 to 1.9 weighted average on a Likert scale). Learner-reported confidence towards clinical duties varied following exposure to interactive scenarios–PGY2 residents reported an increase in confidence towards rapid response scenarios (4 to 4.33) while PGY1 residents reported a decrease (4 to 3.85).

DISCUSSION / REFLECTION / LESSONS LEARNED: GME faces unique challenges training and evaluating learners adapted to learning environments incongruent to current standards in medical pedagogy. In contrast to commercial products, program-sponsored web platforms can stand as cost-effective, evidence- based modalities to improve learner engagement, examine their performance, and tailor curricula to specific needs. Further, our data suggests serial monthly online interventions can be an effective curricular design that augments traditional learning modalities and mitigates the ineffectiveness of lectures. With established engagement with core material and self-assessment tools, future studies will examine the impact of the platform on learner performance, such as board certification rates and in-training exam scores.

ONLINE RESOURCE URL (OPTIONAL): http://sjmoim.com (LOGIN: sgim2020 PASSWORD: sgim)

A SPIRITUALITY IN MEDICINE CURRICULUM: UNDERSTANDING AND LEVERAGING AN OFTEN OVERLOOKED SOCIAL DETERMINANT OF HEALTH FOR PATIENTS AND RESIDENT TRAINEES

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NEEDS AND OBJECTIVES: As medicine becomes increasingly reliant on technology, there has been a movement towards reconnecting to the humanity and greater meaning in our profession. One proposed solution is to integrate spiritual learning into training. Spirituality curriculums are nearly ubiquitous in undergraduate medical education yet have had a slower uptake into graduate medical education. Studies show that spirituality curriculums during residency not only improve a physicians ability to provide spiritual care but leave positive impacts on professional and personal formation for years to come. The objectives for our curriculum are that primary care (PC) residents will be able to: 1. Integrate spiritual care into their medical care of patients; and 2. Identify and employ their own spiritual resources in an effort to increase well-being and resilience.

SETTING AND PARTICIPANTS: We created six one-hour sessions on topics in spirituality and medicine to be delivered during primary care elective blocks over a three year residency. 18 PC residents will participate, with each session given to six residents at a time.

DESCRIPTION: Session topics: 1. Introduction to spirituality and the chaplaincy; 2. Conversations with chaplain residents; 3. Understanding patients spirituality in treatment and end of life care; 4. Physician experience of death, dying, grief, and guilt; 5. Transference and countertransference; 6. Moral injury, personal spirituality, and effects on caring for the patient. The sessions are developed and delivered by a chaplain educator via brief didactics and structured discussions.

EVALUATION: We conducted a pre-intervention needs assessment, completed by 14/18 of our residents. We will conduct a post-survey to assess whether the learning objectives and needs were met. Results showed that 50% of residents felt comfortable asking patients about their spiritual and/or religious identities. While 85.7% felt they understand the role of a chaplain, only 43% knew when a referral would be helpful. Interestingly, 64% felt they had transgressed deeply held moral beliefs while learning and practicing medicine, and 50% know how to use their own spirituality/religion/worldview to cope with the stress of learning and practicing medicine. Brief interim surveys after our recent session showed this to be the highest rated session in our PC curriculum, with comments that this was "one of the best sessions we have ever had," creating "a safe space to chat" and "very useful."

DISCUSSION / REFLECTION / LESSONS LEARNED: We were surprised to learn that more than half of our residents felt they had transgressed deeply held moral beliefs during their training, and only half know how to use their own spirituality or worldview to cope with the stress of practicing medicine. By providing the opportunity to discuss and explore moral injury, coping strategies, and patient spirituality with an experienced chaplain, residents will gain knowledge and tools to maintain and their own moral compass and utilize the chaplaincy to understand how patients spirituality may impact their care.

ASSESSING LEARNER OUTCOMES IN THE MIGRANT HEALTH ELECTIVE AT THE UNIVERSITY OF MINNESOTA

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NEEDS AND OBJECTIVES: Medical and graduate medical education are constrained by profession and geography, with most learning occurring in major academic medical centers. Opportunities to learn about social determinants of health through working with rural, immigrant, and underserved populations are limited. The Migrant Health elective at the University of Minnesota addresses this gap by providing inter- professional, community-engaged experiences and hands-on service learning with migrant farmworkers. A unique curriculum including didactics, workplace site visits, hands-on farmwork and clinical experiences. Participants learn social determinants of health first hand working with a highly marginalized population and equips them to address the assets and needs of vulnerable and underserved populations.

SETTING AND PARTICIPANTS: The 4-week rotation has educated students of medicine, physical therapy, dentistry, pharmacy & food systems alongside residents in internal medicine, internal medicine- pediatrics, family medicine, occupational medicine and emergency medicine, in addition to youth pipeline students from farmworker families. Over 30 learners have participated in the course over 5 years.

DESCRIPTION: The rotation coincides with peak harvest and work migration season. The curriculum includes didactic days dedicated to developing knowledge about social determinants of health specific to the migrant farmworker population and is augmented with readings, films, journal clubs and workshops. Didactic sessions cover risks of farm work, immigration law, access, language, mobile health, narrative medicine, zoonoses, pesticides and care in low resource settings. Clinical education includes travel to rural farming communities to work with primarily Latinx migrant farmworker families. Sustainability is achieved through community engagement with rural non-profits, federally qualified health care centers, labor organizers, and health departments.

EVALUATION: To assess learner outcomes and address areas for improvement we surveyed all participants (28/32, 87.5% response rate). Over 90% of participants rated their overall experience as "outstanding" or "good" and the majority of learners "agree" or "strongly agree" that the course increased their knowledge in areas specific to migrant farm work and underserved populations.

DISCUSSION / REFLECTION / LESSONS LEARNED: Participants gained knowledge of working with migrant farmworkers and developed new skills applicable to a wide variety of underserved populations. The course survey helped identify which sessions and encounters were most useful and which need further development to optimize learner and patient experiences.

ASSESSING NEEDS AND ADDRESSING CLIMATE CHANGE AT GRAND ROUNDS: KNOWLEDGE, ATTITUDES, AND ENGAGEMENT

Harleen Marwah[1]; Emily Youner[2]; Hana Akselrod[3]; Neelima Tummala[2]. [1]School of Medicine and Health Sciences, The George Washington University School of Medicine and Health Sciences, Washington, D.C., DC; [2]School of Medicine and Health Sciences, The George Washington University, Manhasset, NY; [3]Infectious Diseases, George Washington University, Washington, DC. (Control ID #3392382)

NEEDS AND OBJECTIVES: Global climate change has been described as both a threat that could "undermine the past 50 years of gains in public health," as well as "the greatest global health opportunity of the 21st century."(Lancet 2015) Academic medical centers will undoubtedly play a critical role in equipping clinicians to care for patients in a changing climate, and also have an important societal role as trusted sources of information in times of public crises. However, education on these risks has not historically been part of standard medical school curricula. The George Washington University School of Medicine and Health Sciences weekly Internal Medicine Grand Rounds offers an opportunity to incorporate foundational climate change education to reach this varied audience of clinicians at different stages of training and experience.

SETTING AND PARTICIPANTS: Setting: The George Washington University Hospital Participants: 38

DESCRIPTION: The "Global Climate Change: Understanding and Responding to Impacts on Health" lecture provided an overview of climate science and a review of diseases with environmental drivers while educating attendees on how climate change impacts health, which populations face disproportionate risk due to climate change, and what opportunities exist for physicians to become involved with adaptation and mitigation efforts.

EVALUATION: Participants completed a pre-lecture survey to evaluate their baseline perceptions of climate change and the impacts on health. 53% of participants identified the issue of climate change as being "extremely important" to them and 76% of participants identified as being "very worried" about climate change. Nearly all participants (95%) agreed that climate change will affect future generations of people "a great deal." Only 13% of participants felt "very knowledgeable" about the impact of climate change on health and 11% felt "not at all knowledgeable." No participants answered that climate change was unrelated to patient care, with 32% of participants agreeing climate change is directly related to patient care "a great deal."

DISCUSSION / REFLECTION / LESSONS LEARNED: This lecture and assessment of attitudes on climate change and health was the first of its kind done at our institution. With the majority of participants self-describing themselves as being "very worried" about climate change and 11% feeling "not at all knowledgeable," this education was welcomed and relevant. In future iterations, the session's effectiveness could be further assessed through a post-survey to evaluate how perceptions, knowledge, and attitudes were influenced. Our group has been concurrently developing similar needs assessments and modules for medical students, residents, and broader physician audiences. An evaluation of perception and baseline knowledge by career level and focus could allow for more tailored content to ensure participants remain engaged and the information advances their knowledge.

ONLINE RESOURCE URL (OPTIONAL): https://drive.google.com/drive/folders/1HB73Ti-I9Vw7M2MTX1F2rEItzYQ1biRH?usp=sharing

A STUDENT-INITIATED, COMMUNITY-BASED PARTICIPATORY EDUCATION CURRICULUM ADDRESSING STRUCTURAL CHALLENGES & INEQUITIES IN HEALTHCARE DELIVERY

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NEEDS AND OBJECTIVES: Academic health centers (AHCs) are charged to train future physicians to recognize and address structural forces impacting health outcomes. Inadequately engaging marginalized communities while educating trainees on "health disparities issues" may contribute to misunderstanding the structural contexts for present-day health inequities. We developed an adjunct to the University of Nebraska Medical Center (UNMC) College of Medicine's curriculum focused on

"Structural Challenges & Inequities in Healthcare Delivery." The pilot sought to enhance learners' structural competency by exploring historical and present inequities in Omaha.

SETTING AND PARTICIPANTS: 132 first-year medical students, 18 community stakeholders, and 11 UNMC facilitators.

DESCRIPTION: Lectures and assignments introduced core topics like political determinants of health, unconscious bias, structural racism, and population health. Students also went into the community to learn directly from community leaders in housing, education, policy, and health promotion. Learners and facilitators were surveyed to assess pilot outcomes. Descriptive analyses were performed, with Mann-Whitney tests applied to compare the distribution of grouping variables.

EVALUATION: Of 123/132 (93.2%) students responding to the survey, 76.4% were White and 50.4% male; 29.4% grew up in a rural hometown (population < 50,000), and 38.2% students were identified *post hoc* as having a "background underrepresented in medicine" (URM, LGBTQ+, and/or rural hometown).

The small group community stakeholder conversations (Mean 4.38 on a 5-point Likert scale) and community panel discussion (4.48/5), contributed more to student knowledge gained than lectures (3.87/5) or reflective writing assignments (3.65/5). The curriculum's overall impact on knowledge and skills was positive with 96.7% of students indicating an improved understanding of each of the six curriculum objectives (4.15/5 across individual questions for each objective). 95.9% students indicated that education on the topics covered is important to becoming a good doctor, and 86.2% indicated interest in pursuing additional training on one or more topics. Students from urban areas reported stronger prior knowledge on topics covered than rural students (3.58 vs 3.17, p=0.023), but did not have differing responses regarding the impact of the curriculum. There were no differences between underrepresented racial minority (URM) and non-URM student responses, although only 13 (10.6%) students identified with URM groups.

DISCUSSION / REFLECTION / LESSONS LEARNED: Students indicated improvement in knowledge, skills, and attitudes related to curriculum objectives. Narrative feedback emphasized learners' desire for more direct community engagement integrated into curricula on structural determinants of health. Vertical curricular integration is imperative to ensure that learners continue to demonstrate structural competency throughout all four years. Future plans include longitudinal service-learning projects in collaboration with community stakeholders.

A THREE-YEAR-EXPERIENCE WITH A QUALITY-PATIENT SAFETY ELECTIVE

Jessica Donato. Hospital medicine, Cleveland Clinic, Beachwood, OH. (Control ID #3390702)

NEEDS AND OBJECTIVES: Healthcare systems rely on individuals with interest and skills in quality improvement and patient safety. Many internal medicine trainees seek to develop advanced competency in this field to expand their skillset and advance their academic careers. We developed an annual quality and patient safety (QPS) elective for internal medicine trainees starting in 2017 to provide additional QPS proficiency through dedicated didactic and experiential education.

SETTING AND PARTICIPANTS: A 1-week nonclinical elective is offered annually within our large internal medicine program for second and third year residents starting in 2017. Eight residents enrolled in the initial elective in 2017, 10 in 2018 and 9 in 2019.

DESCRIPTION: The elective involved 3-4.5 hours of interactive educational sessions daily, which included core didactic sessions run by the course director, guest lectures by institutional experts, and journal clubs. Core didactics covered topics such as culture of safety, root cause analysis, and the model for improvement. Expert speakers were recruited from our institution to provide didactics on topics including risk management and high reliability organizations. Didactics and experiential education were modified, added and removed annually based on survey feedback. Experiential education was sequentially added including a pharmacy tour, lab tour, and shadowing experience with inpatient nurses, each with a focus on systems of care and patient safety. Time was allotted for a group debrief on each experience. The participants also observed one or more safety conferences outside of internal medicine, such as urology or general surgery M&M. A project over the course of the week was also completed in which participants completed a root cause analysis (RCA). Residents worked in pairs with protected time for their investigation and dedicated time to check-in with the course director on their RCA work.

EVALUATION: The elective culminated in resident presentations of their RCAs to an audience of faculty and peers. The course director completed an assessment of each trainee during the presentation, which was considered the final deliverable. All trainees showed attainment of competency in RCA methodology. A survey was administered to the elective participants in the 2018 and 2019, with a 90% response rate in 2018 and 89% response rate in 2019. 100% of respondents (2018 and 2019) noted knowledge and skill acquisition from the elective, and 100% (2018 and 2019) found the content of the elective useful for their future career and reported more interest in pursuing work on QPS projects because of the elective.

DISCUSSION / REFLECTION / LESSONS LEARNED: We present a successful QPS elective to provide advanced educational experience directed at trainees with a specific interest in QPS who elect to enroll. This elective has been modified and successful for three years with trainees showing successful knowledge and skill acquisition based on assessment of their final presentations. Surveys also support trainee self-reported knowledge and skill acquisition.

A VIRTUAL PATIENT MODULE FOR TEACHING TELEMETRY MONITORING TO PRE- CLERKSHIP MEDICAL STUDENTS

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NEEDS AND OBJECTIVES: Cardiac telemetry monitoring (CCM), is essential for monitoring heart rate, rhythm, and waveform in hospitalized patients. Accessing and interpreting telemetry data is not typically taught formally, including at University of Pittsburgh School of Medicine (UPSOM), despite its extensive use and convenience in providing immediate data to clinicians. While little data exists on teaching the use of CCM, recent studies show that undergraduate and graduate trainees demonstrate suboptimal interpretation skills and low-level confidence with EKG. This void in knowledge can contribute to adverse patient outcomes. We hypothesize that a brief virtual patient module teaching interpretation of CCM (the curriculum) would improve students' knowledge and reported use of skills with CCM.

SETTING AND PARTICIPANTS: The curriculum and accompanying survey of knowledge, attitudes, and use of skills were distributed to the Class of 2021 during Pre-clerkship Week in May 2019. The Class of 2020, serving as a historical control, participated during May 2018 Pre-clerkship week without exposure to the curriculum. To maximize student completion, students were incentivized with a gift card raffle. Students received a maximum of 4 emails encouraging participation.

DESCRIPTION: The 30-minute curriculum was created using VPSim software, employing 3 interactive clinical cases with sequential

presentation of history, physical exam, lab, and imaging data. Multiple-choice questions with immediate feedback and a tutorial on practical use of CCM were embedded. Both intervention and control groups completed two surveys: a presurvey and a 6-month postsurvey including questions on user demographics, knowledge, and attitudes toward CCM. This curriculum was approved by UPSOM's Research on Medical Students Review Committee and deemed exempt by the IRB.

EVALUATION: Participant comfort and knowledge were assessed prior to and 6 months following the module using RedCap. Content knowledge was evaluated using board-style multiple choice questions with embedded telemetry images. Attitudes were measured using a Likert-type scale.

DISCUSSION / REFLECTION / LESSONS LEARNED: Preliminary and qualitative data suggest that this module was effective in improving students' knowledge. The main challenge to implementation was maximizing student participation and follow up survey response rates. Given its feasibility and acceptability, we plan to include a dedicated classroom session for curriculum implementation during Pre-clerkship week May 2020 with a post-survey session in October 2020. The allocation of dedicated course time to complete the curriculum will hopefully allow for more robust data collection and quantitative evaluation of the intervention.

BEST PRACTICES AND PRACTICAL APPROACHES FOR MANAGING PATIENTS WITH WORK-RELATED CONDITIONS

Esi Nkyekyer. GIM - Occupational & Environmental Medicine, University of Washington, Seattle, WA. (Control ID #3374464)

NEEDS AND OBJECTIVES: Primary care physicians evaluate and manage patients with occupational injuries and illnesses. Training in the care of patients with work-related conditions is however lacking in internal medicine resident education. An expert-guided, group-based case discussion approach was used to deliver a curriculum on best practices for managing patients with work-related conditions. The objectives were for residents to:

-Describe the interplay between work and health and explain the importance of disability prevention.

-Describe the benefits available to patients with work-related conditions through the Workers' Compensation system and the Social Security Disability Insurance system.

-Provide care for patients with work-related conditions using best practices for promoting early and safe return-to-work.

-Describe the life-cycle of a Workers' Compensation claim and the roles played by key stakeholders.

-Navigate internal and external resources for addressing barriers to return-to-work when caring for patients with work-related conditions.

SETTING AND PARTICIPANTS:

The University of Washington (UW) Internal Medicine Residency Program holds a weekly 3.5 hour-long Academic Half Day (AHD) during the academic year for residents on non-admitting rotations. 30 residents participated in this AHD.

DESCRIPTION: A brief overview of a case of a 37 year old male engineered-stone fabricator with silica dust exposure and diagnosis of complicated chronic silicosis was provided. This was followed by a foundational lecture on the: interplay between work and health; importance of preventing work-related injury, disease and disability; the workers' compensation system and life cycle of a claim; best practices for early and safe return to work; role of physician, employer, claim manager, nurse case manager, occupational health nurse and vocational rehabilitation counselor; and the role of social security disability administration in workers' disability. The residents were then split into 3 groups to discuss the case in greater detail facilitated by experts from the Department of Labor and Industries, Social Security Administration Regional Office, UW Claim Services Office, and Harborview Center for Occupational Health and Education.

EVALUATION: The residents completed a 6-item knowledge questionnaire before and after the AHD, and a teaching evaluation. 27 residents completed the pre-session knowledge questionnaire, 24 completed the post- session knowledge questionnaire, and 29 completed the teaching evaluation.

DISCUSSION / REFLECTION / LESSONS LEARNED: This AHD effectively used lecture-based and active learning approaches to introduce residents to key medical and adminsitrative aspects of managing patients with work-related conditions. Through the expert-guided, group-based case discussions, residents were able to discuss basic and complex management concepts and have their questions adequately answered. The residents found the session content useful and practical and appreciated interacting with the experts.

ONLINE RESOURCE URL (OPTIONAL): https://sites.google.com/view/ahdresourcesoem/home

CHASE FILES: UTILIZING UNSCRIPTED CASES TO PROMOTE CLINICAL REASONING

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NEEDS AND OBJECTIVES: The evolution of the master diagnostician has been influenced by the overlap of clinical reasoning and cognitive psychology within health care systems (Dhaliwal *et al.,* JAMA 2013). There has been a demonstrated need for innovation in diagnosis education with new approaches to promote diagnostic excellence (Sundberg and Olson, Diagnosis 2019). One approach is the model of utilizing unscripted and spontaneously presented cases to promote clinical reasoning; inspired by UCSF's curriculum (APDIM 2019) and implemented at Cambridge Health Alliance (CHA). CHAse files aim to: (1) effectively teach clinical reasoning to trainees, (2) promote engagement of faculty, and (3) create an interactive and collaborative learning environment amongst trainees and faculty.

SETTING AND PARTICIPANTS: Biweekly teaching sessions with rotating Harvard medical students and sub-interns (2), Internal Medicine residents of all years (24), Transitional year (7) and Psychiatry (8) interns, and core faculty from the Department of Medicine (10).

DESCRIPTION: Two Chief Medicine residents lead and facilitate the sessions. A resident presents an unscripted case where they had a diagnostics and/ or management dilemma. This case is unknown to the facilitators and audience members. The facilitators lead the group through the case engaging trainees in soliciting the patient's history and clinical course from the resident presenter, and engaging faculty when need to provide expert opinion. Key moments when trainees are engaged to collaborate include: (1) development of a problem representation, (2) generation of a schema or approach to the case, and differential diagnoses, and (3) interpretation of key labs or imaging findings. Lastly, the facilitators and resident presenter summarize key learning points.

EVALUATION: Data from surveying trainees who attended these biweekly teaching sessions from 7/1-12/31/2019 have shown that the style has been highly interactive and engaging (mean score= 4.9, scale of 1-5) and content has been appropriate in complexity (mean score= 3, scale of 1-5 from very basic to very advanced). Some qualitative comments have

included: "Excellent, interactive, and applicable content! I like the time to think independently and collaborate as we work through a case. Love CHAse files! Really enjoy the emphasis on clinical reasoning in the curriculum and live application during each session." Next, we plan to conduct a mixed methods analysis. Quantitatively, trainees will be surveyed on their satisfaction with the curriculum and self-assessment of clinical reasoning knowledge. Faculty will be surveyed to evaluate engagement and possible decrease in burnout. Qualitatively, focus groups will be conducted with trainees to glean qualitative themes regarding their educational experience.

DISCUSSION / REFLECTION / LESSONS LEARNED: Although the sessions are meant to teach clinical reasoning to trainees, I have grown as an effective facilitator, clinician educator, and diagnostician. It has been rewarding and humbling to learn with and from our trainees and faculty.

COMMUNICATIONS CURRICULUM TO APPLY THE SPIRIT OF MOTIVATIONAL INTERVIEWING TO USUAL CARE OF COMMON MEDICAL CONCERNS

Sandeep Kapoor[2,3]; Frank Cacace[1,5]; Laura Harrison[4]; Jennifer Verbsky[1,5]; Jeanne Morley[1,5]; Joseph Conigliaro[1,5]. [1]Division of General Internal Medicine, Northwell Health, New Hyde Park, NY; [2]Medicine and Emergency Medicine, Northwell Health, New Hyde Park, NY; [3]Medicine, Emergency Medicine, and Science Education, Zucker School of Medicine at Hofstra/Northwell, Hempstead, NY; [4]SBIRT, Northwell Health, New Hyde Park, NY; [5]Medicine, Zucker School of Medicine at Hofstra/Northwell, Hempstead, NY. (Control ID #3391032)

NEEDS AND OBJECTIVES: Our large healthcare system has implemented Screening, Brief Intervention, and Referral to Treatment (SBIRT) as the foundational systematic approach for addressing substance use as part of usual care utilizing skills of the "Spirit of Motivational Interviewing". The content of SBIRT training, including motivational interviewing (MI) skills utilized to conduct a brief intervention, can be applied by healthcare professionals to all conversations. The objective of the educational session was to utilize the SBIRT framework to empower internal medicine residents to have thoughtful, empathetic conversations with patients about substance use and other common health-related concerns and behaviors.

SETTING AND PARTICIPANTS: This session was delivered to internal medicine residents at an ambulatory practice as part of their regularly scheduled education. The session was delivered to each of the five rotating firms for one hour, with a total of 65 residents participating and completing surveys. **DESCRIPTION:** The session content focused on how to apply MI skills to common topics discussed with patients during primary care visits. Prior to reviewing the steps of the brief negotiated interview (BNI), the importance of remaining nonjudgmental and nonconfrontational were explored. Additional communication skills, such as the empathy microskills of reflection, legitimation, and exploration, and how to identify "change talk", were demonstrated and practiced. Finally, participants were led through the steps of the BNI, (1) Raise the subject, (2) Provide feedback, (3) Enhance motivation, and (4) Negotiate and advise; complete with examples for common scenarios in primary care, such as blood pressure, medication management, diet, and substance use.

EVALUATION: Participants completed a "One Minute Paper" at the conclusion of the session, which asked four open ended questions. For the most important concept learned in this session, 29 (45%) of participants responded with empathy microskills, 13 (20%) reported the BNI skills, and 4 (6%) reported identifying change talk. 9 (15%) of participants identified "evocation" (eliciting a patient's feelings) as the concept they still had questions about or found confusing. 15 (23%) reported that empathy was realistic to focus on and apply to their current role, 7 (11%) of participants reported they could apply partnership, and 9 (14%) reported they will allow their patient more time to talk and direct the conversation. Most common suggestions for improvement include more case scenarios and role play.

DISCUSSION / REFLECTION / LESSONS LEARNED: The communication skills were well received by the participants. Their survey responses indicate that they appreciated the value of identifying change talk and applying empathy microskills to their conversations with patients. Though the educational framework was developed to address substance use, participants recognized that the skills could easily be applied to addressing their patients' blood pressure, diabetes, medication adherence, and other health conditions affected by behaviors.

COMMUNITY GRAND ROUNDS: A COMMUNITY AND UNIVERSITY PARTNERSHIP ON CHICAGO'S SOUTH SIDE ADDRESSING SOCIAL DETERMINANTS OF HEALTH THROUGH HEALTH EDUCATION

Natalie Watson, Doriane Miller. Medicine, University of Chicago, Chicago, IL. (Control ID #3390618)

NEEDS AND OBJECTIVES: Community participation in population health improvement can assist academic health centers in addressing health equity by targeting interventions more effectively. Community representatives, medical students and University of Chicago faculty partnered to develop a health education series called "Community Grand Rounds" (CGR). Created in 2010, CGR works with community representatives to: 1) identify health concerns of Chicago's South Side residents, 2) provide information regarding university and community resources that address community health concerns, and 3) provide medical students with the opportunity to learn about health concerns directly from community residents in a community setting.

SETTING AND PARTICIPANTS: Setting: Churches, schools, public housing and youth centers. Participants: Community representatives, called Community Consultants (CC) representing community organizations, medical students and faculty from University of Chicago's' Pritzker School of Medicine, community residents from University of Chicago Medicine's primary service area

DESCRIPTION: CCs meet twice monthly during the academic year with lead faculty and staff to identify CGR topics, recommend a delivery format, and recruit audience participants. In 2017, Pritzker Medical students joined the CGR planning group. Medical students meet regularly with lead faculty and staff and CC's to develop topic specific resource materials that are posted in CGR brochures. Medical students also attend CGR and research resources for CGR participants in real time via smart devices. CGR topics have included: community violence and youth mental health, eating healthy in food desert, impact of youth employment on health, positive parenting and aging issues as well as others. Audience members are surveyed at the end of each session and are asked about the value of content for each CGR. Twice yearly, all partners debrief on the effectiveness of the partnership and program.

EVALUATION: Since 2010, there have been 50 Community Grand Rounds and over 4600 attendees. To date, 93% of audience members report that the content of the Community Grand Rounds is of value and would recommend it to others. Audience members surveyed report knowledge gains about the topics presented, satisfaction with venues and speakers, and support the continuation of the series. CC's surveyed report a commitment to the partnership and to CGR. Medical students report that the series has provided them with valuable opportunities to learn about community health and health equity issues from direct engagement with community members outside of a hospital setting.

DISCUSSION / REFLECTION / LESSONS LEARNED: Community Grand Rounds provides a bidirectional pedagogic platform for community members and medical students interested in learning about community health concerns, along with potential resources that can address these concerns. CGR's success is due to the commitment of its community partners and the university's ability to respond to community needs in a culturally sensitive manner.

COMMUNITY PERSPECTIVES IN MEDICINE: INCLUDING UNDERSERVED POPULATIONS IN MEDICAL EDUCATION

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NEEDS AND OBJECTIVES: 1. Include underserved populations in medical education to ensure physician styles and approaches to patient care can be adapted to fit people of all backgrounds

2. Provide medical students with an opportunity to discuss health disparities with underserved communities as well as with their classmates

3. Develop tangible, actionable items for medical students to adapt their clinical skills

4. Cultivate an environment of cultural humility within academic medicine

SETTING AND PARTICIPANTS: Community Perspectives in Medicine (CPIM) was started at Weill Cornell Medicine in fall of 2015 by medical students in response to the #BlackLivesMatter movement. The course was designed to increase dialogue between underserved populations in medicine and the next generation of physicians by inviting community-based organizations (CBOs) to meet with fifteen first year medical students and discuss their experiences in medicine. Participating CBO organizations represent diverse populations covering a broad spectrum of topics, including sexual orientation, chronic illness, disability, religion, race, incarceration, and immigration status. Students volunteer to participate in the course, and are all in their first semester of medical school.

DESCRIPTION: Each of the five 2-hour sessions is divided into two parts. For each session's first hour, a second-year student facilitates a semi-structured interview of the CBO guests focusing on health disparities within their community, challenges experienced with the medical system, and what they wish doctors did differently. Students are encouraged to ask questions, often resulting in a rich dialogue. The session's second part is a debriefing by the student facilitator over a relaxed dinner (without CBO guests).

EVALUATION: The course has been offered annually from 2015-2019 with 42 course evaluations completed for 2015-2017 (93% response rate). Overall course satisfaction was extremely high, with 98% of participants (41/42) ranking their overall satisfaction as excellent. All participants ranked the course format as excellent (81%) or above average (19%) and course content as excellent (90%) or above average (4%). A current IRB-approved study is evaluating the longitudinal impact of the course on attitudes towards underserved patients.

DISCUSSION / REFLECTION / LESSONS LEARNED: Over the five years of running CPIM, a few themes have arisen in free-text comments. Students particularly enjoy the small class size with continuity of participants, speakers actively involved in advocacy work or patient care (rather than a public-health perspective), and speakers who provide pre-readings with context as to their organization and take-away points. Many opportunities for continued leadership within CPIM have helped keep students engaged with the course beyond its one-semester duration.

ONLINE RESOURCE URL (OPTIONAL): https://www.mededportal.org/publication/10501/

CONTINUOUS IMPROVEMENT ON TEACHING QI – AN EVIDENCE-BASED, MEASURE- DRIVEN QUALITY IMPROVEMENT CURRICULUM FOR INTERNAL MEDICINE RESIDENTS

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NEEDS AND OBJECTIVES: In 2014, the Clinical Learning Environment Review Program (CLER) delineated quality improvement (QI) actions that will optimize the clinical learning environment. Their 2019 national report showed while most residents and fellows have participated in QI projects, most have limited knowledge of QI concepts and methods. Their projects are rarely formally assessed, followed up and sustained. Also, most residents and fellows sporadically participate interprofessional QI teams.

In 2018, our residency program launched a resident-led QI curriculum, and its review after 1 year showed the same challenges the CLER report described. Hence, we initiate a QI project to improve the quality of resident's QI projects in 2019. We aim to increase the percentage of QI projects with measurable aims and from 0% in AY2018-19 to 75% in AY2019-20.

SETTING AND PARTICIPANTS: 4 internal medicine residents from a single continuity clinic site at a Veteran Affairs hospital finished the modified QI curriculum.

DESCRIPTION: The new curriculum consists of an orientation didactic, a QI project worksheet and mentoring from a chief resident of quality and patient safety. The QI project worksheet uses the IHI-QI model as a framework and contains selected tools from Lean Six Sigma. The orientation didactic, given by the chief resident, explains the project framework outlined on the worksheet on the first day of the rotation. Residents propose their project idea and fill out the worksheet during the rotation. The chief resident checks in with the resident at least once a week to answer questions and monitor progress.

EVALUATION: Residents are given pre-rotation and post-rotation assessment based on QIKAT-R to assess their QI knowledge, and questionnaire to assess their attitude towards QI before and after their rotation. Their project proposals on worksheets collected at the end of the rotation were assessed using 2 tools, QIPAT-7 and MAQIP.

After starting the new QI curriculum, residents increased their QIKAT-R score from 5.21 to 7.19 (out of 9 points). They self-reported more confidence in their ability to identify systematic issues, writing aim statements, developing measures, proposing changes, tracking and adjusting projects. The percentage of projects having measurable aims increases from 0% to 50%. The QIPAT-7 and MAQIP scores of the residents slightly increased compared to those who underwent the old curriculum.

DISCUSSION / REFLECTION / LESSONS LEARNED: The new QI curriculum increases the resident's QI knowledge and their confidence in doing a QI project. We confirm using an evidence-based framework with frequent resident check-ins enhance the resident's learning. However, the quality of their QI project did not show significant improvement. The projects lost a lot of points on the assessment tools because the residents could not start PDSA cycle 1, as they ran out of allocated time before obtaining an IRB exemption and data from health informatics timely. Future improvement should include a streamline process to obtain IRB exemption and health data.

CREATING CLINICIAN EDUCATORS: EVALUATION OF A 1-MONTH MEDICAL EDUCATION ELECTIVE FOR SENIOR RESIDENTS

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NEEDS AND OBJECTIVES: Aspiring clinician-educators (CEs) need training in effective teaching skills. Our residency program had a successful residents as teachers program, but residents desired further instruction in teaching techniques. We created a 1-month medical education elective aimed to increase the trainees teaching knowledge, confidence, and skills.

SETTING AND PARTICIPANTS: Internal medicine PGY-2 & 3 residents in a large university training program, 2015-2019.

DESCRIPTION: We designed the elective using Kolb's 4-step experiential learning model: concrete experience, reflective observation, abstract conceptualization, and active experimentation. The elective had 18 interactive didactic sessions, 4 practice teaching sessions, and 3 reflective writing assignments. Course content included educational theories, the cognitive science of learning, and practical medical education topics.

In a pre-post design, participants completed a 19-item survey related to 4 constructs in education (knowledge, confidence, skills, and importance) using a 5-point Likert scale (e.g., 1=very unknowledgeable, 5=very knowledgeable). Survey completion was anonymous, but pre-post surveys were linked using a blinded code. We used a paired T-test to compare the means of the answers in each category (main outcome) and for each question (secondary outcome). We used a $p<0.05$ to examine significance.

EVALUATION: Between 2015 and 2019, 39 residents completed the course, and 100% completed the surveys. Comparing the data from before and after the elective, there was a statistically significant increase in the mean self-rated level of teaching knowledge (2.63 [SD 0.57] vs. 4.43 [SD 0.42], $p<0.0005$), confidence (3.31 [SD 0.4] vs. 4.29 [SD 0.32], $p<0.0005$), and skills (2.9 [SD 0.63] vs. 4.14 [SD 0.38], $p<0.0005$). The difference persisted when individually analyzing each item of the 3 categories. There was no significant difference in the reported importance of having teaching as a major component of their careers.

DISCUSSION / REFLECTION / LESSONS LEARNED: Our study indicates that a 1-month medical education elective increases the self-rated level of teaching knowledge, confidence, and skills in internal medicine residents. To our knowledge, we are the first to report an increase in perceptions of these constructs after completion of a 1-month elective that, importantly, has a strong foundation in adult educational theory.

Our study strengths include our relatively large number of participants and 5 years of data that show a consistent response over multiple cohorts of residents. Our main limitations include being single-institutional and using reaction data for the elective evaluation. However, reaction data is the most common type of outcome information interpreted by researchers that explored the importance of CE tracks in residency programs.

We hope that our detailed curriculum description will be beneficial for residency programs seeking to train aspiring CEs using a 1-month elective. With this training, residents will have the necessary tools to jumpstart a successful CE career.

CRITICAL CARE CURRICULUM FOR INTERNAL MEDICINE RESIDENTS TRANSITIONING FROM INTERNS TO SUPERVISING SENIOR RESIDENTS

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NEEDS AND OBJECTIVES: To implement a critical care (CC) curriculum to address the gap in knowledge in CC education for internal medicine (IM) residents transitioning from internship to the role of supervising senior resident

SETTING AND PARTICIPANTS: Categorical PGY2 and PGY3 Internal Medicine Residents at Zucker SOM Hofstra/Northwelll

DESCRIPTION: We conducted a survey for categorical IM residents and CC faculty which determined there was a perceived gap from both parties in the level of preparedness of rising second year IM residents taking on the role of supervising senior residents in the CC unit, with largest gap in shock and vasopressor management, acute respiratory failure and ventilator management, and acid base disorders. The curriculum was developed under the guidance of CC faculty at our institution. PGY2s were given a knowledge based pre-test and subsequently were disseminated three high yield didactic interactive videos encompassing the aforementioned topics. PGY2s then participated in an OSCE, led by PGY3s, which comprised of three different patient encounters to evaluate and implement appropriate clinical decisions based upon the teachings in the videos. The OSCEs were graded base on a checklist rubric. Upon completion of the OSCE, PGY 2 residents were given a knowledge- based post-test (identical to the pretest).

EVALUATION: 20 IM Residents (60% of PGY2s) participated in the curriculum.

Knowledge based pre/post test: Pre-test knowledge based scores ranged 33-100% (standard deviation [SD] of 20%), averaging 70%. 30% of PGY2s obtained a 100% on the pre-test. Post test scores ranged from 70% to 100% (SD of 8%), with an average of 94%. 80% of the 70% of PGY2s who did not receive 100% on the pre- test, obtained a 100% on the post test and only one PGY2 did not improve his/her score on the post test.

OSCE: Sepsis and pressors average score of 83% with a standard deviation (SD) of 14%; acute respiratory failure score average score 94% with a SD of 14%; acid base average score78% with a SD of 15%. Passing rate was considered >70%, and for each above stated OSCE, the passing rate was 90%, 100% and 70% respectively.

Further statistical analysis is pending.

DISCUSSION / REFLECTION / LESSONS LEARNED: This pilot curriculum aimed to provide key aspects of CC education for rising second year residents. On average, our residents scored 24 points higher on the post test after the CC videos were disseminated and the OSCE conducted. All but one resident achieved a higher (or equal to 100) score on the post test, with 80% of those who did not achieve perfect score on the pretest achieving 100%. The OSCE examination showed that the passing rate for the acute respiratory distress topic was the highest at 100%, followed by vasopressors at 90% and acid/base at 70%. Further statistical analysis will be done on the above stated data. The next steps in the project will be conducting a knowledge- based test 4 months after the curriculum implementation to determine retention of knowledge, and to determine the limitations in the curriculum for further refinement and development.

CULTIVATING STRATEGIES FOR RESIDENT SUCCESS: THE PERSONAL-PROFESSIONAL DEVELOPMENT BLOCK

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NEEDS AND OBJECTIVES: By the end of the personal and professional development block, participants should be able to:

Identify behaviors that promote work-life integration and personal/ professional satisfaction

Apply social psychology principles to improve resident performance

Define key skills essential to leadership development and professional identity formation

SETTING AND PARTICIPANTS: PGY 2 categorical internal medcine residents prepare a presentation on one professionalism topic. They read the primary resource and derive learning objectives specific to residency training. Each resident is then responsible for the development of interactive cases and a TED-type talk incorporating the cases to consolidate resident learning of the stated objectives. Assigned core faculty members serve as mentors and reviewers during the development phase.

During the presentation, the resident provides background information, its importance in personal/professional development and strategies for skill development. Utilizing a case based format, they discuss how these skills can be applied to residency training and then end with key lessons and action items for real world application.

DESCRIPTION: Constant self-reflection and targeted goals for improvement are crucial to a physician's success and well-being but may not be taught in residency programs and may be deficient in graduating residents. The Personal and Professional Development (PPD) Block is designed to introduce skills promoting lifelong learning, peak performance, resilience, effective communication, professionalism and leadership.

The curriculum consists of interactive one hour sessions, developed and led by PGY-2 residents under the mentorship of core internal medicine faculty. Resident participants are given a popular social psychology book on an assigned topic. Using a case-based format, residents present a TED-format talk emphasizing key points and provide application to residency training.

EVALUATION: Each resident presenter was assigned a mentor who also read the same book and reviewed the resident presentations. Directly after the discussion, the faculty mentor provided verbal feedback on the following: (1) presentation fidelity to the assigned resource, (2) application to residency training and (3) overall presentation quality.

DISCUSSION / REFLECTION / LESSONS LEARNED: Topics discussed have included development of a growth mindset, optimizing performance, fostering good habits, positive psychology and burnout prevention, enhancing emotional IQ and strategies for personal change to improve professional success. Using popular psychology books such as The Happiness Advantage by Shawn Achor and Mindset by Carol Dweck and other available materials such as TED talks and supplemental online information, residents developed talks that were informative, interactive and entertaining. Resident feedback was positive but suggested introducing topics earlier in the year, so we've moved to a longitudinal curriculum starting earlier in the year. This year we also added a post presentation survey.

CYCLING THROUGH CLINICAL SKILLS EDUCATION: RESULTS OF A NOVEL FORMATIVE ASSESSMENT

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NEEDS AND OBJECTIVES: Direct observation with immediate feedback augments physical exam skills of trainees. We found UAB residents value direct observation / feedback but desire more physical exam training. To close this gap, we piloted an "Enhanced Clinical Skills" (ECS) track to offer personalized training in core physical exam skills. We report the formative assessment of residents' clinical skills to better understand their unique educational needs.

SETTING AND PARTICIPANTS: In 2019, 10 residents participated in the ECS Track, a longitudinal program of physical exam education.

DESCRIPTION: *Design*: After a local needs assessment to prioritize content, we designed an educational innovation to test skills: a 5-station Formative Assessment (FA) circuit. For each station, residents examined a patient with known abnormalities (6 min) and then presented their findings to two trained faculty (4 min) present in the same room. Afterwards, residents received individualized feedback. *Measures*: a) *Skills Performance*: Faculty first independently examined the patients, agreed upon expected findings, and filled out standardized score cards of residents' performance; b) *Educational Experience / Self Assessment*: Residents and faculty rated their experiences of the FA and self assessment using a 10-question survey comparing FA to traditional models of resident feedback (10 point Likert scale) *Formative Feedback*: Each residents received a summary T.I.P. sheet on their performance. When the feedback from all residents was compiled, patterns emerged for curriculum development.

EVALUATION: *Skills Performance*: Residents demonstrated the highest competence at the CV station: 8/10 correctly determined abnormal cardiac findings (auscultation, pulses, JVP). Conversely, residents struggled to demonstrate expected skills competency at the NEURO station: 8/10 did not detect abnormalities in tone, gait, or reflexes. In addition, 9/10 did not meet expected standards in bedside ultrasound to detect pulmonary abnormalities.

Educational Experience: Residents rated the FA as more personalized as compared to feedback from ward attendings (mean of 8.63 vs 6.38), more timely (9.75 vs. 6.57) and more credible (9.13 vs. 7.50).

Self Assessment: Residents's self-assessment of ultrasound skills aligned with additional educational need: 6/10 rated their US skills as "unsatisfactory" and 2/10 as "borderline." On a more global self-assessment of physical exam skills, however, none of the residents rated their performance of physical exam skills as "unsatisfactory" in contrast to the assessment of trained faculty who observed them.

DISCUSSION / REFLECTION / LESSONS LEARNED: We offered a needs-based FA for 10 clinically-experienced residents by having trained faculty observe trainees examining actual patients in a timed circuit and then providing real-time feedback. The FA of our ECS Track offers a novel way to meet individualized educational needs and provide clinical education in a personalized, timely, and credible fashion. It also provides a data-driven path for individual and program-wide skills education.

DEVELOPING A CLINICAL SOCIAL DETERMINANTS OF HEALTH CURRICULUM FOR MEDICAL STUDENTS

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NEEDS AND OBJECTIVES: Accrediting bodies have increasingly called upon medical schools to include social determinants of health (SDH) in their curricula. However, this does not ensure that students learn how to address SDH in a way that improves patient care. A recent systematic review showed that most SDH training occurs in preclinical years or as an elective, but rarely during core clerkships. UCSF School of Medicine has a strong preclinical SDH curriculum, and students are evaluated on patient advocacy during clerkships. And yet, students receive little formal training in how to address patients' SDH. This targeted needs assessment reports stakeholder attitudes toward SDH pedagogy at UCSF, and is part of a larger project to design a skills-based SDH curriculum integrated into the Internal Medicine (IM) clerkship.

SETTING AND PARTICIPANTS: Zuckerberg San Francisco General (ZSFG) is a public hospital and one of three sites for the IM clerkship at UCSF. The needs assessment is based at ZSFG, the pilot site for the curriculum. It consists of interviews with faculty curricular leads across UCSF, medical students currently enrolled in the IM clerkship, and senior IM residents.

DESCRIPTION: Interviews with faculty gage opinions about SDH in the current curriculum, how the curriculum has changed over time, and perceived limitations in content. We conduct focus groups of 5-10 participants with students and residents. Students are invited to reflect on their experience in addressing patients' SDH, their existing SDH training, and areas for development. Residents are asked to reflect on how students currently address SDH, and what training might prepare them to better care for underserved patients.

We then analyze this interview data in two ways: a deductive method allows us to confirm that a majority of stakeholders value SDH training; an inductive method suggests strategies to best accomplish curricular objectives while balancing stakeholder needs.

EVALUATION: This curriculum will be evaluated through student self-assessments, objective evaluator assessments, and a general program evaluation. Prior to implementing the curriculum, a cohort of students will complete pre/post-clerkship self-assessments. This will establish a control for how knowledge and skills evolve with clinical experience. We will then compare the pre/post data of students who complete the curriculum against this baseline.

DISCUSSION / REFLECTION / LESSONS LEARNED: Three key learning theories have influenced medical education: behavioral, in which complex tasks are simplified into steps; cognitive, wherein students build upon conceptual frameworks; and socio-cultural, where guided participation in patient care facilitates learning. Current SDH curricula fall short in each domain. Advocacy skills are not distilled into concrete actions; SDH are not revisited throughout medical school; and learning to care for underserved patients is rarely facilitated. We anticipate stakeholder interviews to illustrate how a clerkship-based SDH curriculum can utilize these theories to best promote workplace learning.

DEVELOPING A CULTURE OF WELLNESS

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NEEDS AND OBJECTIVES: The Accreditation Council for Graduate Medical Education Common Program Requirements has named addressing resident wellbeing as a core program requirement, tasking Resident Training Programs to mitigate factors that contribute to physician burnout. Physician burnout varies throughout a physician's medical career with prevalence as high as 60% for residents. Residency training raises the risk for burnout due to lack of autonomy, lack of time and decreased environment control. At University of Tennessee Health Sciences Center (UTHSC) Internal Medicine program, a Wellness Champion (WC) was appointed to represent the program on the Graduate Medical Education Well-Being Sub- Committee. This WC conducted a needs assessment to better understand the culture of wellness in the residency. In response, the Resident Wellness Committee (RWC) was formed to promote resident-led initiatives. Through monthly wellness events the RWC sought to promote a culture of wellness within the Internal Medicine residency program.

SETTING AND PARTICIPANTS: All categorical Internal Medicine, Preliminary Interns and Internal Medicine-Pediatrics UTHSC residents were invited to participate in the needs assessment. All RWC events were available to the above residents and entirely funded by the program.

DESCRIPTION: In August 2019, residents received a needs assessment via email which evaluated: self- perceived burnout, the residency's culture of wellness, and preferred wellness initiatives. The results of the needs assessment prompted the development of the RWC comprised of 12 residents, a WC in their last year of training, an Associate Program Director, Program Coordinator, and Chief Resident. The Internal Medicine program is divided into four families, and a representative from each post-graduate year was elected by their respective peers from each family. Monthly after-work activities and Wellness Wednesday Noon Conferences were planned, executed, and promoted by the RWC.

EVALUATION: The needs assessment was emailed to 158 residents, of which 125 were not on either vacation or a Pediatrics rotation; 29 residents completed it (23 % completion rate). The needs assessment was emailed mid-year to residents with 44 of 123 residents not on either vacation or a Pediatrics rotation responding (36% completion rate). Feedback regarding the wellness events has been overwhelmingly positive, highlighting appreciation for events during the workday and an improvement in the program's overall culture of wellness.

DISCUSSION / REFLECTION / LESSONS LEARNED: Ensuring resident representation in designing and implementing program well-being activities improved the culture of well-being at UTHSC. The large size of our program required adaptations to the initial RWC proposal such as expanding from eight residents to twelve residents and developing an Executive Committee to assist the WC.

DEVELOPMENT, IMPLEMENTATION AND EVALUATION OF A NOVEL CASE-BASED SIMULATION GUN VIOLENCE PREVENTION TRAINING FOR FIRST-YEAR RESIDENTS

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NEEDS AND OBJECTIVES: Gun violence kills more than 39,000 Americans every year. Studies have demonstrated that physicians do not regularly discuss firearm safety with patients. Lack of education about how to have conversations about firearm safety is an important barrier, especially among resident trainees.

The objectives of this training were 1) to demonstrate feasibility of a gun violence prevention training program across disciplines; 2) to address knowledge gaps related to firearm safety counseling and 3) to improve residents' comfort in having such conversations with patients.

SETTING AND PARTICIPANTS: 6 residency programs at one academic medical center in Boston, MA participated and included this training as a 60-90 minute session during intern orientation (5 programs) or at the beginning of the academic year (1 program) in summer 2019. 148 first-year residents participated: 74 (50%) from Internal Medicine, 22 (15%) from Pediatrics, 16 (11%) from Psychiatry, 15 (10%) from Emergency Medicine, 12 (8%) from Surgery, and 9 (6%) from Obstetrics/Gynecology.

DESCRIPTION: The curriculum development team included content experts, simulation and medical education leaders, and attendings and residents from all participating departments. The session began with a 15-minute lecture that reviewed a framework to consider relevant epidemiolgoy, outlined available resources (e.g. how to obtain gun locks) and an approach to patient counseling, and discussed relevant laws (e.g. Extreme Risk Protection Orders that facilitate temporary removal of firearms from the home in certain circumstances).

Trainees then practiced these skills with standardized patients (SPs) using two cases: 1) routine screening for presence of a gun at home, with a focus on counseling on safe storage and 2) a visit with a patient who was worried about a depressed family member. SPs provided trainees with feedback.

EVALUATION: Participants completed a survey before and after the session. 70% reported no prior training in talking with patients about firearm safety. Prior to the training, 99% of participants thought it was important for health care providers to routinely screen patients for access to firearms and to counsel on safe practices; after the training 100% of participants answered affirmatively.

Before the training, 3% of participants reported knowledge of available resources; after the training, 96%. Prior, 3% of participants were aware of Extreme Risk Protection Orders and their appropriate use; after the training 98% reported awareness. On a scale of 1-10 (higher scores indicating more comfort having a discussion about gun safety with patients), trainees initially reported a median score of 5; after the training, median score was 8.

DISCUSSION / REFLECTION / LESSONS LEARNED: It was feasible to implement a case-based gun violence prevention training across departments in our hospital. The program was well received, and nearly all first-year residents felt this was an important topic area. Self-reported knowledge and comfort with conversations related to firearm safety increased after the training.

DEVELOPMENT OF A HOSPITAL MEDICINE TEAM BASED LEARNING AND SIMULATION CONFERENCE

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NEEDS AND OBJECTIVES: Resident trainees are often first responders to acutely decompensating patients on the general medical wards. There is a paucity of educational interventions cultivating these skills. The long-term goal of this project is to develop a novel hospital medicine curriculum that integrates medical knowledge with interprofessional teamwork. This pilot introduced a 1-hour conference utilizing Team Based Learning (TBL) and Simulation activities (SIM) as a first step in the long-term goal. The objectives were:

1. Development of a novel one-hour conference using principles from TBL and simulation to address acute clinical hospital medicine scenarios.

2. Compare internal medicine resident preference for combined TBL and simulation sessions over traditional didactic lectures.

3. Assess learner engagement in sessions.

SETTING AND PARTICIPANTS: Conference occurred in a simulation center and included medical students, internal medicine interns and third year residents rotating on inpatient wards. Each session had 13-14 participants. Two hospital medicine faculty led a total of three sessions.

DESCRIPTION: Kern's six-step approach for "Curriculum Development in Medical Education" was utilized. *Transfusion Reactions* and *Status Epilepticus* were the pilot topics selected. Trainee surveys and faculty feedback were collected after each session. Three plan-do-see-act (PDSA) cycles were performed integrating trainee and faculty feedback. The final conference structure is as follows: Individual readiness assessment, team formation, group readiness assessment, TBL, and simulation (half of learners switch the order of TBL/SIM for smaller group sizes).

EVALUATION: A total of n = 40 anonymous trainee post session surveys were completed. In response to question 1 on the 5-point Likert scale: I was engaged and involved, n = 33, 82.5% of respondents agreed, or strongly agreed to the statement, suggesting that learners were participating in active learning throughout. In response to question 2: I prefer the topic of transfusion reaction (or status epilepticus) in TBL/SIM over a traditional lecture, n = 37, 92.5% of learners agreed or strongly agreed. When asked how comfortable they felt at diagnosing and managing transfusion reactions (or status epilepticus), n = 39, 97.5% responded they felt at least moderately comfortable.

DISCUSSION / REFLECTION / LESSONS LEARNED: This project serves as a pilot for a novel TBL/SIM conference addressing acute hospital medicine scenarios. Feedback suggests that this conference structure increases learner engagement, is preferred over traditional lectures, and increases learner comfort in management of clinical conditions. Next steps include adding interprofessional learners and assessing the impact on teamwork skills of trainees.

DEVELOPMENT OF A STRUCTURED POINT-OF-CARE ULTRASOUND CURRICULUM FOR INTERNAL MEDICINE RESIDENTS

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NEEDS AND OBJECTIVES: Point-of-care ultrasound (POCUS) has expanded in practice amongst hospitalists and critical care physicians for a multitude of reasons: increased diagnostic accuracy and speed, cost reduction, and reduced radiation exposure. Internal medicine (IM) residents are exposed to POCUS at all stages of their training. These experiences drive the IM residents' interest in learning POCUS. Our curriculum seeks to train IM residents to safely integrate POCUS into clinical practices.

SETTING AND PARTICIPANTS: The participants are 55 PGY-2 internal medicine residents across 4 academic hospitals.

DESCRIPTION: The curriculum consists of three phases:

1. Pretest: Residents complete a knowledge quiz, an opinions survey, and a hands-on POCUS test.

2. Training workshops: Residents participate in a workshop series consisting of lectures and hands-on training on human models covering views of the heart, lungs, abdomen, and lower extremity vessels. At the conclusion of the last workshop, residents complete a satisfaction survey, a retrospective pre-post confidence survey and repeat the knowledge test.

3. Skill building: For the remainder of the academic year, residents will participate in weekly scanning sessions with local experts, monthly conferences, and online feedback on uploaded images. At the end of the academic year, residents will repeat the surveys, online knowledge test, and the hands-on test.

EVALUATION: In the hands-on portion of the pretest, no resident scored ≥80% well done; for reference, to pass the equivalent faculty course, the attending's score must be ≥80% well done. In the image interpretation portion of the pretest, the average resident score was 53%. Of residents who responded to the pre-course survey, 6 residents (20%) reported receiving training in POCUS, however 17 (58%) reported using POCUS in their practices. 76% of residents believed POCUS should be a standard part of the IM resident curriculum.

After the workshop, overall confidence in image acquisition and interpretation with POCUS significantly increased. In addition, there was a statistically significant increase in the image interpretation quiz score to 78%. The residents' overall rating of the course was 4.5/5.

DISCUSSION / REFLECTION / LESSONS LEARNED: Despite low hands-on pre-intervention scores in image acquisition and interpretation, more than half of residents report using POCUS in their clinical practice. This underscores the need for a structured curriculum to teach and supervise the use of POCUS in training programs. Our next steps will

be to complete the skill building phase of the curriculum and assess resident retention of abilities and knowledge following the completion of the full year course.

DOES A ONE-HOUR INVESTMENT IN FINANCIAL WELL-BEING PAY OFF FOR TRANSITIONAL YEAR RESIDENTS?

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NEEDS AND OBJECTIVES: An overlooked source of anxiety for new medical school graduates is the change in financial situation as they move from accruing student loans to earning a wage and entering repayment of student loans. This transition may adversely affect resident wellness just as much as duty hour overages, high patient census, and poor work-life balance. The goal of this study was to determine if a free 1 hour financial planning lecture would improve the financial well-being of new interns.

SETTING AND PARTICIPANTS: In June of 2019, all 10 incoming transitional year residents to Intermountain Medical Center in Murray, Utah participated in the study.

DESCRIPTION: In June of 2019, all incoming transitional year residents were asked to anonymously complete the validated, ten question Consumer Financial Protection Bureau (CFPB) Financial Well-Being Scale. The following week, during their new-intern human resources orientation, the incoming interns received a free, one-hour lecture about financial planning and preparedness provided by a certified financial planner from the Utah Medical Association (the intervention). The same CFPB Financial Well-Being Scale was administered again 1 month after the intervention and again at 3 months after the intervention. Responses to the survey were kept anonymous. The surveys were administered via Survey Monkey and emailed to the potential respondents. The raw data was summarized and an average financial well-being score was calculated for each administration of the survey.

EVALUATION: Nine out of the ten potential respondents completed the baseline (pre-intervention) survey; eight completed the one-month post intervention survey and four completed the three-month post intervention survey. The financial well-being before the intervention was averaged with a score of 58 (out of 100). There was an improvement of 6.9% to 62 in the raw Financial Well-Being Score from pre-intervention to one-month post intervention. This was statistically significant with a p-value of 0.02884. Additionally, responses were consistently improved across all 10 questions of the CFPB Financial Well-Being Scale from pre-intervention to one-month post intervention.

DISCUSSION / REFLECTION / LESSONS LEARNED: As the cost of medical education continues to increase rapidly, the transition from medical school to residency can be an anxiety provoking time as student loans enter repayment. We sought to mitigate this anxiety with a 1 hour financial planning session which resulted in improved financial well-being of the interns. It is notable that even the smallest of modifications to new intern orientation curriculum can have a significant impact. This addition of a non-traditional topic in the orientation curriculum, highlights the importance of a holistic approach to resident education and stewardship.

DUAL IMPACT IN TEACHING SOCIAL MEDICINE: USING REFLECTIVE WRITING FOR BOTH LEARNERS AND TEACHERS

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NEEDS AND OBJECTIVES: Residency training focuses on medical care, which accounts for only 10% of health, while Social Determinants of Health (SDOH) account for 40%. We developed a 3-week block to improve knowledge, skills and attitudes relating to SDOH. Curriculum evaluation response rates are only about 30%, so we sought to enhance evaluation through qualitative analysis of reflective writing samples that are required during this rotation.

SETTING AND PARTICIPANTS: All Internal Medicine interns (Primary Care Track [PCT] and non- PCT]) participate in the Social Medicine rotation.

DESCRIPTION: Components include: (Clinical:) addiction medicine, home-based primary care, wound care clinic, homeless clinic; (Community-based:) recovery groups, volunteering; (Additional low-resource activities:) online Medication-Assisted Training and SDOH modules, brief readings, thought experiments, and reflective writing.

All interns complete a 1-2 page reflection. Several prompts are offered; open-ended reflection is also welcome. On submission, interns indicate whether they give permission for (anonymous) inclusion in an analysis of the rotation. 19 of 34 (56%) indicated yes. Local IRB exemption was obtained.

Included reflection pieces were de-identified and analyzed by two independent readers who each compiled a set of core themes identified from analysis of all the readings. The readers then met to establish concordance on a set of central themes. They then re-read the reflections and coded readings to these themes for the final analysis.

EVALUATION: Prevalent themes included: 1) appreciating a larger picture: seeing the patient as a whole person, the impact of SDOH, and the importance of community; 2) the power of patient stories; 3) the prevalence of emotional discomfort in working with SDOH, including frustration, bias and uncertainty; 4) the positive impact of exposure to novel experiences and populations; 5) the impact of time to connect with patients and allow reflection; and 6) insights into self in working with SDOH, including ignoring SDOH because of perceived lack of skill/ability; as well as reconnection with meaning and purpose, including being reminded why one chose to enter medicine in the first place, aspirations for one's future, and gratitude for new experiences/insights during the rotation.

DISCUSSION / REFLECTION / LESSONS LEARNED: From our analysis, the rotation appears to have a positive impact on knowledge, skills and attitudes relating to working with SDOH. Many interns reflected on reconnection to their mission in medicine and a more holistic approach to health and well-being, which felt particularly important during an otherwise very hectic, medically-focused and hospital-oriented first year. Regarding specific curricular components, the impact of recovery groups and personal stories of recovery appear particularly impactful. The slower pace of the rotation enables greater reflection and connection with patients. Finally, reflective writing provided important insights into impact for learners, beyond our standard rotation evaluations.

EDUCATIONAL T.I.P.S. FOR IMPROVED CLINICAL SKILLS: A NOVEL APPROACH TO CURRICULUM DEVELOPMENT

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NEEDS AND OBJECTIVES: Residents report low confidence in physical exam aptitude and low satisfaction with physical exam teaching (*South Med J*. 2016; 109: 747). Hence, we piloted the "Enhanced Clinical Skills" (ECS) training track to offer personalized training in core physical exam skills. To create the curriculum, we identified learner deficits using a formative assessment, which uncovered personal and program-wide educational needs.

SETTING AND PARTICIPANTS: *Participants*: 10 upper-level residents participated in the ECS Track to receive dedicated teaching of clinical skills. During the first month, each participated in a Formative Assessment (FA) of their clinical skills.

DESCRIPTION: *Formative Assessment Design*: Following the UK(MRCP) PACES format and Johns Hopkins APECS model, patients with actual physical exam abnormalities were recruited to sit in one of five exam stations (CV, MSK, NEURO, GI, PULM). Two trained faculty independently examined each patient and agreed upon pathologic findings. Residents then rotated through a timed circuit, having 6 minutes to examine and 4 minutes to present findings at each station before the observing faculty. At the end of the circuit, faculty provided real-time feedback on each resident's performance. *Measures*: Residents filled out a 10-point Likert scale assessing the educational experience and a self assessment of their performance. Faculty also assessed each resident's performance. *Curriculum Development*: Aggregate scores helped identify areas for curriculum design.

EVALUATION: The combined feedback revealed patterns for curriculum development. *Autonomy*: expected clinical skills were demonstrated by 80% in CV, 50% PULM and 50% GI. *Emerging Autonomy*: 20% demonstrated expected skills with the NEURO exam. Using bedside POCUS, 30% identified CV and 10% identified PULM abnormalities. *Self Assessment*: None rated their performance of physical exam skills as "unsatisfactory," in contrast to the assessment of faculty who observed them. *Curriculum Development*: residents received a T.I.P. Sheet (Targets to Improve the Physical exam) for self-directed learning. The T.I.P. Sheet highlighted areas of strength ("ready to teach others") and emphasized areas growth ("work on technique") related to the physical exam. An aggregate TIP Sheet for all residents allowed for identification of educational focus. Eight monthly sessions paired learners and faculty with actual patients to meet demonstrated need. Three months focused on POCUS, two months focused on NEURO, two more months taught MSK, and one month emphasized GI. Residents were encouraged to used the comments on their personal T.I.P. Sheet to augment their own education and reinforce skill.

DISCUSSION / REFLECTION / LESSONS LEARNED: Our ECS Track piloted a novel way to teach clinical skills based on demonstrated learner need using a formative assessment with specific feedback.

Monthly sessions using patients and faculty taught to demonstrated deficits. Future directions of the ECS program could involve retesting the residents in timed circuits after completing the annual curriculum.

EFFECTIVE CLINICAL TEACHING: DO YOU KNOW IT WHEN YOU SEE IT?

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NEEDS AND OBJECTIVES: An Objective Structured Teaching Exercise (OSTE) parallels the commonly utilized Objective Structured Clinical Examination (OSCE) by observing residents in structured teaching encounters with standardized trainees. We previously developed a generalized assessment tool of clinical teaching using OSTEs that performed well with regards to reliability and validity. This 15-point assessment tool spans 5 clinical teaching domains and each item is measure on a 1-5 Likert scale with behavioral anchors. One barrier to implementation is training faculty reviewers on the 15-point tool and the time commitment to fill out the form. This study compares the use of an unanchored single-item global assessment rating by an untrained faculty member to the comprehensive assessment tool.

SETTING AND PARTICIPANTS: Internal Medicine residents in the Resident-as-Teacher (RaT) elective at Massachusetts General Hospital participated in this study.

DESCRIPTION: The global assessment form contained a 16 cm line where raters marked an X indicating overall resident teaching performance (the "global rating"). Aside from a smiley and frowny face, no anchors were given. Next, the raters completed the 15-point assessment form and were unable to change their global rating. These raters received frame-of-reference training on the assessment form and no training on the global rating. For the global scale the X was measured to the nearest 1mm. A % of the max score was calculated for each method. We assessed test characteristics of the two scales.

EVALUATION: Twelve Internal Medicine residents participated in the RaT elective and 11 completed both the pre- and post- OSTE assessment (4 cases each). One resident only completed the post. One case was not scored due to technical issues; thus, there were 91 measurements. Four faculty members scored the cases. The mean global rating was 49.6% (SD 16.4%) versus 46.0% (SD 11.8%) for the 15-point scale. The global scale used a larger portion of the scale (from 5.1% to 82.2%) compared to the 15-point scale (18.3% to 68.3%). Both were normally distributed. The teaching case scores between methods were highly correlated (0.81 Pearson's r; $P < 0.001$). This correlation held across all four cases and all four faculty reviewers (0.81 to 0.86; all $P < 0.001$). Final teaching scores per resident (mean across all four cases) were highly correlated (0.88; $P < 0.001$). When comparing changes in resident scores before and after the RaT elective, both measures showed similar effect sizes by Cohen's d [Global Scale (0.77; $P = 0.03$), Assessment Scale (0.79; $P = 0.02$)].

DISCUSSION / REFLECTION / LESSONS LEARNED: The single-item global rating scale without specific training performed well compared to the previously developed 15-point assessment tool. In settings where summative assessment is desired, the global scale is an efficient alternative to decrease the barriers to implementation. The 15-point assessment tool provides more granular detail in various domains of teaching and may remain superior for formative assessment.

EHR SUMMER CAMP: A HANDS-ON CME WORKSHOP TO ENHANCE EFFICIENT USE OF THE EHR THROUGH CUSTOMIZATION

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NEEDS AND OBJECTIVES: Our EHR has many customization options, but review of user proficiency data showed our faculty and residents have low use of customizations.

After completing the workshop, MDs were expected to

1. Understand opportunities for customization in the EHR,

2. Customize at least 4 features to improve the efficiency of their daily work

3. Improve efficiency using the EHR.

SETTING AND PARTICIPANTS: Setting: Division of GIM at the University of Pittsburgh outpatient clinic

Participants in pilot workshop: 15 faculty MDs

DESCRIPTION: The workshop is a 2 hour, hands-on, workflow-based experience in a computer lab, where participants log into their EHR accounts and customize features guided by a GIM and clinical informatics MD. Each of 7 topics begins with a demonstration of ideal workflows incorporating customizatized features, followed by a build session wher participants are guided through their own customizations, with specific content suggestions. By the end, participants set up (1) diagnosis, level of service, and documentation speed buttons, (2) favorite order sets, (3) order detail defaults, (4) personalized order panels, (5) letter defaults, and (6) "quick actions" to communicate normal inbasket results. The workshop was offered twice in August, during a time slot usually devoted to faculty development activities, suspended for the summer. S'mors were distributed at the end of the session. We chose to pilot as a CME faculty workshop to improve faculty experience and so precepting faculty could assist residents.

EVALUATION: Our vendor provides proficiency metrics monthly. We compared participants' metrics before and 3 months after the workshop. Changes in proportions were tested using chi-square test, and in continuous variables using paired t-test. The vendor-defined 'proficiency score,' (range 0-10) measuring use of time-saving features went from mean 4.61 to 7.12 ($p<0.01$). Mean numbers of time-saving features increased: chart review user-built filters (0.73 to 1.53, $p< 0.01$), inbasket 'quick actions' (1.4 to 2.4, $p< 0.05$), and user-created order defaults (65.5 to 73.3, $p < 0.05$). Orders placed without changing defaults per encounter, measuring effectiveness of customization, increased from 0.84 to 0.90 ($p<0.05$). Percent of providers with personalized billing (from 67% to 100%) and diagnosis (from 13% to 93%) buttons ($p< 0.05$ for each) increased. The number of 'quick actions' used per day did not increase (0.14 to 0.13, p NS). The vendor-provided PEP score, a metric of time spent compared to workload, improved from 5.35 to 5.81 ($p< 0.05$). Time spent in the system per day and from 7 pm to 7 am did not change, but there was a trend towards decreased time spent outside scheduled hours (58.7 to 50.2 mins, p=0.08).

DISCUSSION / REFLECTION / LESSONS LEARNED: An interactive workshop to increase EHR customized tools is feasible, acceptable, and results in an increase in EHR customization by users. Vendor-provided metrics are useful in evaluating for programs aimed at EHR use. Follow-up interventions may be needed to improve subsequent use of customized tools.

ENHANCING INTERVIEW SKILLS FOR GME FACULTY

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NEEDS AND OBJECTIVES: Although many medical schools use behavioral-based interviews, most residencies and fellowships still use unstructured interviews. The literature suggests that structured interviews help both in reducing bias and selecting the best fit applicants. Most faculty who interview residency and fellowship applicants lack formal training. We created a faculty development workshop to teach GME faculty how to conduct interviews more effectively.

SETTING AND PARTICIPANTS: Participants included 15 GME faculty across various departments participated in a workshop at our institution's "Medical Education Day".

DESCRIPTION: GME faculty participated in a workshop with a group OSCE where they reviewed an applicant's CV and letter of recommendation, and observed an unstructured interview followed by a structured interview that utilized behavioral based questions. After each simulation, faculty rated the applicant. We taught faculty about different styles of interviewing including how to evaluate behavioral based questions, and reviewed literature supporting each method. We discussed the prevalence of unconscious bias and illegal questions from the NRMP. Participants worked together to create behavioral based questions tied to the particular needs of their own programs.

EVALUATION: Faculty rated the candidate in the unstructured interview favorably with 87% responding that the candidate was above average or excellent. Following the structured interview, 78% of faculty rated the candidate average or below average, and were concerned about the potential behavioral issues including a lack of empathy toward a difficult patient and limited insight. In a post-workshop survey, only 50% of faculty reported that their department provides training for interviews, and 50% thought they should have detected a previous problematic candidate at their interview. 100% of faculty reported motivation to change their interviewing style, and 92% of faculty reported the workshop was moderately, very, or extremely effective in providing tools for interviews.

DISCUSSION / REFLECTION / LESSONS LEARNED: This workshop enabled GME faculty to reflect on their ability to tailor questions to their program's needs. We successfully taught faculty how to utilize structured interviews to choose optimal candidates for their programs. These structured questions, created with the ACGME milestones, were designed to improve the interview reliability and validity by increasing standardization.

EQUIPPING INTERNISTS TO MEET A GREAT NEED: CONTRACEPTION COUNSELING EDUCATION IN A PRIMARY CARE CLINIC

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NEEDS AND OBJECTIVES: Compared to other industrialized nations, the unintended pregnancy rate in the US is notably high. Furthermore, It is known that that well below half of internists routinely discuss contraception with women of childbearing age at preventive visits. Commonly cited reasons for failing to counsel patients are lack of time, knowledge, and training. To close this knowledge gap, we created a contraceptive counseling education tool and implemented it in an internal medicine residency clinic. Our aims are improvement in the residents' perceived self-efficacy with the topic and increased frequency of contraceptive counseling.

SETTING AND PARTICIPANTS: This intervention included 30 internal medicine trainees in a continuity clinic where they are divided into four groups that rotate in the clinic for a month at a time. Each month of clinic includes a half day per week of education, during which our intervention was implemented.

DESCRIPTION: The teaching session was developed and led by a senior resident with an interest in women's health and supported by faculty. The curriculum included instruction in best practices for contraceptive counseling and a detailed review of contraception methods, as well as introduction of the WHO tiered chart and the CDC medical eligibility criteria app, which are practical and effective tools for contraception counseling and education. High-yield points were reviewed using hypothetical cases and open- ended questions, which allowed participants to practice using these tools.

EVALUATION: Prior to the intervention, residents were emailed a ten-question online survey assessing frequency of contraception counseling (four-point Likert scale), level of confidence with the topic (four-point Likert scale), and barriers to counseling (multiple choice and open-ended). The majority reported that they provide contraception counseling less than half of the time, indicated lack of confidence with the topic, and said they would be more likely to counsel if they had more knowledge of the topic.

Three months after their respective intervention, we will survey each group again. We will use a Wilcoxon signed-rank test to compare the pre-

and post-education survey results to assess whether residents' confidence with the subject matter has improved and if they are providing contraception counseling more often.

DISCUSSION / REFLECTION / LESSONS LEARNED: To date, we have reached more than 20 residents. Participation has been enthusiastic and attendees have responded favorably, which may be at least partially because they are receiving instruction from a peer and feel more comfortable asking questions and seeking advice. This aspect of our intervention may not be reproducible at all institutions.

EQUIPPING MEDICAL STUDENTS WITH SKILLS TO ADDRESS SOCIAL RISK FACTORS THROUGH A STUDENT-LED LEARNING EXPERIENCE

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NEEDS AND OBJECTIVES: Social risk factors (SRF) are adverse social conditions associated with poor health, such as food insecurity or housing instability. Medical schools commonly teach SRF as immutable realities rather than actionable circumstances that should be addressed with specific tools. To address this gap, students developed an educational experience to equip third-year medical students (MS3) with tools to address SRF during their Internal Medicine (IM) clerkship. After piloting it during the 2018-'19 academic year (AY), we revised the project to improve its feasibility, acceptability, and efficacy for all stakeholders.

SETTING AND PARTICIPANTS: MS3 at the Boston University School of Medicine completing their IM clerkship at Boston Medical Center (BMC).

DESCRIPTION: MS3 during the '18-'19 AY used THRIVE, BMC's 9-domain SRF screening tool and resource referral directory, to screen patients for SRF and provide information on social resources. Two-weeks later, students conducted follow-up phone interviews with patients to assess their experience connecting with resources. Analysis of pre- and post-experience assessments indicated improved MS3 confidence in providing resources to help patients with SRF. However, the initiative had low completion rates (27%) due to challenges including insufficient instruction on Electronic Health Record (EHR) documentation, heavy clerkship workload, lack of integration with existing workflows, and lack of support from residents. During the '19-'20 AY, we developed new orientation materials for students, streamlined MS3 workflow by simplifying the screening tool and patient selection, and eliminating follow-up phone calls. To better integrate with existing workflows, we instructed MS3 to review resources with residents and attend interdisciplinary care management rounds. To increase resident support, we worked with a chief internal medicine resident to include information on the educational experience in resident orientations.

EVALUATION: Student leaders conduct mid-clerkship huddles with MS3 to elicit real-time feedback about challenges and ideas for improvement. MS3 complete a pre- and post-experience self-assessment measuring their attitudes towards and confidence in addressing SRF. The post-assessment also elicits feedback on using the THRIVE tools and completing the experience. MS3 self-assessment completion rates, EHR documentation rates, and THRIVE tools usage are evaluated to measure learning experience feasibility.

DISCUSSION / REFLECTION / LESSONS LEARNED: Despite equipping MS3 with the skills to use BMC's THRIVE tools, students still felt inadequately prepared and unsupported to address SRF. Even if this new interdisciplinary workflow better supports MS3, it is critical that students begin to develop skills to address SRF during preclinical years. This calls for significant changes in medical school curricula to better balance learning activities focused on providing biomedical care with those related to addressing SRF.

ONLINE RESOURCE URL (OPTIONAL): https://www.youtube.com/watch?v=UySWfYwUD-c

EVALUATING THE EFFECTIVENESS OF A STRUCTURAL COMPETENCY AND BIAS IN MEDICINE CURRICULUM FOR INTERNAL MEDICINE RESIDENTS

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NEEDS AND OBJECTIVES: Residency programs focus on developing a physician's clinical skills, however little time is dedicated to exploring the structural factors that influence a patient's well-being. Therefore, we have instituted a longitudinal curriculum focused on structural competency, structural racism, implicit bias, microaggressions, and cultural humility.

We expect residents to recognize structural barriers that exist in our society which contribute to poor patient health outcomes. Understand historical and structural factors that contribute to health inequality for the residents of their city (New Orleans). Understand the concept of implicit bias and how it plays a part in clinical interactions. Learn to communicate professionally with colleagues concerning issues of racism, bias, and social inequality.

SETTING AND PARTICIPANTS: The course was presented to Tulane Internal Medicine residents at the PGY 2,3 level. The course was taught by Tulane Internal Medicine faculty. Residents completed pre- and post-surveys to assess changes in their knowledge and attitudes concerning structural competency, institutionalized racism, and bias.

DESCRIPTION: The course was offered to 64 residents in five didactic sessions, each lasting 60 minutes. Residents were provided with optional additional reading to explore after the presentations. These materials were available online from the STFM Resource library: Teaching About Racism Toolkit.

EVALUATION: The study surveyed 2nd and 3rd year IM residents prior to the start of the course using a Structural Competency-adapted version of the previously-validated Clinical Cultural Competency Questionnaire (CCCQ)-Pre. The CCCQ, although originally developed to assess cultural competency of medical professionals, has been adapted and applied to pharmacy students, nursing students, and medical students in previous studies. The adapted tool, the Clinical Structural Competency Questionnaire (CSCQ)- Pre, was administered to internal medicine residents to assess baseline knowledge, attitudes and skills. The original CCCQ utilized a Likert scale, so additional question formats (dichotomous, rank, etc.) were added, as well as questions adapted from the most current structural competency literature. Students were asked to complete the CSCQ-Post at the end of the course. This study was exempt by the Tulane University IRB.

DISCUSSION / REFLECTION / LESSONS LEARNED: Our curriculum encourages residents to examine their own cultural background and biases. It also allows residents to examine the societal structures that contribute to health care inequality.

Many residency programs offer little if any training concerning these topics, some barriers to implementation include faculty availability and available time for didactic sessions for residents. However, with institutional support more of these types of didactic sessions can be implemented.

In the future expanding sessions to include resident led discussions or literature review could improve resident knowledge and comfort with these topics.

EVALUATION OF THE THIRD YEAR MEDICAL SCHOOL EDUCATIONAL ENVIRONMENT BEFORE, DURING AND AFTER AN ACADEMIC MEDICAL CENTER TRANSITION

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NEEDS AND OBJECTIVES: Educational environment has an impact on students' perceived well-being, satisfaction, and educational achievement.[1] During the 2016-2017 academic year, Creighton University School of Medicine transitioned its Academic Medical Center from an inner city location to a midtown area, and from entirely resident led teams to a mix of private practice, mid-level and academic teams. This affected the educational environment of third-year medical students.[WRW1] Therefore, we surveyed four cohorts of third-year medical students in 2016 to 2019 (i.e., both before and after the transition) to measure the educational environment and atmosphere as well as student self-perceptions.

SETTING AND PARTICIPANTS: Following IRB approval, all third-year medical students were asked to complete a brief demographic questionnaire as well as the Dundee Ready Education Environment Measure (DREEM).[2] The survey request was sent in April each year.

DESCRIPTION: Although the DREEM consists of five subscales, we were most interested students' perception of learning environment (12 items), students' academic self-perceptions (8 items), and students' perceptions of educational atmosphere (12 items). Items within each subscale were summed and one-way ANOVA with Tukey-adjusted post-hoc tests were conducted to test differences within each subscale across years.

EVALUATION: We averaged a 52% response rate. Across years, all subscale scores followed nearly identical trajectories with subscale scores increasing from 2016 to 2017 and steadily decreasing from 2017 through 2019. Specifically, perceptions of learning environment increased by 7.3 points from 2016 to 2017 (95% CI: 4.0 to 10.6, $p < .001$) and then decreased 5.0 points from 2017 to 2019 (95% CI: 1.3 to 8.7, $p = .003$). Academic self-perceptions increased by 3.0 points from 2016 to 2017 (95% CI: 0.7 to 5.2, $p = .004$) and then decreased 3.3 points from 2017 to 2019 (95% CI: 0.8 to 5.9, $p = .004$). Likewise, perceptions of educational atmosphere increased 5.4 points from 2016 to 2017 (95% CI: 2.0 to 8.7, $p < .001$) and then decreased by 4.7 points from 2017 to 2019 (95% CI: 1.0 to 8.5, $p = .007$).

DISCUSSION / REFLECTION / LESSONS LEARNED: Creighton University School of Medicine recently transitioned from an academic medical center led entirely by academic teams to a center previously organized by private practice-based physicians. This center has now melded academic, mid-level and private- practice-based care. In addition, the geographic location and the payor mix have changed. In preparation, care was taken to ensure that students would be engaged in patient care and that the new Academic Medical center would maintain a culture of care for the underserved. Despite this complicated transition, results of our survey suggest that the educational environment continued to provide a stable and positive learning environment for third-year medical students.

EXPANDING THE DIVERSITY OF THE GIM WORKFORCE: CREATING A FELLOWSHIP FOR ADVANCED PRACTICE PROVIDERS IN GENERAL INTERNAL MEDICINE

Elena Lebudska[1]; Matthew J. Moles[2]; Mary W. McCord[1]; Huong M. Lam[1]; Hillary Chrastil[3]; Frances Palmer[1]; Mary Kozloski[4]; Carmen L. Lewis[5]. [1]Internal Medicine, University of Colorado, Denver, CO; [2]Medicine, University of Colorado, Denver, CO; [3]General Internal Medicine, University of Colorado, Aurora, CO; [4]General Internal Medicine, University of Colorado Denver, Aurora, CO; [5]Internal Medicine, Univesrity of Colorado, Denver, CO. (Control ID #3390197)

NEEDS AND OBJECTIVES: There is a dearth of primary care providers in the United States. One solution to this problem is diversifying the primary care workforce by welcoming Advanced Practice Providers (APPs) to this field. Doing this requires increased education and training for our APP colleagues. We are hoping that by creating an APP fellowship we can help advance this goal. We have created a one-year APP fellowship specifically geared at advancing APP knowledge and comfort with primary care. Many new APP graduates find it challenging to secure employment without having experience, and additionally feel uncomfortable with independent practice especially in broad fields like internal medicine. Our objectives for the fellowship were to: improve clinical knowledge of common primary care topics, improve comfort with independent practice, and to add well trained APPs to our academic institution.

SETTING AND PARTICIPANTS: This APP fellowship takes place at a large academic medical center within the GIM department. Preceptors include primary care general internists and select Internal Medicine subspecialists. One applicant is enrolled per year.

DESCRIPTION: The APP fellow works 7 half days a week paired with one of 5 attending internists at one of two primary care clinics. During the first six months the fellow sees patients in partnership with an attending in a co-management structure. During the second six months, the fellow strategically progresses to more independent practice while always having attending support. There are options to perform two-week subspecialty rotations outside of primary care based on the fellow's interest. Fellows attend weekly formal interdisciplinary case conferences and weekly GIM grand rounds.

EVALUATION: Informal feedback is given after each session to the fellow by their attending preceptor on: billing, notes, clinical decision making, time management, and diagnostic evaluation. Attending preceptors and the fellowship coordinator have phone meetings every 2-3 months to discuss the progress of the fellow. Feedback sessions are also conducted by two of the fellowship preceptors with the fellow every 2 months where ACGME milestones are used to assess the fellow's progress towards unsupervised practice and gain feedback on the program.

DISCUSSION / REFLECTION / LESSONS LEARNED: We are currently in our third year of this APP fellowship. Our fellows have been highly sought after for jobs after completion of this extra training, and we have been able to retain two of our current graduates. Barriers to implementing a fellowship like this include: funding sources for the fellow, attending preceptor availability, and the need for fellowship coordination. Every year we have many exceptional applicants with much more interest then we have spots available. We feel this has been a successful endeavor and in the future hope to expand our program and help other institutions institute a similar educational experience. We hope to look at physician attitudes towards APPs and see if this changes based on our fellows and their involvement in our program.

FACILITATED GROUP MENTORING FOR WOMEN TRAINEES AT AN ACADEMIC INSTITUTION

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NEEDS AND OBJECTIVES: The under-representation of women in leadership positions has long been recognized. Due to this under-representation, the traditional dyadic mentoring schema may not be possible for women trainees. Furthermore, literature suggests programs to

help women faculty acquire and strengthen specific skills necessary in academic medicine are beneficial. Professional development initiatives directed at women trainees are lacking.

SETTING AND PARTICIPANTS: Women trainees in the department of medicine at Washington University in Saint Louis.

DESCRIPTION: We developed the "Forum for Women in Medicine" (FWIM) program in 2014 to empower women trainees in the department of medicine with skills for successful careers. FWIM is a facilitated group mentoring program that hosts a series of professional skill-building workshops for women residents, fellows, and junior faculty. The sessions were a combination of lectures, small-group discussions, and self-reflection exercises among trainees and faculty facilitators. Participants also attended lunches with prominent women leaders in a multiple of fields both within and outside of medicine.

EVALUATION: Participants varied from 4-19 (average 11) trainees and 11-24 faculty facilitators (average 17) per session between 2017 and 2018. Pre- and post-year and post-workshop surveys were conducted. For workshops between 2017 and 2018, 100% of residents felt that the curriculum vitae (31/31), letter of recommendation (24/24), and conflict resolution workshops (17/17) provided information that was beneficial for the trainee. In 2018 surveys, women trainees felt more comfortable handling interpersonal conflict in post-2018 surveys compared to pre-2018 surveys (75.8% vs 58.6% agreed or strongly agreed, $p = 0.085$). Male trainees over the same period of time did not have a significant increase in comfort with handling interpersonal conflict (84.3% vs 79.5% agreed or strongly agreed, $p = 0.370$). In post workshop surveys, trainee's comments resolved around themes of finding mentorship and networking, sharing and exchanging ideas, and learning new skills.

DISCUSSION / REFLECTION / LESSONS LEARNED: Mentorship for women trainees in academic medicine is a unique situation warranting a unique solution. Women trainees had improved confidence in conflict management after our 2017-2018 series of workshops compared to male trainees. Facilitated group mentoring in our institution provides avenues for skills building and networking outside of the archetypal dyadic mentoring relationship.

FACING FAILURE: REVITALIZING M&M CONFERENCE IN THE AMBULATORY SETTING

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NEEDS AND OBJECTIVES: Our IM residency currently has no forum for trainees to review outpatient cases where a safety lapse has occurred. This results in missed opportunites to improve clincial safety for our under-served patients in our safety net clinic and contributes to the perception that ambulatory education is under-valued in GME. The absence of an ambulatory-based patient safety conference also inadvertently perpetuates a culture of fear and blame surrounding medical errors.

1. Residents will identify, report, and analyze adverse patient safety events that have occurred in the resident continuity clinic.

2. Create a positive culture surrounding patient safety events via discussion, self-reflection, and deliberate practice.

SETTING AND PARTICIPANTS: Internal medicine residents' noon conference during their ambulatory week.

DESCRIPTION: M&M Conferences are incredibly powerful opportunities for self-reflection and learning. As patient safety becomes a growing area of ACGME focus, such conferences can serve as valuable tools to enhance a graduate medical training program.

By piloting a new ambulatory M&M conference, we hope to bridge some of the perceived value gap between inpatient and outpatient education in our training program. Our curriculum will review patient safety concepts while monitoring attitudes and event reporting of ambulatory safety events. Measuring culture change is inherently difficult; the evolution of attitude assessments and an increase in event reporting should serve as surrogate markers for culture change surrounding resident perceptions of ambulatory patient safety.

EVALUATION: We will utilize baseline and post-intervention surveys to assess attitudes regarding this fundamental question: are residents able and willing to identify cases in which a safety lapse has occurred? Simultaenously, we will carefully monitor numerical data on the number of safety events reported to institutional leadership.

DISCUSSION / REFLECTION / LESSONS LEARNED: Developing an ambulatory-based M&M conference emphasizes the importance of patient safety in the clinic setting, ensuring a more even playing field between the inpatient and outpatient aspects of graduate medical training. An initial basic needs assessment revealed that residents were not even aware of *how* or *where* to report patient safety events that occur in their continuity clinic. Baseline survey data indicates that current resident attitudes likely hinder robust self- reflection and attention to ambulatory patient safety.

Interestingly, subsequent curriculum changes to introduce a new ambulatory M&M conference have led to a significant spike in event reporting from the resident clinic, suggesting increased attention to and interest in identification of ambulatory patient safety events. Increased interest in leading the ambulatory M&M conference by multiple resident volunteers also highlights evolving attitudes on this topic. In combination, we hope these data sets serve as surrogate markers for much needed culture change.

FACULTY COACHING TO IMPROVE TEACHING SKILLS: TRANSFORMING ANXIETY INTO COMPETENCE THROUGH TRUST AND PRACTICE

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NEEDS AND OBJECTIVES: Most faculty, having acquired deep clinical competency, have had little or no formal training or mentoring in teaching and are expected to "naturally" develop these skills. Faculty members with negative teaching evaluations have few resources to remediate deficiencies, which can be demoralizing for an otherwise competent faculty member and challenging for leaders accountable to both residents and faculty. This presents a quandary – how to effectively and durably correct the teaching skills of an established faculty member? One such situation arose in our institution. An expert in feedback on teaching ('coach') was asked to coach a receptive faculty member ('host').

SETTING AND PARTICIPANTS: Observation and coaching was conducted one-on-one in the context of the host's clinical teaching environment.

DESCRIPTION: A longitudinal coaching model was created based on purposeful, theoretically sound evidence around observation, structured feedback and development of a host-coach alliance. The program was piloted for optimization in 3 conceptual domains: 1) establishment of a host-coach relationship; 2) a shared mental model around best teaching practices; and 3) effective delivery, reception, and use of feedback. Strategies included: encouraging the host to guide initial coaching direction, establishing host-identified goals, keeping feedback formative, and taking the time to build a trusting relationship. Our shared model was the Stanford Faculty Development Program (SFDP) teaching framework. Six half-day observation sessions occurred over three months in the host's clinical teaching environment. Each session was immediately followed by 30 minutes of feedback. Content was reinforced in a follow-up email, and an email prior to each session outlined the next SFDP theme. The host and coach routinely reflected on progress and

created a plan for maintenance. The coach was compensated for 0.1 FTE for 6 weeks by the host's division.

EVALUATION: Host self-assessment upon conclusion and 3 months follow-up included increased: 1) confidence in teaching ability, 2) in-the-moment feedback skills; 3) time efficiency; 4) capacity to support residents' autonomy; and 5) a framework to elicit learner goals. Trainee assessments reflected the host's improvement in terms of approachability, level of autonomy given, and overall learning culture.

DISCUSSION / REFLECTION / LESSONS LEARNED: Using established tools from medical education this coaching program created a collegial environment with beneficial results. Lessons learned include: 1) time is a critical ingredient in coaching for remediation: adult learning theory hinges on a strong relationship, a credible teacher, and a positive learning environment, all of which require time to build, 2) process transparency is important to creating an educational alliance, 3) power differences between coach and host were diminished by their joint commitment to creating a collegial relationship using structured sessions.

FIREARM SAFETY… WHAT IS MY ROLE AS A PHYSICIAN?

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NEEDS AND OBJECTIVES: Firearm related homicide and suicide ranks among the top 10 leading causes of death of Americans for most of the lifespan. In 2017, firearm related violence was responsible for 115,000 non-fatal injuries and 39,773 deaths[1]. Studies have shown that counseling from a healthcare provider can reduce adverse outcomes related to firearms[2,3]. Despite this, medical students infrequently receive training about firearm safety and injury prevention[4]. Commonly cited barriers include lack of educational resources, lack of trained personnel, and concerns over the topic's relationship to politics[5,6]. We created an interactive small group module designed to teach medical students about the role of a physician in reducing firearm related injury and death in a politically neutral context.

SETTING AND PARTICIPANTS: The module was implemented in a small group setting to first year medical students during their "On Doctoring" course. One hour of time was dedicated to the module. Faculty preceptors attended one hour of faculty development, but otherwise had no specific training or expertise on the subject. The student to faculty ratio was 8:1.

DESCRIPTION: Doctoring preceptors used a PowerPoint presentation to guide their groups through a discussion on firearm safety. First, basic background information such as public health implications, physician rights, ownership statistics, ownership laws, and public health implications were introduced. Next students were asked to consider and discuss as the a group the following questions:

As a physician,

May I discuss firearm safety with patients? Should I discuss firearm safety with patients?

What must I discuss regarding firearms with patients?

Preceptors moderated the conversation using the PowerPoint to help guide the conversation and provide accurate answers. Faculty were encouraged to share their own personal practices on inquiring and providing counseling to patients on firearm safety. Lastly, specific strategies for initiating and navigating this conversation were introduced.

EVALUATION: Participants' knowledge and perception on counseling of patients on firearm safety was assessed before and after the firearm safety curriculum using 5-point Likert-type scale questions. Students were asked the below questions:

I understand Florida Laws surrounding gun ownership and sales.

I can define "safe firearm storage practices".

I understand when a physician can ask patients about firearm access and safety.

I feel comfortable asking a patient about access to firearms.

I feel comfortable counseling a patient about safe firearm storage practices.

DISCUSSION / REFLECTION / LESSONS LEARNED: Of the 163 students invited to participate in the survey, 154 (94.5%) responded with both pre- and post-survey questionnaires. Students showed a statistically significant improvement in all five of the pre and post curriculum questions. Additionally, 96% of respondents felt that the curriculum was presented in an unbiased manner.

FORMATIVE AND SUMMATIVE ASSESSMENT OF A RESIDENT-AS-TEACHER COURSE USING OBJECTIVE STRUCTURED TEACHING ENCOUNTERS (OSTE)

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NEEDS AND OBJECTIVES: The Resident-as-Teacher (RaT) course at the Massachusetts General Hospital (MGH) is an intensive two-week elective aimed at improving resident teaching ability through didactics, teaching experiences, and feedback. Evaluation of the effectiveness of such courses has been limited to subjective resident evaluations. The use of Objective Structured Teaching Encounters (OSTE) allows for objective measurement of changes in resident teaching and can identify previously unknown strengths and weaknesses of the RaT curriculum.

SETTING AND PARTICIPANTS: Eleven PGY1-3 Internal Medicine residents at MGH participated in the RaT course and completed the pre- and post- OSTE assessments.

DESCRIPTION: A previously developed 45-minute OSTE and assessment tool with strong validity evidence was administered before and after the RaT elective. The OSTE was comprised of four scenarios: *Teaching on Rounds, Teaching at the Bedside, Giving a Chalk Talk, and Giving Feedback on an HPI.* Each case had two versions that varied in clinical content to allow for different pre- and post- examinations. Trained faculty members rated each encounter using a 15-item tool spanning 5 domains of teaching including: *creating a positive learning climate, effectively communicating goals, accurately assessing the level of the learner(s), effectively controlling the teaching session, and providing effective feedback to the learner(s)*. Each item was rated on a 5-point Likert scale, with higher scores indicating better performance. Case teaching scores were calculated by taking the mean of all 15-items. The overall teaching score was the mean across all cases.

EVALUATION: Overall teaching scores increased from 2.74 to 2.91 (pooled SD = 0.23, P=0.016) with an effect size of 0.76 (Cohen's d, large effect). Correlation between pre-OSTE score and absolute improvement was strong (r = -0.76), indicating the highest impact of the course was on lower performing baseline teachers. Residents improved most in *Teaching on Rounds* (effect size: 0.79; P = 0.03), *Giving Feedback on an HPI* (0.58; P = 0.09), and *Giving a Chalk Talk* (0.52; P = 0.11), while performance declined on *Teaching at the Bedside* (-0.35, P = 0.32). Effect sizes were positive for all domains [Learning climate (effect size 0.66; P = 0.05), Control (0.61; P = 0.08), Goals (0.47; P = 0.15), Assess (0.40; P = 0.22), Feedback (0.36, P = 0.27)].

DISCUSSION / REFLECTION / LESSONS LEARNED: This study provides objective evidence of the benefits of this RaT elective and argues for it's continued inclusion into a busy residency curriculum. Additionally, the OSTE identified four specific areas for improvement in RaT: 1) Improving already talented teachers, 2) Increasing bedside teaching experiences, 3)

Focusing on how to give feedback during teaching scenarios and 4) Adding content on assessing the level of learner. Future OSTE studies will measure the impact of these curricular changes on RaT course effectiveness and include a control group to address the possibility that residents may improve simply by being more familiar with the OSTE format.

FROM CONFRONTATION TO COLLABORATION: AN INTERPROFESSIONAL, COMMUNICATION SKILLS CURRICULUM FOR CHALLENGING PATIENT ENCOUNTERS

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NEEDS AND OBJECTIVES: Physicians and nurses often encounter patients that wish to leave the unit against medical advice. These encounters are challenging and contribute to provider burnout. There are a number of reasons why providers may feel that it would be unsafe for a medical patient to leave the floor. This ranges from patients who are fall risks to those for whom there is a concern for substance use. These encounters require a high level of interpersonal and interprofessional communication skills in order to manage them successfully.

SETTING AND PARTICIPANTS: Our curriculum focused on training physicians and nurses on communication skills central to successful management of encounters in which patients wish to leave the unit AMA. This pilot initiative recruited 18 providers total and including 9 hospitalist physicians and 9 registered nurses. Our curriculum goals were to improve nurse and physician knowledge, attitudes, and skills surrounding this type of encounter.

DESCRIPTION: In order to assess skills prior to and after the curriculum, we conducted a pre- and post- intervention OSCE (Objective Structured Clinical Examination) with an SP. In order to assess attitudes we administered pre and post surveys. We then conducted training sessions which included both physicians and nurses. Each of these sessions included didactic training on policies and skills and then practice of communication skills with SP's in a group setting.

We focused on the following five communication skills 1) establish a common goal using "we" statements, 2) outline the plan of care and consequences using "if-then" statements, 3) explore patient concerns using open- ended statements, 4) express empathy using "NURSE" statements and 5) verify the patient's understanding using "teach-back".

EVALUATION: It was challenging to coordinate hospitalist and nurse schedules for providers to accommodate all portions of the study. This ultimately limited our sample size. We measured Cohen's d as estimates of effect sizes for the skills pre and post assessments. We found that the curriculum had a very large effect (1.79) on the overall mean. Providers completed pre and post surveys to assess attitudes and comfort. They reported increased comfort after participating in the curriculum (3.2 pre vs 4.2 post, p=0.0085).

DISCUSSION / REFLECTION / LESSONS LEARNED: We found that our curriculum was effective in increasing overall provider skills in these communication strategies. Providers felt more comfortable having conversations with patients that wish to leave the unit against medical advice after this training. Anecdotally, hospitalists and nurses appreciated the opportunity to train together on these skills and to discuss the various issues that come up in these encounters.

We focused on patients wishing to leave the unit against medical advice. However, the communication skills in the curriculum are helpful in a multitude of challenging patient encounters, and especially encounters where limits need to be set with patients.

FROM FAMILY VIOLENCE TO TRAUMA INFORMED CARE: A MULTIDISCIPLINARY WORKSHOP FOR MEDICAL STUDENTS

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NEEDS AND OBJECTIVES: Violence is tragically common across all age groups, and frequently goes unreported. While screening for child abuse (CA), intimate partner violence (IPV), and human trafficking (HT) is recommended, rates of screening and reporting are low in primary care. Training improves screening and referral to community resources. Through a session on family violence, we introduced medical students to the related topics of CA, IPV, and HT.

SETTING AND PARTICIPANTS: 100 second year medical students at one medical school in New York in 2019.

DESCRIPTION: A two hour interdisciplinary workshop included an introduction to the definition of, risk factors for, red flags of, and prevalence of CA, IPV, and HT. A patient advocate shared a testimonial, and social workers and educators from a nonprofit advocacy organization provided screening, documentation, and reporting strategies. A child abuse pediatrician described the rationale for mandatory reporting, while a faculty expert in HT outlined screening and reporting techniques and tenets of trauma-informed care. Students were then asked to screen for IPV and CA in outpatient preceptorship experiences.

EVALUATION: Students completed a pre- and post-session survey including knowledge and attitudinal elements from a validated questionnaire. Assessment included a question on the final essay exam and clinical skills encounter. Fifty students completed both the pre- and post-session surveys. Student reported ability to detect and respond to cases of IPV and CA increased significantly following participation (mean 3.9 vs. 1.9 on 1-5 scale, $p<0.01$) as did comfort identifying red flags of HT (1.9 vs. 1.3 on 1-3 scale, -<0.01). Following the session, more students identified risk factors for IPV (65% vs. 32%, $p<0.01$) and warning signs of abuse (92% vs. 62%, $p<0.01$). Following the session 71% of students identified appropriate ways to ask patients about IPV. While 75% of students reported awareness of trauma-informed care after the session, no students correctly identified its four principles. Fewer than half of students received full credit for eliciting IPV on the OSCE exam (32%) or differentiating the approach in CA and IPV on the final essay (28%). Student evaluations of the session were a mean of 4.7 of 5. Students appreciated the family perspective and integrative approach as "eye opening," "powerful" and "touching and chilling," and requested additional skills practice and content on HT.

DISCUSSION / REFLECTION / LESSONS LEARNED: This interdisciplinary workshop introduced students to principles of screening and trauma informed care in cases of CA, IPV, and HT. The multi- stakeholder approach including patients, community leaders, and clinical faculty increased student knowledge and confidence to address violence in patients' lives. Small group debrief and practice of these challenging topics is important in developing skills.

GAMIFICATION OF RESIDENT JOURNAL CLUB TO INCREASE ENGAGEMENT AND CRITICAL APPRAISAL SKILLS

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NEEDS AND OBJECTIVES: Critical appraisal skills are essential to internal medicine practice. Nonetheless, the medical education literature is replete with studies demonstrating the suboptimal critical appraisal skills of residents. Graduate medical educators have an opportunity to cultivate these skills during internal medicine residency. Resident journal club is a frequently employed mechanism to imbue these skills, but resident engagement can be variable. We developed a journal club curriculum for an internal medicine residency program predicated on gamification to increase resident engagement and enhance critical appraisal skills.

SETTING AND PARTICIPANTS: Internal medicine residents at the University of Alabama at Birmingham participated in the new journal club curriculum from June 2018 to May 2019.

DESCRIPTION: Monthly journal club sessions arranged residents into competing groups. A case vignette with a clinically relevant question was disseminated to resident groups by e-mail at least two weeks prior to each session. Then, each group selected an empiric study of their choice to answer the clinical question. During the journal club session, each resident group presented a critical appraisal of their chosen study and discussed its applicability to the patient scenario. A faculty expert discussant was present to facilitate critical review and give a brief didactic on a biostatistical topic relevant to the studies (e.g., significance testing of baseline characteristics). A winning group was selected at the end of each session and was awarded a small prize.

EVALUATION: Participants were surveyed at the end of the academic year preceding and following the 12- month intervention to evaluate the quality of the journal club curriculum. Response rates to the pre- and post-intervention surveys were 22.5% and 24.3%, respectively. Both the pre-test (n=25) and post-test (n=27) included eight survey questions that explored participants' rating of various characteristics of journal club on a Likert scale (e.g., "journal club is a good use of my time," and "journal club has increased my confidence when evaluating medical literature"). We used two-sided Fisher's exact test to compare responses before and after the intervention. Residents' self-reported critical appraisal skills significantly improved following the intervention (p=0.005). Four additional survey questions included in the post-test asked participants to directly compare the intervention to the previous curriculum. A majority (73.3%) of residents reported the new curriculum was either "probably" or "definitely" better than its predecessor.

DISCUSSION / REFLECTION / LESSONS LEARNED: Our results suggest that gamification of resident journal club is a reasonable strategy to increase resident engagement in the curriculum and residents' self-reported critical appraisal skills. Further study is needed to investigate the correlation between self-reported and objectively assessed critical appraisal skills.

GETTING BANG FOR YOUR BUCK IN CLINICAL REASONING: INNOVATIVE PEER-TO-PEER TEACHING UTILIZING FEEDBACK LOOPS AND METACOGNITION

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NEEDS AND OBJECTIVES: Adult learners require different teaching modalities not regularly employed in residency programs. Large programs rely heavily on large group didactics that have proven to have low retention rates. The importance of metacognitive strategies and dynamic feedback loops has been studied in adult learning. Utilizing a metacognitive approach, this program aims to improve clinical and diagnostic reasoning capacity among internal medicine residents, increase collaboration and utilize a peer to peer approach to build diagnostic schema, improve learning environment and normalize diagnostic error, and utilize metacognition and direct feedback loops to shed light on medical knowledge deficits and implicit bias.

SETTING AND PARTICIPANTS: Sessions take place at a large academic medical center that hosts over 180 internal medicine residents. All residents take part in the monthly sessions that occur during a protected academic noon conference.

DESCRIPTION: Our innovation utilizes simulation case-based learning and peer to peer collaboration and teaching with feedback loops and the use of metacognition and a cognitive root cause analysis in an interactive monthly conference. Conferences are based on true cases presented by a resident led "Clinical Reasoning Team" with a staff mentor to highlight complex diagnostic schema, diagnostic error, and cognitive biases.

Small groups evaluate a patient with facilitators providing "real-time" lab, imaging, and pathology results. Groups then report out on their approach and challenges encountered. The actual patient course and diagnostic dilemma with a focus on cognitive error is then revealed. The groups then utilize metacognition to reflect on implicit bias and knowledge deficits that led to the diagnostic error. Residents then reflect on their own thinking to shape clinical reasoning using an iterative feedback loop.

EVALUATION: Evaluation of the innovation is underway with a mixed methods design. Focus group data were collected to triangulate the data.

A questionnaire with 102 responses showed that the conference is very well received. Written resident reflections point towards processes and behaviors indicative of transformational learning with a paradigm shift in perspectives. Survey data showed that over 90% of the residents reported that the conference makes them more aware of their cognitive biases, improve their clinical approach and decision making, help them become better clinicians, and that clinical decisions have changed after attending these sessions.

DISCUSSION / REFLECTION / LESSONS LEARNED: Clinical reasoning requires constant feedback and integration in order for young clinicians to learn. We have observed that trainees embrace curricula that prepare them to tackle diagnostic dilemmas. This innovation has changed the culture of our program by normalizing attention to cognitive errors, integrating biases discussions into rounds, and emphasizing metacognitive strategies in the face of uncertainty. Several clinical reasoning tools have been used in the wards since their introduction during conference.

GIVE THEM WHAT THEY WANT!: A NEEDS BASED CAREER DEVELOPMENT CURRICULUM

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NEEDS AND OBJECTIVES: Internal medicine residency programs should provide a framework to guide, shape, and motivate residents to explore and develop skill sets that can lead to different career paths and subspecialties. Despite available mentorship programs and research opportunities, residents craved more support with teaching, delivering feedback, exploring career paths, networking, and building relationships with mentors. Our curriculum aimed to work hand in hand with residents to create career development sessions during their protected academic time.

SETTING AND PARTICIPANTS: This innovation takes place at a large academic center hosting over 180 internal medicine residents. All residents participate in the curriculum.

DESCRIPTION: In direct response to resident feedback, we worked with residents to form a curriculum called "The Career Development Series." The resident leadership group performed a needs based

assessment to identify topics residents felt were useful for career development. We sought advice from other programs in addition to our local fellowship Program Directors, job recruiters, research mentors, and curriculum developers in order to create the series. We provide information on fellowship preparation, interviewing skills, research opportunities, mentorship, coaching, job searching, and networking in addition to skills based sessions on feedback and teaching. Our curriculum includes several targeted sessions for different PGY levels, sessions for peer mentorship, fellowship program director panels, personal statement workshops, skill building workshops, individual mock interviews and a debriefing session for an audience of residents. In addition, we hosted research mentorship speed dating events, and provided instruction on contract negotiations and job search tactics. We also employed the use of a coaching program to facilitate direction when residents want to explore undeveloped interests and mature in their career interests.

EVALUATION: Data was obtained using a mixed methods design. We collected data from the local fellowship program directors, research mentors, and residents. All sessions were very well attended. Survey data showed that 100% of mock interviewees felt the session was helpful, over 70% agreed that the fellowship preparation sessions were helpful, and over 61% of residents who matched used the "Guide to Fellowship" document created. After the feedback skills session, evaluations for faculty increased. The residents felt that the peer mentoring was extremely helpful in identifying career and research mentors.

DISCUSSION / REFLECTION / LESSONS LEARNED: Working with the resident body to create curricula based on their feedback and needs has had an overwhelming positive response. Residents are more invested and readily give feedback when they feel included in development of sessions. Residents have responded so positively to the Career Development Workshop Series that an Director was appointed to run the sessions for residents. Residents continually provide ideas to expand the curriculum in the future.

GLOBAL HEALTH LEADERSHIP CURRICULUM

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NEEDS AND OBJECTIVES: Within global health training, leadership development occurs almost exclusively through ad hoc learning and informal mentorship. In response to this gap, we have created an innovative curriculum in leadership development focused on the unique aspects particular to leadership in global health.

Through our curriculum, our trainees will be able:

-To identify and understand the importance of leadership skills within global health

-To develop their own skills of emotional intelligence and cultural humility in global health through self- reflection and feedback

-To apply leadership skills in developing and maintaining collaborative relationship on global health teams

SETTING AND PARTICIPANTS: Our program is a combined training program in internal medicine and global health. It is a 4-year program consisting of a 3-year residency and 1-year fellowship. There are 2 trainees in each class with a total of 8 trainees. These trainees participate in clinical, research, and academic rotations both locally and globally during their training.

DESCRIPTION: Over four year, our trainees participate in our global health leadership curriculum. The curriculum introduces and develops leadership skills through small group discussions, self-reflection, readings, mentorship, and experiential learning.

The curriculum's foundation is to build community and the practice of self-reflection through small group discussions. Discussions occur by class as well as program-wide meetings throughout the year.

Our first-year trainees also participate in a 4-week course focused on health equity and leadership led by our senior global health trainees. The trainees gain pragmatic clinical and leadership skill while our senior trainees gain valuable experience in curriculum development and teaching.

Integrated with these all experiences, our global health trainees participate in robust global health rotations that allow for active practice and engagement in leadership skill. In these experiences, our trainees practice self-reflection and seek feedback on their leadership skills.

EVALUATION: We will seek qualitative feedback from trainees on their experience. Through this feedback, we hope to demonstrate growth in their knowledge and practice of leadership skills.

We will also seek to engage with our global health partners for feedback on our trainees' leadership skill development, and utilize a series of global health case vignettes to assess the trainees' leadership skills over time.

DISCUSSION / REFLECTION / LESSONS LEARNED: Leadership skills need to be developed, nurtured, and assessed over time, as well as applied in the active practice of leadership. We want to demonstrate that global health leadership skills can be developed. Our hope is over time to demonstrate leadership skill development through self-assessment and reflection, feedback from colleagues, and assessment via standardized case vignettes. We believe that development of these skills will equip our trainees to be more effective leaders, partners, and teammates for health equity.

GLOBAL IS LOCAL: AN IMMERSIVE CLINICAL ROTATION IN RURAL TENNESSEE

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NEEDS AND OBJECTIVES: Medical residents tend to train in urban tertiary care centers, without significant clinical exposure to rural community clinics. At the same time, rural areas, often close to urban centers, have less access to care and significantly worse health outcomes. We created an immersive rural elective in Tennessee to introduce residents to the challenges facing patients and providers in remote, under- resourced communities.

SETTING AND PARTICIPANTS: To date, four PGY3 residents from the Yale New Haven Hospital internal medicine residency programs have completed this elective in Grundy County, one of the poorest counties in Tennessee. Residents worked with local providers in a variety of clinical settings, with an emphasis on the Beersheba Springs Medical Clinic (BSMC), which provides primary care and medications completely free of charge to uninsured residents of Grundy County and the surrounding area.

DESCRIPTION: Residents learn about the structural and socioeconomic determinants of health in rural communities through a predeparture orientation. They live in Grundy county, and are hosted by a local community member who serves as a guide and liaison. Residents see patients alongside a nurse practitioner at BSMC, and at three additional clinical sites. Two clinics are run by local physicians, whose patients have a mix of public and private insurance, and residents assist with intake exams at the county jail. Additionally, residents speak at local schools, participate in board meetings at BSMC, and attend health classes at the clinic and

other community events. Upon their return, residents compose a written reflection, and share a case- based presentation about their experience.

EVALUATION: In their written reflections and during a post-elective discussion, residents expressed appreciation for the learning opportunities provided by seeing a breadth of disease, and serving as the primary manager of complex chronic disease, which is uncommon in the resource-rich settings they are accustomed to. They also valued the fact that they were helping to fill a crucial role in the health of the community, while having deep misgivings about their inability to offer the standard of care they are used to providing. One resident wrote that he felt "ethically conflicted," and "struggled to communicate to [his] patients what standards of care would be and what was possible due to their insurance status." All residents admired the resiliency of their patients and the dedication of the medical staff, and believed they had a deeper understanding of structural barriers to health.

DISCUSSION / REFLECTION / LESSONS LEARNED: We believe the immersive nature of this elective provides a unique opportunity for medical trainees to develop a more personal and nuanced understanding of the challenges confronting patients and providers in rural America. We hope to inculcate in residents the humility necessary to serve in an unfamiliar cultural environment, and inspire them to champion equitable healthcare delivery in the future.

HAVE A MINUTE? RESIDENT ENGAGEMENT WITH AMBULATORY TEACHING MINUTE (ATM) EXERCISES—BRIEF, CASE-BASED EBM TEACHING FOR THE CONTINUITY CLINIC

Devin Oller. Medicine, University of Kentucky, Lexington, KY. (Control ID #3387836)

NEEDS AND OBJECTIVES: The continuity clinic can be a stressful learning environment for residents (Nadkarni et al 2011), and evidence based medicine (EBM) teaching is limited in this setting (Tiburt et al 2008). The Ambulatory Teaching Minute (ATM) was developed to address the need for high-yield teaching on EBM topics in busy resident continuity clinics. In this preliminary work, I assessed resident engagement to assist in developing best practices for facilitation of ATMs.

SETTING AND PARTICIPANTS: At the University of Kentucky, EBM-focused didactics have traditionally been integrated into the residency-wide noon conference series (journal club or traditional lecture formats). ATMs were designed to complement this existing curriculum, centering content in the ambulatory setting. 4 preceptors served as facilitators of ATM exercises to 24 residents over the course of 3 months, delivering 4 ATMs to each of these learners during their one month ambulatory rotation.

DESCRIPTION: The one-page ATM handouts (see resource URL) consist of four sections: 1) a case description, 2) a guided discussion that asks learners to develop a meaningful research question and outline the ideal study to answer the question posed by the case, 3) a brief synopsis of a recently published study that addresses this question, and 4) a brief facilitator-facing discussion guide.

In an effort to standardize facilitation of ATMs, preceptors opting in received an instructional video reviewing the ATM 2 weeks prior to facilitation. In the week prior to completing their ambulatory month, residents and their preceptors received an invitation to participate in an optional survey to measure resident engagement.

EVALUATION: Surveys to measure resident engagement using a modified STROBE instrument (O'Malley et al 2003) were completed by all 4 preceptors and 6 residents (100% and 25% response rates, respectively). The average engagement score of 3.81 (out of a maximum of 5). 60% of respondents reported the exercise taking between 6-10 minutes, with the next most frequent response (20% of respondents) being 2-5 minutes. In response to the question of "How frequently would it be realistic for you to complete an ATM exercise?" 60% responded once per week.

DISCUSSION / REFLECTION / LESSONS LEARNED: The positive engagement scores seen in this preliminary work point to the Ambulatory Teaching Minute's potential as an additional tool in the preceptor's toolbox to address EBM knowledge gaps among residents. Two lessons learned should be highlighted to inform others interested in using ATMs. First, narrowing the scope of the ATM to *either* a clinical pearl or a key EBM takeaway would likely lower ATM development and facilitation time. Second, future work should include assessments that ask participants to rank the various features of the ATM they find most helpful or engaging to better understand how ATMs can be streamlined.

ONLINE RESOURCE URL (OPTIONAL): https://drive.google.com/drive/folders/1vNrMGqys5ilbLPw4jOPGzm-LG2ZoTNAl?usp=sharing

HEALTH DISPARITIES CURRICULUM IMPACT ON RESIDENT OWNERSHIP OF SOCIAL DETERMINANTS OF HEALTH

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NEEDS AND OBJECTIVES: A curriculum for social determinants of health is critical in addressing health disparities and plays a pivotal role in comprehensive patient care and medical education. The American College of Physicians (ACP) recently called for the integration of health disparities into all levels of medical education. Furthermore, the Clinical Learning Environment Review (CLER) program emphasizes residents identify and address health care disparities unique to their institution. Our academic internal medicine residency program implemented a systematic curriculum on health disparities and evaluated its effect on resident's ownership of assessing social determinants of health in clinical practice.

SETTING AND PARTICIPANTS: The University of Kansas Health System Internal Medicine Residency Program is a large training program that includes inpatient and outpatient experiences in a large academic medical center, Veterans Affairs health system, and a safety net clinic. The program has 69 categorical internal medicine residents and 10 internal medicine-psychiatry residents.

DESCRIPTION: A systematic curriculum was formed to educate and enable categorical internal medicine residents to address health disparities. To solidify core concepts, residents completed an online learning module. Subsequently, small group sessions investigated the role of physicians in addressing health disparities and reviewed system resources in both the ambulatory and inpatient settings of our health system.

EVALUATION: Residents were surveyed pre- and post-small group discussion to evaluate their perceived responsibility to identify social determinants of health and whether its training should be included in graduate medical education or incorporated into clinical practice guidelines. Responses were recorded on a five-point Likert scale with scores of five indicating the highest level of agreement. Following the intervention, residents felt a higher level of responsibility to identify social determinants of health (3.9 vs. 4.3, $p < 0.002$), felt health disparities training was necessary (3.7 vs. 4.4, $p < 0.001$), and should be incorporated into clinical practice guidelines (3.7 vs. 4.4, $p < 0.001$).

DISCUSSION / REFLECTION / LESSONS LEARNED: Creating a health disparities curriculum based on ACP-CLER priorities was feasible for our program. While ACP-CLER priorities demonstrate requirement to educate on health disparities, our research suggests residents also find value in this type of education and its integration into graduate medical education.

HERE'S TO SPEAKING CONFIDENTLY: A TOASTMASTERS PUBLIC SPEAKING WORKSHOP FOR RESIDENTS

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NEEDS AND OBJECTIVES: Physician interpersonal and communication skills, which have been shown to correlate with improved patient outcomes, comprise one of the six core competencies for Internal Medicine residents outlined by the Accreditation Council for Graduate Medical Education (ACGME). Public speaking falls within this realm, yet many residents endorse some degree of public speaking anxiety, creating an opportunity for a validated training curriculum. Furthermore, public speaking and presentation delivery is an integral part of a successful academic physician's career. We designed a workshop for Internal Medicine residents and medical students based on Toastmasters International, which describes itself as "a non-profit educational organization that teaches public speaking and leadership skills through a worldwide network of clubs."[1]

SETTING AND PARTICIPANTS: There were 35 participants in this workshop. 24% (n=8) were medical students, 43% (n=14) were PGY-1, 21% (n=7) were PGY-2, and 12% (n=4) were PGY-3. No prerequisite knowledge, skills, or resources were required to attend or participate. The workshop was held in a classroom with tables set up to work in groups, facilitating learner engagement.

DESCRIPTION: We chose an interactive workshop model to enhance learner engagement and promote reflection and sharing. A 60-minute public speaking workshop included a mini-didactic that outlined public speaking skills, styles and strategies, identification of flaws and pitfalls, and a Toastmasters public speaking activity with peer feedback. Pre- and post-workshop surveys consisted of questions pertaining to prior public speaking training, anxiety, and confidence levels. Anxiety and confidence levels were assessed on a 6-point Likert scale (1=extremely calm or extremely unconfident, 6=extremely anxious or extremely confident).

EVALUATION: Pre-workshop public speaking anxiety level was 3.86 (SD 1.02), with no significant difference between interns (2.93, SD 0.88) and PGY 2 and 3 (3.45, SD 1.30, p=0.26). Pre- and post-workshop public speaking confidence levels were 3.94 (SD 1.18) and 4.14 (SD 1.01), respectively (p=0.18). Pre- workshop confidence among interns (3.77, SD 1.47) and PGY 2 and 3 (3.91, SD 1.08) did not differ (p=0.83). Pre-workshop confidence was inversely correlated with anxiety (R= -0.58).

DISCUSSION / REFLECTION / LESSONS LEARNED: Graduate medical education requires public speaking on rounds and in conferences. Although not statistically significant, the mean public speaking confidence level rose after this workshop. There was no correlation between confidence and training level, confidence and prior public speaking training, anxiety and training level, or anxiety and prior public speaking training. The inverse correlation between trainee anxiety and public speaking confidence suggests that including anxiety reduction techniques may augment public speaking workshops and trainee confidence in public speaking.

ONLINE RESOURCE URL (OPTIONAL): 1. https://www.toastmasters.org/about/all-about-toastmasters

HOME VISITS DURING INTERNAL MEDICINE RESIDENCY: REINFORCING THE IMPACT OF SOCIAL DETERMINANTS OF HEALTH ON PATIENT CARE

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NEEDS AND OBJECTIVES: Our internal medicine resident's training on social determinants of health (SDoH) has been in the form of an on-line module and scattered lectures. It's direct connection to patient care has been inconsistent. Home visits have been well established forms of evaluating unique patient needs but have not previously been a part of our General IM program. This innovation was developed to provide a practical approach to understanding SDoH within the resident's own practice. Objectives: 1. Provide experiential learning opportunity for residents to better understand the impact of SDoH on their patient's health. 2. Identify SDoH triggers for providing resources to improve care 3. Demonstrate appropriate documentation and billing codes for home visits

SETTING AND PARTICIPANTS: Ambulatory setting with IM Residents

DESCRIPTION: As of July 2017, all PGY 2 Internal Medicine residents receive an introductory discussion on the impact of SDoH on patient outcomes during their required BUMCP ambulatory rotation. Residents then review their patient population, identify, contact and schedule one patient to visit in their home. Common reasons for choosing the patient included concerns regarding medication adherence, recent falls, and uncontrolled chronic conditions. The home visit included the resident, a supervising attending, and our social worker whom addressed key questions around insurance, income, and transportation needs. Additional participants included medical students and pharmacy residents when available. Beginning May 2018, residents also completed a reflection on what they learned from the home visit.

EVALUATION: As of October 2019, 43 of 46 residents have participated in a home visit with their own patient or as part of the team. Common reflection themes noted after the visit included the lack of nutritious foods, barriers and cost of transportation, medication reconciliation and adherence issues, patient safety concerns, health literacy, family support for the patient, and previously undiagnosed depression or dementia. Since May 2018, the home visit also provided an opportunity to address advance directives in 11 of 26 patients (42.3%). Alternative assignment (3) included visiting a community resource (Area Agency on Aging) local office.

DISCUSSION / REFLECTION / LESSONS LEARNED: Home visits provide invaluable direct experience in understanding how SDoH impact resident's own patient's daily care. Residents learned to work collaboratively with our social worker to identify and address transportation, patient home safety, housing, food insecurity/choices and financial barriers to care. They noted the limitations of medication reconciliation done without actual prescription bottles in identifying duplicate prescriptions, use of OTC medications, and patient health literacy. Self-reflection questions help to solidify lessons learned. It allowed for advance directive discussions. Unexpectedly, we found that many patients are reluctant to have physicians visit their home. Next steps would be to identify some of the patient barriers to this type of visit.

HUNGER AND HEALTH TRAINING PROGRAM: AN INNOVATIVE CURRICULUM IN FOOD INSECURITY AS A SOCIAL DETERMINANT OF HEALTH

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NEEDS AND OBJECTIVES: In 2017, an estimated 1 in 8 Americans were food insecure. Food insecurity is associated with poor health outcomes and therefore is an important social determinant of health, yet is often neglected in graduate medical education curricula. Our goal was to partner with a local community food bank to provide specialized training on food insecurity for our residents that included experiential and service-learning

components. Our three objectives were the following: 1. Train the next generation of health professionals on food insecurity as a key social determinant of health. 2. Recognize the role that health care providers play in helping patients connect to food resources. 3. Increase comfort with routine screening, consultation and referrals for food insecurity.

SETTING AND PARTICIPANTS: Internal Medicine Residents at the University of Michigan, as part of an underserved elective, participated in the Hunger and Health Training program at Food Gatherers, the food rescue and food bank program serving Washtenaw County, Michigan.

DESCRIPTION: Our Internal Medicine Residents can elect a two week 'underserved medicine' rotation during the course of their training. In academic year 2018-2019, we partnered with Food Gatherers, the community food bank, to include training in food insecurity and incorporate a half day of service-learning at a local food pantry during this rotation. Food Gatherers' Hunger and Health Training program includes approximately 12 hours of specialized training on food insecurity and contains a mix of small group lecture and discussion, hands-on service learning opportunities at the community soup kitchen and local food pantries, self-study activities, and an invitation to participate in the SNAP challenge, an activity which helps to illustrate hunger in the US and the essential role food banks and healthcare providers play in the fight against hunger.

EVALUATION: Evaluation of Food Gatherers' Hunger and Health Training Program was obtained through written feedback obtained at the end of the rotation. Comments have been uniformly positive: "Learning about food insecurity at Food Gatherers was very beneficial. It was an area about which I previously had little knowledge, and which will be very relevant for my practice going forward." "This was an incredibly humbling and fulfilling experience and helped me remember my calling to medicine."

DISCUSSION / REFLECTION / LESSONS LEARNED: Food insecurity is common and a known social determinant of health. Curricula on the nuances of food insecurity and collaboration with community partners, however, is often lacking. The incorporation of specialized training in food insecurity at a local food bank was perceived as beneficial to the residents who participated in the rotation. The well-received participation in a half day of service at a food pantry nicely illustrates an education model which occurs outside of a traditional setting. The positive feedback on the non-MD instructors also demonstrates that education of our trainees by non-physician colleagues can be well received if done well.

IMERSD: INTERNAL MEDICINE EXPERIENCE FOR RESIDENTS IN SOCIAL DETERMINANTS OF HEALTH

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NEEDS AND OBJECTIVES: The social determinants of health include the social, economic, environmental, cultural systems and structures that shape the conditions of a person's daily life. While these concepts are often introduced during medical school, exposure among incoming interns tends to be quite variable. We implemented an immersive community tour during intern orientation to enhance residents' understanding of the social determinants of health, as well as to foster awareness of local demographics and available community resources

SETTING AND PARTICIPANTS: Wilmington Hospital is an urban hospital in Wilmington, Delaware and is the primary care training site for multiple residency programs. The hospital is located in the most impoverished zip code in the state and serves a very economically and racially diverse patient population. A total of 23 internal medicine interns participated in this activity.

DESCRIPTION: All interns participated in a 3-hour community tour of the city of Wilmington. The tour included visits to 3 community partners including a homeless shelter, a low-income housing unit, and a community center focused on workforce development and food insecurity. A scripted didactic program highlighting local health statistics and community health outcomes was presented during travel between sites. A handout outlining additional community services was provided at the conclusion of the tour.

EVALUATION: Data included pre- and post-tour knowledge-based surveys regarding the identification of key social determinants of health as well as local demographics, health outcomes, and community resources. The response rate was 100% for the pre-tour survey and 83% for the post-tour survey (N=23). Pre-survey data indicated that despite all residents reporting previous experience working with underserved populations, only 17% (4/23) were able to accurately identify the key social determinants of health and their associated impact on health outcomes. Post-tour surveys indicated a significant increase in both the identification of social determinants (15/23, 65% of participants) as well as the awareness of local resources. The residents also reported an increased level of comfort in understanding the surrounding community and the adversities affecting their patients.

DISCUSSION / REFLECTION / LESSONS LEARNED: These findings suggest that an immersive community tour can greatly enhance resident understanding of the social determinants of health, local population factors, and available community resources. In future iterations, we hope to broaden the offering to all residents and evaluate the impact on community resource utilization and patient outcomes.

IMMIGRANT AND REFUGEE HEALTH: LEGAL, PSYCHOSOCIAL, AND NARRATIVE PERSPECTIVES

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NEEDS AND OBJECTIVES: The primary need of this curriculum is to help students develop expertise in immigrant and refugees, with a focus on the legal, social, clinical, and narrative determinants of health. The course utilizes mixed methods and flipped classroom modalities. The primary objectives include student exposure to the following: (1) Didactics on the Social and Legal Determinants of Health and Clinical knowledge of Refugee health, (2) Experiential Learning with Refugee and Immigrant patients interviews, (3) Narrative Medicine for Refugee and Immigrant Storytelling, (4) Cultural Humility Training.

SETTING AND PARTICIPANTS: This curriculum takes place within the Denver Health Longitudinal Integrated Clerkship (LIC) classroom. The participants of the study are third-year medical students who participate in the Longitudinal Integrated Clerkship (LIC). The students work longitudinally at Denver Health for a year; they interact with immigrant and refugee patients in emergency, inpatient, and outpatient settings. Denver Health is a safety net, level-one trauma center that serves a large population of urban underserved patients, including those who are uninsured/under-insured, Medicare and Medicaid, LGBTQ*, immigrants and refugees.

DESCRIPTION: Didactics are a PowerPoint on Social and Legal Determinants of Health on basic facts of refugee and immigrant populations; an expert in refugee medicine provides further context. Narrative medicine course is flipped classroom, and includes close reading of literature pertaining to immigrants and refugees. The students have an experiential learning project, interviewing refugee and immigrant patients, and reflectively writing about this.

Finally, the curricula concludes with a cultural humility workshop and group debrief on reflective writing pieces.

EVALUATION: Qualtrics pre- and post-survey in three parts. Part one includes statements on a five-point Likert scale from strongly disagree to strongly agree: (1) I view narrative medicine as a tool for providing better clinical care, (2) I use narrative medicine to find meaning in my work, (3) Narrative medicine helps me reflect on what matters most to my patients, (4) When I feel burnt out in medicine, I can cope with writing, (5) I feel comfortable exploring personal stories with immigrant and refugee patients, (6) I feel comfortable publicly sharing stories about what impact migrant populations have on me, (7) I feel personally connected to immigrants and refugees. Part two is the Perceived Stress Scale 4 (PSS-4). Part three is participant information and feedback.

DISCUSSION / REFLECTION / LESSONS LEARNED: This curriculum has impactful. Students gave real-time feedback that the didactic components of legal and medical are challenging; the discussion, reflection, reading, and writing assignments are most beneficial. The sessions have also brought up discussions about burnout, and ideas on sustainable practice in taking care of underserved patients with complex needs at Denver Health. The hope is that this curricula can be incorporated into school-wide and national curricula.

IMMIGRANT HEALTH: BUILDING BRIDGES IN MEDICAL EDUCATION

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NEEDS AND OBJECTIVES: Rapidly changing US immigration policy and the complexity of the healthcare system make it difficult for immigrants to access quality care. To become effective clinicians, learners must be fluent and confident in addressing immigrants' unique concerns. We created an elective to teach students about these topics. By the end of the course, students:

- Identify physical and mental health concerns specific to immigrant patients and implement evidence-based screening guidelines

- Design a management plan incorporating local resources and best practices for immigrant health

- Describe current national, state, and local immigration policy and its impact on health

- Explain the role of physicians as advocates for immigrant patients

SETTING AND PARTICIPANTS: Four 4th-year medical students participated in this 2-week course at an academic medical center in Austin, Texas.

DESCRIPTION: Each morning, students attend didactics (e.g. infection screening, common mental health concerns, pathways to permanent residency, asylum interview training) or community visits (e.g. refugee resettlement agency, nonprofit orgs., law school immigration clinic). On 4 afternoons over the 2 weeks, students attend community clinics and see only 1-3 immigrant patients per day to allow for deep exploration of each patient's immigration experience. On other afternoons, students participate in moderated small-group discussions on immigrant health hot topics and participate in writing accountability groups to produce course deliverables.

EVALUATION: Students complete four assignments for assessment:

- Two de-identified reflection pieces on patients they saw during the elective, discussing how their stories relate to larger epidemiological patterns or policy issues and proposing potential solutions. Reflections are assessed on writing quality, depth of reflection, and the innovation of proposed solutions, and are meant to be the basis for an op-ed or publication.

- Short final presentation expanding on one of these reflections.

- As a group, students create an immigrant health resource toolkit for use in a local clinical setting. Submissions are assessed on completeness and practical utility.

The course is evaluated by students on effectiveness of teaching methods, quality of speakers, and salience to their medical education and careers.

DISCUSSION / REFLECTION / LESSONS LEARNED: By providing students with direct experiences with immigrant patients, we illustrate how a comprehensive social history can be critical in a variety of clinical scenarios, and we humanize people who are often maligned or stereotyped in society and political dialogue. The course strengthens the medical school's ties to other disciplines and community organizations, reinforcing the importance of team-based care and demonstrating how interdisciplinary collaboration can improve health. One lesson learned is that immersion in these topics can be emotionally draining for participants; future iterations of the course will carve out more time for debriefs and discussions of self-care when caring for vulnerable populations.

IMPACTING THE OPIOID CRISIS THROUGH PROJECT ECHO

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NEEDS AND OBJECTIVES: The widespread incidence of morbidity and mortality associated with Opioid Use Disorder (OUD) has resulted in a national crisis. One component of this public health epidemic includes a lack of an adequately trained healthcare workforce to provide opioid case management, prescribing, and dispensing. Strategies are needed to address these deficits in service delivery.

SETTING AND PARTICIPANTS: Primary care providers (PCPs) are at the forefront of caring for patients who are misusing or addicted to substances and are typically the point of referral to subspecialist consultation. Although data have shown that early intervention is correlated with more positive health outcomes, PCPs often have no specialized training in treating OUD or managing addiction. There remains a dearth of physicians equipped to adequately treat individuals with substance use disorders. This is most often the case in rural areas, where access to providers experienced in medical management of patients with OUD, is severely limited.

DESCRIPTION: Project ECHO is a tele-mentoring, medical education and care delivery model, which uses hub-and-spoke knowledge-sharing networks, led by expert teams at academic medical centers who use telehealth multi-point videoconferencing to conduct virtual clinics with community providers. Every clinic involves a short didactic session given by an expert in the group that hosts the meetings (or "the hub" team), followed by case-based discussions of de-identified real cases presented by practitioners in the community (or "the spokes"). Through access to experts for medical consultation and collaboration, existing community providers can provide more specialized care, ultimately diminishing barriers that patients often face when needing treatment for chronic and complex health conditions

EVALUATION: As Project ECHO seeks to provide continuing education to health care providers, Moore's framework was utilized to evaluate the level of impact on individual practitioners. Data collected included Participation & engagement, Satisfaction, Learning, and performance.

DISCUSSION / REFLECTION / LESSONS LEARNED: Project ECHO has the potential to improve access to expert specialist care in isolated communities, disseminate knowledge to healthcare professionals

without displacement or high cost, increase current and relevant medical knowledge, reduce health disparities, promote evidence-based and high-quality care for complex conditions, and increase job satisfaction and retention in providers. Few studies have been published to-date regarding the impact of OUD-specific tele-ECHO clinics on provider and patient. Given the documented need for highly trained providers and a range of comorbid conditions that prevail in patients with OUD and SUD, the dissemination and provision of Project ECHO focused in this area should be a priority.

ONLINE RESOURCE URL (OPTIONAL): https://www.vcuhealth.org/for-providers/education/virginia-opioid-addiction-echo/va-opioid-addiction-echo

IMPACT OF AN ADDICTION CURRICULUM ON RESIDENTS' PERCEPTION OF TREATING OUD

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NEEDS AND OBJECTIVES: To understand the impact of a Medication Assisted Treatment (MAT) curriculum on Internal Medicine residents' perceptions of Opioid Use Disorder (OUD) and MAT

SETTING AND PARTICIPANTS: PGY2 and PGY3 internal medicine residents in an outpatient, academic, safety-net clinic

DESCRIPTION: Addiction Week provided hands-on experiences with patients receiving MAT. The curriculum included the following: didactics on addiction and buprenorphine (mostly web based), readings about addiction, direct observation of addiction counselors counseling patients receiving MAT, direct discussion with patients receiving MAT, observation of a group therapy session, and informal discussion with providers who prescribe MAT.

EVALUATION: Two themes emerged.

1) Increased understanding and empathy for patients with OUD: Residents described the value of interacting directly with patients functioning well on MAT, which helped to reduce judgment and foster empathy: "After seeing people change, successfully going through treatment, I'm less likely to brush over somebody's opiate use disorder or judge the person...." Residents gained a deeper understanding of addiction and increased appreciation for those suffering from this disease.

2) Increased confidence using MAT: Residents felt more confident to discuss addiction with patients: "I ..would probably start with a conversation about treatment with suboxone ...which is a little bit easier to do now that I've seen people going through the program."

Many residents described feeling more inclined to prescribe MAT in the future: "I feel like I found out that my role in all this could be to prescribe ... I don't think I had that perspective before this."

DISCUSSION / REFLECTION / LESSONS LEARNED: OUD is a national crisis. Although MAT is the standard of care, access is very limited. Providers may be reluctant to prescribe MAT because they lack knowledge or believe it is ineffective. Internal Medicine residents typically do not receive formal education about either OUD or MAT. After completing Addiction Week, residents described the curriculum as helping them to achieve deeper insight into addiction and treatment, which fostered greater understanding and empathy for patients with OUD. Seeing patients treated in stable outpatient settings helped to cultivate enthusiasm for MAT. This enthusiasm translated into a willingness to begin prescribing MAT. Intentions have been shown to predict future behavior; however, more research is needed to study the long-term outcomes of the curriculum.

IMPACT OF A TRAUMA-INFORMED CARE WORKSHOP ON INTERNAL MEDICINE RESIDENTS' KNOWLEDGE, ATTITUDES, AND BEHAVIORS REGARDING TRAUMA AND TRAUMA-INFORMED CARE

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NEEDS AND OBJECTIVES: There is a high incidence of trauma among adult patients cared for in primary care or hospital settings. The experience of trauma has been shown to negatively impact physical, mental, and socioemotional health, limit access to health care, and reduce lifespan. Trauma-informed care (TIC) is a framework for recognizing, understanding, and acknowledging patients' experiences of trauma, which emphasizes compassion and avoidance of re-traumatization. While TIC curricula have been introduced within undergraduate medical education, implementation within Graduate Medical Education has been limited. We found no published reports describing such curricula in Internal Medicine (IM) residents.

Accordingly, we performed a pilot study to evaluate the impact of TIC training on IM residents' knowledge, attitudes and behaviors on this subject.

SETTING AND PARTICIPANTS: The TIC workshop was held during a required educational session for a subset of IM residents (PGY2 and PGY3) enrolled in the Health Equity Pathway in the University of Colorado IM Residency.

DESCRIPTION: The intervention consisted of one 3-hour workshop, led by a psychologist with expertise in TIC, and was held during a required educational session for a subset of IM residents enrolled in the Health Equity Pathway in the University of Colorado IM Residency. Fourteen residents in this pathway voluntarily completed surveys before and after participation in the workshop in order to assess the impact of the workshop on self-reported knowledge, attitudes, and behaviors. Twenty-two residents who did not participate in the workshop also completed identical surveys (control group). Survey data was collected anonymously via Qualtrics and analyzed in Excel utilizing multiple regression. This study was approved by the Colorado Multiple Institutional Review Board.

EVALUATION: Of the 14 residents completing the pre-workshop survey, 10 also completed a post- workshop survey (71% response rate). We observed a statistically significant improvement in residents' self- reported knowledge and attitudes regarding trauma and TIC ($p<0.0001$), but not in skills ($p=0.3$). The greatest change was seen in residents' perceived ability to identify various types of trauma, confidence in inquiring about traumatic experiences, and ability to identify appropriate patient resources. Nineteen of the 22 residents (86%) in the control group desired specific training on TIC.

DISCUSSION / REFLECTION / LESSONS LEARNED: TIC training is an important gap in IM residency with the majority of residents reporting desire for this training. An innovative TIC workshop influenced residents' self-reported knowledge and attitudes, but not skills related to this topic. Additional interactive sessions may be necessary in order to have residents practice skills related to implementing TIC in their clinical practice.

IMPACT OF COMPREHENSIVE CARE CLINIC (C3) ON GRADUATE MEDICAL EDUCATION

Angie Seo, Dino A. Messina. General Internal Medicine, Alpert Brown School of Medicine, Providence, RI. (Control ID #3386121)

NEEDS AND OBJECTIVES: Continuity clinic provides an opportunity for residents to care for patients in an ambulatory setting. Many of these patients are complex, high-risk, and with multiple socioeconomic challenges. This can be overwhelming for residents when they inherit a panel of clinic patients at the start of residency. Models of care similar to our Comprehensive Care Clinic (C3) can be used to help residents provide quality and personalized care for our most vulnerable patients in a complex and fragmented healthcare system.

SETTING AND PARTICIPANTS: C3 began in September 2017. High-risk patients were identified as those with poorly controlled diabetes, hypertension, or high utilizers (greater than 3 emergency room visits or 2 hospitalizations in the prior year). It was designed as a multidisciplinary visit with the attending and resident physicians, nurse care manager, pharmacist, and social worker. To date, over 200 patients and 40 residents have experienced C3.

DESCRIPTION: Our nurse care manager identifies high-risk patients and schedules hour-long C3 visits with their resident physicians during their ambulatory block. Members of the C3 team review patient charts in advance with the goal of identifying barriers to care. Once a patient arrives, attending and resident physicians introduce the C3 approach and assess the patient's goals. The pharmacist does a complete medication reconciliation, including affordability and adherence. The social worker explores social determinants of health, including living situation, income source, support systems, transportation, mood, and health confidence. A post-huddle is performed allowing the team to come up with individual, targeted interventions. The nurse care manager then shares the plan with the patient to wrap-up the visit and often checks in with him or her in between clinic visits to provide ongoing coaching and guidance.

EVALUATION: We used a 5-point Likert scale survey to evaluate resident thoughts on care of high-risk patients (n=17; 8 with C3 and 9 without C3 experience). Both groups found it overwhelming to take care of complex patients in clinic, but more C3 residents agreed that they had a good understanding of their patients' barriers to care, living situation, and health literacy. Qualitative responses indicate many enjoyed the multidisciplinary team approach and appreciated the amount of time they had with their patient.

DISCUSSION / REFLECTION / LESSONS LEARNED: Getting a comprehensive assessment of complex patients and their social determinants of health can be overwhelming and challenging as resident physicians in typical clinic sessions. C3, however, promotes team-based care, continuity, population management, care coordination, and patient-centered medical home. Its potential role in improving resident experience and curbing burnout in clinic is worth evaluating.

IMPLEMENTATION OF AN INTERPROFESSIONAL LONGITUDINAL ADDRESSING SUBSTANCE USE CURRICULUM: DESCRIPTION AND EVALUATION OF MEDICAL STUDENT PRE-CLINICAL CURRICULAR EXPERIENCES

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NEEDS AND OBJECTIVES: Substance use is a prevalent public health issue. Due to gaps in education and clinical training, many healthcare providers are uncomfortable addressing the topic, and few patients report discussing substance use with their healthcare providers. Screening and brief intervention (SBI) for substance use is recommended for all patients in healthcare settings. Barriers to SBI adoption include provider discomfort, lack of training and experience addressing substance use.

SETTING AND PARTICIPANTS: An iterative approach was used to build a four-year, longitudinal undergraduate curriculum at a large health system's affiliated School of Medicine; this study describes the 2017-2018 rendition of pre-clinical first and second year sessions.

DESCRIPTION: The first-year (MS1) curriculum addresses knowledge, skills and attitudes related to screening for alcohol use using the transtheoretical model of behavior change and the evidence-based Alcohol Use Disorders Identification Test (AUDIT). As an experiential component, students attend an Alcoholics Anonymous meeting and write a reflection. Assigned reading and a large group didactic session focus on the spectrum of alcohol use, health consequences of alcohol use, the importance of normalizing the topic, and universal screening across healthcare settings. Role-plays in small groups using standardized patients (SPs) allow students to practice screening skills. The session is integrated into liver physiology and pathology curriculum.

The second year (MS2) curriculum, part of the neurology unit on addiction, expands on first year skills by focusing on brief intervention and drugs. Assigned readings and a large group didactic session concentrate on interventions for patients who screen positive for drugs utilizing the evidence-based DAST-10 screening tool. To develop SBI skills, students learn and practice a brief intervention using the brief negotiated interview (BNI) framework with SBIRT faculty, health coaches, and SPs.

EVALUATION: MS1 knowledge and attitudes were assessed using pre- and post-surveys, with 1-5 Likert scale questions analyzed using paired-samples t-tests. 85 MS1 survey pairs were included in analysis. The largest increases were in confidence to screen patients for alcohol/drug problems (+1.08; $p<0.001$) and familiarity with SBIRT for substance use (+1.31; $p<0.001$). MS2 post-surveys asked four open-ended questions. Common responses included for main concepts learned were how to normalize the topic and speak to patients in a non-judgmental way. There was confusion about how to integrate the screening into a patient encounter, but incorporating screening tools was what students felt they could apply to their current roles.

The most frequent suggestion for improvement would be to have more time to practice with the SPs.

DISCUSSION / REFLECTION / LESSONS LEARNED: More experiential opportunities for students to practice skills would be beneficial. Longitudinal evaluation of the entire four-year curriculum is needed to better assess knowledge, attitudes, skills, and impact on clinical practice.

IMPLEMENTATION OF A NURSE SHADOWING EXPERIENCE FOR INTERNAL MEDICINE RESIDENTS

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NEEDS AND OBJECTIVES: Improve quality of care and patient safety through improved interprofessional communication.

Optimize long term resident and nursing wellness through improved workplace collaboration.

Examine impact of short shadowing experience on resident and nursing attitudes.

Validate on a small scale for use with other subspecialties, in addition to longitudinal interprofessional development for residents during their later training.

SETTING AND PARTICIPANTS: Study was designed and set in a large, tertiary academic medical center in Morgantown, West Virginia. Survey participants included Internal Medicine Residents in their first year of residency training (pre n=16, post n=14) and Medical/Surgical nursing colleagues (pre n=17, post n=5).

DESCRIPTION: We implemented a nurse shadowing program among post-graduate year one Internal Medicine resident physicians to facilitate communication between healthcare team members. Residents would have one protected shadowing experience consisting of 3 hours as part of their inter-professional education curriculum. Residents observed nursing electronic medical record workflow, routine nursing evaluations, and nursing interactions with other members of the healthcare team.

EVALUATION: Both residents and nurses were offered opportunity to complete a validated survey (Jefferson Scale of Attitudes Toward Physician-Nurse Collaboration) both prior to and after completing the shadowing experience. Data were collected and analyzed for statistically significant changes as well as non- significant trends in survey response on individual questions as well as pooled results.

DISCUSSION / REFLECTION / LESSONS LEARNED: Nurses and physician attitudes were found to be significantly different before and after the nurse shadowing experience. Potential impacts as well as limitations of this survey in context of our institution were examined. Due to voluntary nature of survey and relative low number of respondents, there is insufficient power for statistical significance, but did demonstrate trend towards positive attitudes toward collaboration. This pilot intervention's resultant improvements could likely be magnified by increased exposure over various levels of training. Elucidation of future directions including longitudinal interprofessional education among residents as well as implementation in residencies outside of internal medicine would likely be beneficial. This program is easily implementable and could serve as a model for other programs.

IMPLEMENTATION OF A POINT-OF-CARE ULTRASOUND CURRICULUM AT A COMMUNITY-BASED INTERNAL MEDICINE RESIDENCY PROGRAM

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NEEDS AND OBJECTIVES: Point-of-care ultrasound (POCUS) training has become increasingly integrated in internal medicine residency programs. Recent professional guidelines have stressed the need for hands-on training and longitudinal exposure. However, there is significant heterogeneity in curriculum design and content for residency POCUS training. Smaller community-based residency programs may also perceive a lack in elective/training time or resources for a POCUS curriculum. Our objective was to develop an effective pilot POCUS program at a community hospital-based residency program utilizing the existing elective format.

SETTING AND PARTICIPANTS: In 2019 we developed a pilot POCUS program utilizing selected internal medicine residents on low volume consultation services. Our pilot was based at the Montefiore Medical Center Wakefield campus, which is a 345-bed community hospital in the Bronx, New York.

DESCRIPTION: Residents were grouped into three cohorts of three to four residents paired with one instructor. Prior to the start of the pilot each cohort was required to take a POCUS test of knowledge to establish a baseline for comparison. Cohorts then underwent two weeks of morning lectures on diagnostic abdominal, cardiovascular, and pulmonary ultrasound and supervised hands-on training first with a standardized model (the primary author), then on admitted patients. One week after the conclusion of the pilot each cohort then repeated the test of knowledge to assess for improvement in scores. Scores from the test of knowledge were collected anonymously through Google Survey (Google, Mountain View, CA) and analyzed in Excel (Microsoft, Redmond, WA) using a two-sample *t* test with unequal variance to compare pre- and post-elective test of knowledge scores.

EVALUATION: All residents who participated in the pilot took the initial test of knowledge. 70% of residents completed the repeat test of knowledge one week after the pilot. The average and median score on the pre-pilot test of knowledge was 63% and 60% respectively, with a score range of 44% to 84%. The average and median score after the pilot rose to 83% and 80% respectively, with a score range of 72% to 100%. The difference in average scores was statistically significant with p-value of 1.4×10^{-6}.

DISCUSSION / REFLECTION / LESSONS LEARNED: An effective POCUS teaching curriculum that does not require a significant reallocation of resources or residents is feasible in a smaller community-based residency program. A combination of small cohort size, didactics and supervised hands-on training led to a significant increase in POCUS knowledge. Challenges remain in instituting a longitudinal POCUS experience in the future.

IMPLEMENTATION OF SOCIAL DETERMINANTS OF HEALTH (SDH) CURRICULUM WITH INTERNAL MEDICINE RESIDENTS – REVIEW OF RESIDENT FEEDBACK ON TOPICS RELATED TO TRANSPORTATION, STRUCTURAL RACISM AND ADVOCACY

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NEEDS AND OBJECTIVES: Rochester, NY has the most individuals living below half the federal poverty level of any mid-sized city in the US. The University of Rochester Medical Center (URMC) Internal Medicine (IM) resident practice serves this population, providing care to 73% Medicare, Medicaid or Dual Eligible individuals. The goals of our curriculum are 1) to develop data-driven attitudes surrounding SDH and 2) to introduce resources available to address patient needs.

SETTING AND PARTICIPANTS: We developed a didactic curriculum to educate IM residents about SDH. All 69 IM residents participated in the curriculum.

DESCRIPTION: Resident responses were tallied mid-curriculum, which has previously been reported, and post-curriculum, using average Likert scales. Qualitative data was obtained through open-ended questions. Previous results demonstrated increased self-reported empathy in working with an underserved patient population and increased awareness of how cost may impact patient choices. Post-curriculum survey results focused on the 2nd half of the course which addressed transportation, structural racism and advocacy. A paired T-test was used to assess for significance comparing mid- and post-curriculum survey results.

EVALUATION: At both mid-year and post-curriculum feedback 81% (56 of 69) of residents completed a survey. Average resident comfort with addressing patient transportation needs increased from 5.7 to 6.5 on a 10-point Likert scale ($p = 0.05$), and comfort with discussing structural racism increased from 5.0 to 6.5 ($p = 0.002$). Further, 92% said they would definitely recommend the curriculum to an incoming intern. Open- ended questions asked how residents thought the curriculum would affect their practice in the future. Over half spontaneously reported a better understanding of individual needs and resources in the community. Residents also reported a more comprehensive understanding of contributors to illness, a desire to refer to community resources, and a recognition that

they have the power to advocate for their patients. One individual did note that recognizing the vast need in our community contributed to feelings of hopeless.

Another reported plans to incorporate care for the underserved into their practice as a result of the curriculum.

DISCUSSION / REFLECTION / LESSONS LEARNED: The URMC SDH Curriculum for IM residents has transformed resident attitudes and beliefs surrounding barriers to care and provided residents with increased awareness of community resources. Helping residents understand historical injustice and barriers surrounding issues like transportation and primary care practice development has the potential to impact how residents view patient need and thus work as advocates for the underserved. Areas for further work include addressing the risk for hopelessness that accompanies work on SDH, incorporating a narrative on rural care, and determining whether the curriculum influences long term practice.

IMPROVING ACGME SURVEY COMPLIANCE WITH "EDUCATION NOT COMPROMISED BY EXCESSIVE RELIANCE ON NON-PHYSICIAN OBLIGATIONS" BY DECREASING INPATIENT MEDICINE CLERICAL BURDEN

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NEEDS AND OBJECTIVES: 1. Identify sources of non-physician obligations that compromise education

2. Implement a discharge coordinator service on the inpatient medicine teaching service to decrease clerical burden

3. Improve compliance on the ACGME resident survey with "Education not compromised by excessive reliance on non-physician obligations"

SETTING AND PARTICIPANTS: Participants include 99 Internal Medicine residents (PGY1-3) at a University Hospital in New York City. Discharge coordination services were implemented in October 2018.

DESCRIPTION: Increased clerical burden is a well-recognized risk factor for physician burnout. As such, the ACGME Resident Survey asks residents to rate program compliance with "Education (not) compromised by excessive reliance on non-physician obligations". In multiple annual ACGME Resident Surveys our program compliance with "Education (not) compromised by excessive reliance on non-physician obligations" measured below the national average. We set out to design an intervention to address compliance with this measure. Via resident surveys, we identified discharge coordination from the Internal Medicine Inpatient Teaching Service as a source of increased work intensity, non-physician obligations and burnout. We designed and implemented a discharge coordination service as a way to decrease work intensity, improve compliance with "Education (not) compromised by excessive reliance on non-physician obligations" on the ACGME Resident Survey and decrease burnout.

The residency program managed the hiring, implementation, orientation of the discharge coordinator and orientation of residents to the intervention process. Daily communication between the residents and our discharge coordinator occurred primarily through Cureatr, a web based messaging application linked to patients records. Once discharge appointments were made the discharge coordinator entered these into the inpatient electronic health record.

EVALUATION: Pre-intervention baseline data was collected and compared to post-intervention data. Data collection occurred via well-established survey processes (ACGME Resident survey, MSBI Wellness survey and annual internal anonymous surveys via New Innovations). This project received IRB exemption.

DISCUSSION / REFLECTION / LESSONS LEARNED: 1. Compliance with "Education not compromised by excessive reliance on non-physician obligations" improved by 11% on the 2019 ACGME Resident Survey as compared to the 2018 survey, from 26% in 2018 to 37% in 2019.

2. Compliance with an "80 hour" work week improved by 11% on the 2019 ACGME Resident Survey as compared to the 2018 survey, from 82% in 2018 to 93% in 2019. During this time, we saw a decrease in residents identifying "Paperwork" as "reasons for exceeding clinical experience and educational work rules" from 18% to 10%.

3. The implementation of the discharge coordination service allowed new collaboration with discharge coordination and readmission programs.

4. Burnout Survey data analysis pending.

IMPROVING MEDICAL EDUCATION AND ACADEMIC HOSPITAL MEDICINE FACULTY DEVELOPMENT THROUGH A STRUCTURED FACULTY EXCHANGE

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NEEDS AND OBJECTIVES: Each academic medicine program varies resulting in distinct strengths and unique challenges in faculty development.

The quality of medical education is directly linked to faculty development. Improving the quality of medical education requires a multifaceted approach. The complex factors affecting medical education and faculty development are further complicated by geographic location, patient characteristics, and professional growth opportunities.

Overcoming these obstacles requires an innovative and collaborative approach. The authors from two institutions, with the support of a national society, researched the characteristics of individual academic hospital medicine groups (HMG) to determine if a structured faculty exchange involving physicians and nurse practitioners/physician assistants (NPs/PAs) would lead to improved medical education and faculty development through increased engagement.

SETTING AND PARTICIPANTS: University of New Mexico (UNM) is a 553-bed hospital in Albuquerque, NM, a city in the high altitude desert, with an ethnically diverse population of 545,000. UNM has a well-established internal medicine (IM) residency program, an academic hospitalist program, and an NP/PA fellowship program. UNM HMG has 26 physicians and 11 NP/PAs.

Southeast Health (SEH) is a 420-bed hospital, located in Dothan, AL, a town of 80,000 people next to the Gulf of Mexico. SEH has an affiliated medical school and an IM residency program. SEH HMG has 28 physicians and 5 NP/PAs.

Participants from each institution included physicians and NP. The visit was a week long.

DESCRIPTION:

The tailored itinerary generated collaboration and mentoring opportunities.

SEH faculty observed team rounding and met with UNM HMG leadership. Discussions included faculty education, quality improvement (QI) curriculum, and addressing practice challenges. SEH faculty also presented a QI project from their institution and established collaborative relationships.

UNM faculty observed SEH NP/PA hospitalist team models, discussed innovations, established mentor relationships with leadership, and discussed the QI projects at SEH. They also participated in women in

medicine events by providing talks on communication and interdepartmental relationships and were invited as judges for a poster competition.

EVALUATION: The evaluation process involved interviews, a survey, and the establishment of shared QI projects in mutual areas of challenge. The survey provided feedback and lessons learned.

Collaborative QI projects currently underway as a result of the exchange include paging etiquette, quality of sleep for patients, and onboarding of NPs/PAs in HMGs.

DISCUSSION / REFLECTION / LESSONS LEARNED: Support from a national society provided visibility to this innovation and expanded the professional network of participating institutions. HMG group faculty exchanges are uncommon. This initiative enhances faculty development to improve medical education. The exchange supports SGIM's mission to cultivate educators and clinicians to improve the health of patients and caregivers.

INNOVATIVE INTERACTIVE EDUCATIONAL APPROACH TO TEACH SOCIAL DETERMINANTS OF HEALTH TO FIRST YEAR MEDICAL STUDENTS

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NEEDS AND OBJECTIVES: To address health disparities, future physicians must understand the role of social determinants of health (SDOH), but teaching SDOH can be challenging. We created a curriculum on SDOH using an authentic experience with four real myocardial infarction (MI) patients.

SETTING AND PARTICIPANTS: Participants are first year medical students enrolled in *Patient, Doctor, and Society* (PDS) course that occurs in the first weeks of medical school at the University of Alabama School of Medicine in Birmingham.

DESCRIPTION: The curriculum, *Birmingham Stories,* took place over six days. Day 1: Students participated in a poverty simulation to help sensitize them to basic SDOH. Day 2: students interviewed one of our patients, focusing on the medical history surrounding the patient's MI. The patients were selected in advance because of a common history of MI, but they differed widely in terms of background, occupation and socioeconomic status. Day 3: students met in small groups and shared their patient's medical history with their peers, such that at session end, all four patient stories were familiar to all. Day 4: students drove to their patient's neighborhood and completed a windshield survey. Students then interviewed their patient a second time, this time focusing on how life and social circumstances may affected their health, health outcomes, and self-care. Day 5: Students gave formal presentations about their patient to their small groups, with a focus on SDOH. Group discussion followed each presentation, highlighting and reinforcing the role of SDOH. Day 6: group debriefed the experience and written reflections on SDOH were due.

EVALUATION: End of course evaluations were reviewed; with a 92% response rate, 95.6% of students agreed or strongly agreed that the experience was effective for learning. Of the 16 experiences in the overall PDS course, the 3 components of *Birmingham Stories* ranked 2nd, 3rd & 6th highest. Common themes from analysis of the written reflections were "realness", "seeing first hand", "student safety" and "appreciation for SDOH."

DISCUSSION / REFLECTION / LESSONS LEARNED: The curriculum design optimized the student's experience allowing for a deeper appreciation of SDOH as students compared and contrasted their patient's story to that of their peers. The windshield survey experience was profound as the students were able to understand the environmental factors affecting their patient. Student safety was a concern throughout the course, and raised unexpected responses from students.

INTEGRATING A MUSCULOSKELETAL SUBSPECIALTY CLINIC INTO AMBULATORY ROTATIONS

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NEEDS AND OBJECTIVES: Primary care patients are often referred to specialists for diagnosis and management of musculoskeletal (MSK) concerns due to limited time in a primary care visit, limited procedural support, increased patient complexity, and primary care physician (PMD) lack of training. We have integrated an internal referral MSK clinic as part of our intern (PGY1) ambulatory curriculum in order to address long wait times for patients and improve resident comfort with MSK concerns.

SETTING AND PARTICIPANTS: PGY1s at Mount Sinai Hospital in East Harlem, New York rotate in a hospital-based practice primary care practice, serving a majority Medicaid-insured patient population. During their ambulatory rotation block every six weeks, PGY1s have one 2.5 hr MSK clinic session in which they have a 30-minute didactic followed by patient encounters. The clinic is precepted by a chief resident, a rehab-trained physician and a general internist.

DESCRIPTION: While patient wait times for our rehabilitation and orthopedic specialists routinely range from 3-6 months, wait times for this clinic are often 1-2 weeks. Patients are referred to MSK clinic via our EMR. As this is an internal clinic, our front desk staff can make these appointments without coordination with other departments. Prior to seeing patients in MSK clinic, residents receive six 30-minute didactic sessions consisting of: 1. General approach to MSK evaluation, 2. Knee exam, 3. Shoulder exam, 4. Knee injections, 5. Shoulder injections, 6. Jeopardy-format game.

EVALUATION: Due to feedback that PGY1s received variable exposure via patient evaluations, we introduced the six 30-minute didactic sessions. As a result of this curriculum being introduced, resident satisfaction scores increased by approximately 0.9 points on a 5 point likert scale (from 3.5 to 4.4). The clinic structure did not otherwise change during that time.

DISCUSSION / REFLECTION / LESSONS LEARNED:

Evaluation of MSK concerns is important for general internists. Despite a majority of our residents having received MSK teaching during medical school, the still cited lack of time and lack of knowledge as major barriers to addressing MSK concerns. Our MSK clinic addressed time by allowing PGY1s to complete a focused history and physical related to knee and shoulder concerns only. It addresses knowledge by dedicated teaching of exam and joint injections. Initially, our approach was to allow patient experiences guide resident teaching; we were given feedback that this led to sporadic learning due to inconsistent exposure. In order to address this limitation, a hands-on, interactive didactic series was developed to create a more uniform exposure for all residents, fill in knowledge gaps, and prime learners for their patient evaluations.

As a result of this intervention, resident satisfaction with our MSK clinic improved by approximately 1 point out of a 5 point scale. This addition did not require additional resources, and did not impact patient care with respect to patient volume or wait-time access to the clinic.

INTELLIGENCE MINDSET AND PERFORMANCE ON THE INTERNAL MEDICINE RESIDENT IN-TRAINING EXAMINATION: A RETROSPECTIVE OBSERVATIONAL STUDY

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NEEDS AND OBJECTIVES: Carol Dweck's Theory of Intelligence describes the concept of a growth versus a fixed mindset. Learners with a growth mindset characterize intelligence as being malleable and modifiable through effective practice. Those with a fixed mindset view intelligence as being pre-determined and immutable. Published studies show learners with a growth mindset have a tendency towards higher grades and performance in STEM courses. Only three prior known studies have examined intelligence mindset in a Graduate Medical Education (GME) population. To our knowledge, no studies have been published that have explored the relationship between intelligence mindset and objective measures of GME performance. The goal of this study was to determine if having a growth mindset during Internal Medicine residency training correlates with higher performance on the Internal Medicine In-Training Examination (IM- ITE).

SETTING AND PARTICIPANTS: All categorical internal medicine residents at Washington University in St. Louis/Barnes-Jewish Hospital were invited to participate in this study during the 2018 to 2019 academic year.

DESCRIPTION: Intelligence mindset was assessed with the validated Theories of Intelligence Scale.

Demographics collected included PGY status, sex, race, and marital status. Statistical analysis for demographics used two-sample t-test for continuous variables and Chi-square test for dichotomous variables. IM-ITE percentile scores were directly reported to the residency program and made available for research purposes by resident consent. Analysis of IM-ITE percentile association with intelligence mindset was performed with simple correlations and t-test.

EVALUATION: 44 residents consented to participate in this study. 14 were female and 28 male. PGY-1 residents composed 23 of the total, with the remaining 21 being split between PGY-2 and PGY-3 residents.

Overall 10 had a fixed mindset, 5 were indeterminate, and 29 a growth mindset.

The association between intelligence mindset and gender, PGY status, URM status, or marital status did not achieve statistical significance. When using mindset as a categorical variable there was a non-significant interaction between mindset and IM-ITE ($t(37) = 0.09$, $p = 0.93$). There was a trend towards growth mindset having a positive effect on women's IM-ITE performance and a negative effect on men's ITE performance. A secondary outcome of the study was that gender was found to be associated with IM-ITE percentile, while other demographics were not associated.

DISCUSSION / REFLECTION / LESSONS LEARNED: In an Internal Medicine resident population there was no association between mindset and IM-ITE performance. A trend between gender, mindset, and IM-ITE performance appeared and is a possible area of future study. IM-ITE scores evaluates a specific set of medical knowledge and has limits as a measure of knowledge competence. Further studies are needed to evaluate correlation of intelligence mindset with other core competency domains.

INTER-INTERVIEWER INDEX: A NOVEL INTERVIEWER BIAS TOOL FOR MEDICAL SCHOOL ADMISSIONS

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NEEDS AND OBJECTIVES: Making the admissions process more equitable can lead to improved outcomes. Frequently, admissions committee members know little about the bias and tendencies of interviewers and the recommendations they submit. By providing real-time quantification of inter-interviewer variance to admissions committees, we aim to provide better context for the recommendations made by interviewers provided improved equity for applicants.

SETTING AND PARTICIPANTS: At the University of Colorado School of Medicine, interviewers interact with applicants across different settings including a group exercise, group interview, and individual interview, then provide ratings of "fit" between the applicant and the CUSOM to the Admissions Committee. 94 interviewers and 3,930 recommendations from the '18-19 application cycle were analyzed. This is a Colorado Multiple Institution Review Board certified exempt study.

DESCRIPTION: Interviews are utilized to evaluate applicants to medical schools all across the country. By design, admissions committees rely on the interpretations and final recommendations of interviewers. However, while interviewers are given a basic framework to conduct the interview their interpretations and logic for final recommendations are not standardized and can lead to significant inter-interviewer variability. While variability may promote diversity of thought, it may also invite interviewer bias to give certain recommendations more frequently compared to other interviewers. We propose a standardized metric of real-time informativeness, leniency, and harshness: The Interviewer Index.

EVALUATION: Interviewers can normally give ratings of either Strong Agree (SA), Agree (A), Neutral (N), Disagree (D), and Strong Disagree (SD). Using retrospective rater data, we calculated baseline measurements of interviewer leniency/harshness and informativeness. All Interviewer recommendations were analyzed via several statistical models including a mixed-effects linear, an ordinal logistic regression, and a unidimensional Item Response Theory model with graded responses. Estimates of interviewer ability were obtained from posterior distributions of ability for each subject. Item response curves were created to evaluate rater informativeness.

DISCUSSION / REFLECTION / LESSONS LEARNED: Interviewer recommendations can vary substantially. The Interviewer Index proposes a method of quantifying inter-interviewer variance allowing admissions committees to put interview recommendations into better context and provide more holistic admissions decisions.

INTERPROFESSIONAL EDUCATION THROUGH HEALTHCARE HOTSPOTTING: UNDERSTANDING SOCIAL DETERMINANTS OF HEALTH AND MASTERING COMPLEX CARE THROUGH TEAMWORK

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NEEDS AND OBJECTIVES: Healthcare systems continue to explore novel models to care for the most socially and medically complex patients who account for a disproportionately large percentage of medical services and costs. We developed a curriculum for interprofessional (IP) student teams to learn about caring for the most complex patients of a large, urban healthcare system while developing skills in collaborative care. Our six month program includes learning about topics relevant to complex care including the social determinants of health (SDOH) and teamwork. Clinical care experiences take place within our health system and in our patients' homes or community. Our students also learn to serve as patient advocates and agents of change.

SETTING AND PARTICIPANTS: We developed our program at the flagship hospital of a large healthcare system in Charlotte, NC. Our program involves prelicensure students from medicine, nursing, social work, pharmacy, advanced clinical practice (NP and PA) and health

psychology from various regional institutions. After identifying the neediest patients of our health system, we created IP student teams to care for them.

DESCRIPTION: We developed a 6-month program involving meetings twice a month which include interactive discussions and time for teamwork. Our first session introduces healthcare hotspotting and a video of the work of Jeffrey Brenner, the visionary who introduced this concept. Subsequent sessions focus on SDOH screening methods and tools, building interprofessional teams, geographic information systems (GIS) mapping to learn about health as a reflection of place, trauma informed care, implicit bias, poverty simulation and other topics.

EVALUATION: We developed a survey to assess the student experience including improved knowledge about the SDOH. The questions were answered on a 5 point Likert Scale. We also developed open ended questions for feedback about our program.

DISCUSSION / REFLECTION / LESSONS LEARNED: Our program resulted in our students developing skills to work on IP teams and learn ways to care for complex patients. Team members were engaged in addressing SDOH of their patients. Our students learned that addressing non-medical needs was often more impactful on health outcomes than simply addressing medical concerns. Allowing these students to understand the patients' lived experiences helped them understand the need to individualize treatment. In nearly every case, our patients saw reduced healthcare utilization and cost.

The students also learned how to advocate for their patients while also innovating around new methods of chronic care through home visits. Attending national webinars allowed students to recognize common themes of complex patients (i.e. housing or food insecurity, unemployment, low health literacy) whether these patients resided in Boston, Oakland, Philadelphia or Charlotte.

In our fifth year, we are enlisting the expertise of a graduate program in public health to do a more formal assessment of our program using validated questionaires and focus groups.

INTERPROFESSIONAL EDUCATION THROUGH THE LENS OF MOTIVATIONAL INTERVIEWING: A SESSION FOR SECOND-YEAR MEDICAL AND SOCIAL WORK STUDENTS

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NEEDS AND OBJECTIVES: As we enter the next decade of medical practice, an emphasis on team-based interprofessional practice (IPP) is at the forefront. The question is: how do we prepare medical students to function effectively in an interprofessional setting? The Liaison Committee for Medical Education (LCME) accreditation standard now requires that medical schools provide a core curriculum to prepare medical students to function on interprofessional teams. Our IPE session was developed for medical and social work students to: 1. Identify and describe the unique roles of physicians and social workers in an interprofessional team; 2. Recognize the use of patient-centered language common to all team members; 3. Discuss aspects of IPP during a standardized motivational interviewing case.

SETTING AND PARTICIPANTS: We created a two-hour IPE session during the second-year doctoring course at the Icahn School of Medicine at Mount Sinai. 140 second-year medical students and 28 second-year social work students participated. The students were divided into four classrooms running simultaneously. Each room was further subdivided into groups of approximately 10 medical and 2 social work students to promote deeper interprofessional collaboration.

DESCRIPTION: The session was co-developed and co-facilitated by physician and social work faculty. A scenario between a physician, social worker, and standardized patient was utilized to demonstrate IPP via discharge planning and motivational interviewing. The facilitators used "time-outs" to focus on: communication and motivational interviewing skills, the individual but overlapping roles of social workers and physicians, and nuances of IPP. During "time-outs," students worked in their smaller groups to respond to discussion questions and then shared key learnings with the larger group.

EVALUATION: 121 students (97 medical, 24 social work) completed electronic surveys after the session.

76% felt that IPE sessions enhanced their future ability to work on interprofessional teams, and 74% felt that working with students from other health professions enhanced their education. A theme from the written comments was that students wished there was more time to learn about the other profession's training and roles.

DISCUSSION / REFLECTION / LESSONS LEARNED: Most students felt that IPE sessions will improve their ability to function on interprofessional teams. We learned that an effective IPE session must allow time for students from different disciplines to learn about one another's training and roles, and we will build in time for this in future sessions. A longitudinal component to the curriculum may be useful as students enter their clinical years and begin to work in interprofessional teams.

INTERPROFESSIONAL SYMPOSIUM ON CONTROVERSIES AND BEST PRACTICES IN PAIN MEDICINE

Robert Duarte[3,4]; Yili Huang[3,4]; Stephen Butkus[5]; Laura Harrison[5]; Joseph Conigliaro[6,4]; Jay Enden[7,4]; Sandeep Kapoor[1,2]. [1]Medicine and Emergency Medicine, Northwell Health, New Hyde Park, NY; [2]Medicine, Emergency Medicine, and Science Education, Zucker School of Medicine at Hofstra/Northwell, Hempstead, NY; [3]Pain Management, Northwell Health, New Hyde Park, NY; [4]Medicine, Zucker School of Medicine at Hofstra/Northwell, Hempstead, NY; [5]SBIRT, Northwell Health, New Hyde Park, NY; [6]Division of General Internal Medicine, Northwell Health, New Hyde Park, NY; [7]Medicine, Northwell Health, Bay Shore, NY. (Control ID #3391121)

NEEDS AND OBJECTIVES: Acute and chronic non-cancer pain are among the most common presenting symptoms to healthcare clinicians, yet there are an insufficient number of pain management specialists. The Department of Health and Human Services estimates pain costs the United States $560 to $635 billion annually, and that improving education on pain and treatment for patients, caregivers, and providers is needed to enhance care. An interprofessional symposium on the controversies and best practices in pain medicine was developed to provide continuing education on the multidisciplinary aspects of pain management for the healthcare team. Objectives were to explore non-opioid therapies and dissect and discuss guidelines for evidence-based judicious opioid prescribing.

SETTING AND PARTICIPANTS: The symposium was hosted at a flagship teaching hospital, and attended by 39 participants, including physicians, physician assistants, nurse practitioners, and pharmacists. Attendees represented multiple departments, including neurology, pain management, internal medicine, emergency medicine, anesthesia, and quality.

DESCRIPTION: A group of key interprofessional and multidisciplinary stakeholders designed a three hour symposium. Weekly planning calls allowed presenters to define learning objectives and coordinate messaging. Content included case discussions of inpatient, outpatient, and cancer pain management, and a complex pain management debate.

EVALUATION: Attitudes and knowledge were assessed using pre- and post-session surveys; 27 (69%) participants were included in analysis.

Likert-scale questions were analyzed using paired samples t-tests. On a scale of 1 (strongly disagree) to 5 (strongly agree), participants reported a 0.44 point increase in understanding of pain management ($p<0.001$), a 0.78 point increase in having enough information to manage chronic pain ($p=0.002$) and a 0.85 point increase in having enough information to manage cancer pain ($p=0.003$). 84% indicated they planned to make changes in their clinical practice, including use of pain contracts, increased use of adjuvants, a multi-modal approach, and titrating up the dose of gabapentin. Reported barriers included patient perceptions and limited access to pain management specialists.

DISCUSSION / REFLECTION / LESSONS LEARNED: There is both need and opportunity for education around evidence-based pain management strategies and innovative approaches clinicians can integrate into usual practice. Education on pain management techniques, judicious opioid prescribing guidelines, and managing complex patients is beneficial across all professions and departments. The symposium provided a platform for interdepartmental networking, allowing clinicians to share similar experiences and challenges.

INTERPROFESSIONAL VIRTUAL REALITY TRAINING TO ADDRESS SOCIAL DETERMINANTS OF HEALTH IN THE CLINICAL SETTING

Pablo Buitron de la Vega[1]; Aliza Stern[2]; Noelle Dimitri[3]; Priya S. Garg[4]; Heather Miselis[5]; Suzanne Mitchell[5]; Suzanne Sarfaty[7]; Stephanie Losi[6]; Thea James[8]; Linda Sprague Martinez[9]. [1]General Internal Medicine, Boston Medical Center / Boston University School of Medicine, Boston, MA; [2]Physician Assistant Program, Boston Medical Center / Boston University School of Medicine, Boston, MA; [3]Boston University School of Social Work, Boston, MA; [4]Pediatrics, Boston University School of Medicine, Boston, MA; [5]Family Medicine, Boston Medical Center / Boston University School of Medicine, Boston, MA; [6]Boston Medical Center, Boston, MA; [7]Boston University School of Medicine, Boston, MA; [8]Emergency Medicine, Boston Medical Center, Cambridge, MA; [9]Macro Department, Boston University School of Social Work, Boston, AL. (Control ID #3389353)

NEEDS AND OBJECTIVES: Define social determinants of health (SDH) and discuss resources needed to address them

Identify roles and responsibilities of physician assistants, physicians, and social workers in addressing SDH Demonstrate interprofessional collaboration skills needed to address patients with adverse SDH

SETTING AND PARTICIPANTS: Voluntary second year social work students (N=7), second year medical students (N=5) and first year physician assistant students (N=3) at Boston University

DESCRIPTION: SDH account for up to 70% of variation in health outcomes. Physician assistant (PA) and medical students (MS) are often not equipped to address SDH and some believe that SDH are beyond their scope of practice. Social work students (SW), on the other hand, are trained explicitly to address SDH in addition to medical conditions, spanning health care delivery settings and the broader community. We believe that it is critical for emerging health professionals to have the necessary tools to identify and mitigate SDH using a collaborative interdisciplinary approach. We aimed to improve the knowledge skills and attitudes of health professional students in addressing SDH by using a virtual reality (VR) simulated learning experience (SLE).

In preparation for the VR SLE, 15 students attended 3 web-based video conferences to learn about health equity, team-based models of care and tools to address SDH in the clinical setting. Subsequently, they will participate in a VR SLE where student dyads (a MS or PA with a SW) collaborate to address a patient's SDH. The SLE starts with the MS/PA using a VR headset to enter a virtual hospital room where they practice exploring a patient's SDH. The patient role is played by a faculty. Subsequently, the MS/PA moves to a different VR room where they consult the SW to find SDH resources. Finally, the MS/PA and SW go back to the patient's room to provide information about resources.

EVALUATION: Students completed a pre and post test about knowledge, skills, and attitudes towards addressing SDH. The interprofessional collaborative competencies attainment survey is part of the post test. Students will participate in focus groups to explore their experiences with VR SLE. ANOVA will be used to analyze quantitative aggregated data for the three student groups. The qualitative data will be coded, analyzed and summarized. All students have completed the web based conferences and will complete the VR SLE and evaluation by January 27th 2020.

DISCUSSION / REFLECTION / LESSONS LEARNED: Adequately addressing SDH in the clinical setting is critical to improve health outcomes and reduce health care costs. Health professional training programs need to equip students with skills to address SDH by developing learning experiences that mirror the interdisciplinary nature of our current healthcare system. Web based video conferencing and virtual reality learning scenarios can be used as tools to create engaging, real life experiences where students can practice collaborative problem solving and identify the expertise of the other disciplines when addressing SDH.

INTRODUCTION TO MEDICAL EQUIPMENT CURRICULUM

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NEEDS AND OBJECTIVES: As it stands, there is a lack of a standardized introduction to medical equipment for medical students at our institution. This highlights a gap in achieving Liaison Committee on Medical Education (LCME) learning objectives including educating medical students about the role of medical equipment in patient safety and a lost opportunity to practice critical thinking in the interprofessional setting. We sought to design, implement, and assess the efficacy of an Introduction to Medical Equipment Curriculum in achieving the objectives of increasing medical students' knowledge, increasing comfort level with medical equipment, and increasing ability to apply knowledge to patient plan and disposition.

SETTING AND PARTICIPANTS: An interactive, image-based lecture was delivered to each group of third-year medical students in the first week of their internal medicine clerkship. The lecture discussed common equipment (types of venous access, oxygenation, catheters, etc), focusing on indications, contraindications, and the potential effect on patient plans and disposition.

DESCRIPTION: Students were surveyed with Likert scale-based survey ranging from 1 to 5 before the lecture (T1), immediately after the lecture (T2), and at the end of the clerkship (T3) to assess their perceived knowledge level, perception of being overwhelmed upon entering a patient room, and their ability to identify the role of medical equipment in patient plan and disposition. One hundred and ten medical students were surveys with 79 completing the pre-survey, 70 completing the immediate post-survey, and 45 completing the post-clerkship survey. Fixed effects regressions were used to compare how responses varied at the three different time points.

EVALUATION: On average, the individual student improved by 1.70 points in their perceived knowledge, decreased perception of feeling overwhelmed by 1.00 point, and improved ability to identify the role of equipment in patient plans and disposition by 1.00 point from T1 to T2 ($p<0.001$). Self-reports increased significantly from time 1 to time 2 and did not change by a statistically significant amount from time 2 to time 3.

DISCUSSION / REFLECTION / LESSONS LEARNED: Our project suggests the utility of delivering a curriculum to introduce medical equipment to medical students. It appears to increased their knowledge level,

improve their comfort level, and allows them to integrate their knowledge with practical medical decisions regarding patient plans and disposition.

ONLINE RESOURCE URL (OPTIONAL): https://drive.google.com/file/d/1QZmQP1l-AiWpXwQOZ9eHwvVmJFPCegUG/view?usp=drive_web

LEADING WITH INTENT: CREATING A LEADERSHIP CURRICULUM FOR PRIMARY CARE RESIDENTS

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NEEDS AND OBJECTIVES: Physicians regularly adopt leadership roles despite receiving limited formal leadership training, causing many physicians to identify as "accidental leaders." Although physicians may passively develop leadership skills during residency, the results can be varied and ineffective. It is imperative that internal medicine residency training incorporates intentional leadership development into its curriculum in order for early physicians to flourish in modern clinical settings. In the rapidly evolving setting of outpatient medicine, deliberate leadership development in future primary care physicians could allow for more rapid and effective innovation and utilization of resources. We conducted a needs assessment of primary care internal medicine residents to understand their leadership experiences and gaps in their leadership development. We will then develop a longitudinal leadership curriculum for UCSF Primary Care (UCPC) Internal Medicine residents.

SETTING AND PARTICIPANTS: The leadership needs assessment was conducted with 30 UCPC residents across three years of training, spanning ages 25-40. Resident outpatient training occurs at the University-based clinic, and residents are split into three cohorts (all first-year residents together, and two groups of mixed second- and third-year residents) that spend alternating months in the outpatient setting.

DESCRIPTION: Using a survey adapted from a validated tool from Harvard University, data was collected from UCPC residents to determine gaps in leadership skills to inform the design of a leadership curriculum. "Authentic leadership" theory was utilized to guide trainees through reflection of personal strengths, weaknesses, and goals and allow for individual and honest leadership styles to emerge. Based on survey data, the leadership curriculum will focus on topics such as relationship-building, adaptation, mentoring, conflict resolution, and career development. These sessions will align with the needs of residents in various stages of training.

EVALUATION: The survey data will directly inform the design of a leadership curriculum for UCPC residents. Each session within the curriculum will include pre-survey and post-survey data collection in order to tailor the curriculum to the current needs of residents and ensure that objectives are met.

DISCUSSION / REFLECTION / LESSONS LEARNED: Calls for formalized leadership training in medical education have been made for several decades, though only in the last 10 years have efforts toward developing physician-targeted leadership curricula increased. Existing educational interventions are varied in regard to their target audience, definition of leadership, and evaluation methods. Many existing interventions lack an explicit grounding in leadership theory, and focus on skill-based teaching rather than holistic leadership development. With a clear understanding of learners' needs and use of the authentic leadership framework, UCPC graduates will be poised to enter the workforce with core qualities and skills required of modern-day physician-leaders.

LEARNER PERCEPTIONS OF A NOVEL APPROACH TO CHIEF RESIDENT-LED JOURNAL CLUB IN THE ERA OF CLINICAL PRACTICE GUIDELINES

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NEEDS AND OBJECTIVES: Journal club is a long-standing method of teaching critical appraisal in graduate medical education where trainees and faculty meet to discuss a scientific article. However, escalating statistical complexity, accelerating pace of study publication, and increasing reliance on clinical practice guidelines (CPGs) led us to question the effectiveness of the traditional journal club format. We share trainee perceptions of a redesigned Chief Medical Resident (CMR)-led outpatient journal club intended to provide residents the skills and knowledge to navigate the modern landscape of medical literature.

SETTING AND PARTICIPANTS: Our medium-sized academic internal medicine residency has a weekly, 45-minute journal club that is led by a CMR and attended by all housestaff on ambulatory medicine rotations.

DESCRIPTION: Four changes were implemented: a patient vignette is chosen to frame the discussion of a clinical practice guideline (CPG) and a supporting piece of primary literature; two housestaff each use a critical appraisal worksheet to evaluate and present the article and CPG; study design-specific facilitator's guides were created to help prepare teaching points; and the same topic is repeated for each +1 cohort. An example topic might be a case involving a patient with 10-year risk of atherosclerotic cardiovascular disease of 7.4% but preference against statins, the 2018 ACC/AHA lipid management guideline, and a cohort study on outcomes after coronary artery calcium scoring.

EVALUATION: Five months after implementation, an anonymous e-mail survey was distributed to 48 eligible PGY2-3 residents who had attended both formats of journal club. 14 responded. Residents rated the relative effectiveness in each learning domain on a continuous scale from -5 (markedly worse with new curriculum) to 5 (markedly improved), with 0 indicating no difference.

In each of the 3 knowledge/skill domains (Biostatistics, Appraisal of Primary Articles, Interpretation, and Application of CPGs), residents favored the new curriculum (mean 0.9±2.4 std dev, 2.0±2.3, 3.7±1.3, respectively). Interest in EBM improved (2.7±1.5), as well as development of habits to stay up-to-date (2.2±2.2). Enjoyment of sessions (3.3 ±1.5), assessment of the value of time spent (3.3±1.7), and overall impression (2.9±1.6) ratings also favored the new format.

DISCUSSION / REFLECTION / LESSONS LEARNED: Resident ratings improved across all domains. The most novel change is selection of an illustrative patient scenario and CPG to accompany an article. This refocuses discussions on external validity, inferences supported by study findings, and assessment of parameters influencing whether a recommendation should be followed in a given case. These tasks emulate the application of evidence at the bedside, which may explain why the largest improvements were seen in knowledge relating to CPGs, enjoyment of sessions, and the value of time spent on journal club.

ONLINE RESOURCE URL (OPTIONAL): reblocke.github.io/teaching/2019-Fall-JC

LEARNING ABOUT SOCIAL DETERMINANTS OF HEALTH BY WALKING IN THE PATIENTS' SHOES: INSIGHTS FROM AN URBAN NEIGHBORHOOD TOUR FOR RESIDENTS

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NEEDS AND OBJECTIVES: Neighborhoods in which individuals live have a major impact on health. Though residents indirectly learn about social and environmental obstacles from their patients, residents rarely witness how navigating these unfold in their patients' lives. To address this need, we developed a neighborhood walking tour where residents visited various community sites to more directly discover some of the health challenges in our own backyard

SETTING AND PARTICIPANTS: This tour was conducted around Boston Medical Center, New England's largest safety-net hospital, predominantly serving patients from underserved populations. The participants of the tour were first year internal medicine residents (n = 42).

DESCRIPTION: The tour was part of a mandatory academic half-day during the fall of 2018. An introductory didactic session included a brief history of the neighborhood, a description of local services for the homeless, and an introduction to harm reduction principles. As our neighborhood's story has been integrally tied to the addiction epidemic, the second half of the didactic session focused on harm reduction strategies for patients who inject drugs (PWID). With this foundation, residents then visited the Boston Health Care for the Homeless Program's medical respite facility, a local homeless shelter, and our hospital's preventive food pantry.

EVALUATION: The program was evaluated using pre- and post-surveys consisting of 15 items. There were five Likert-type items on awareness of resources and comfort withcounseling patients affected by some of the social determinants of health (SDOH) discussed. The other 10 items were short-answer knowledge questions on the content from both the didactic and tour session. A few examples of knowledge questions include location of methadone clinics, safe injection use strategies, and eligibility for medical respite. We saw a statistically significant improvement in all but 5 knowledge questions. Notably, residents scored fairly high at baseline on these items, thus it is possible that there was a ceiling effect given that these are common issues that arise within our patient population

DISCUSSION / REFLECTION / LESSONS LEARNED: Our results showed increases in resident awareness of resources related to housing instability and substance use disorders and in resident self-efficacy with harm reduction counseling. To achieve resident engagement on complicated topics such as SDOH, innovative educational practices are required, and we believe that the neighborhood tour benefited residents who have never practiced in an urban setting. Although we only chose to study improvement in knowledge, we believe that exposure to the community, through foot, has better equipped the residents to practice socially competent medicine. Our limitations include small sample size, lack of validated instruments and high baseline knowledge.

LEARNING CARE IN THE NEIGHBORHOOD: COMMUNITY-ENGAGED CURRICULUM DEVELOPMENT OF A REQUIRED COMMUNITY ENGAGEMENT ROTATION

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NEEDS AND OBJECTIVES: Prior surveys of UCSF medical students highlight a need for more robust education and opportunities in community engagement and advocacy. We sought to design a required fourth-year medical student community engagement rotation (CER) with students and community partners, in order to locate learning in the community, ensure mutual benefit, and build trust for future collaboration.

SETTING AND PARTICIPANTS: The CER will begin as a small pilot in February 2020 and expand to a larger pilot in the 2020-21 academic year before becoming a required course for fourth year medical students in 2021-22. We created a working group, including four community partners and two students, which meets monthly for a half-day to guide design of the new rotation.

DESCRIPTION: In 2016, UCSF School of Medicine launched a new curriculum, which will include a required CER. To design a service learning rotation that serves communities and medical students, it is imperative that community partners and students are engaged in the curriculum development process. The working group has designed a four-week rotation in which students spend the majority of the time working with community partners on a project as well as providing interdisciplinary clinical care. The rotation also includes weekly group engaged learning sessions.

EVALUATION: Evaluation of the pilot will include surveys and focus groups with students and community partners. Goals of the evaluation include: (1) determining if the goals of the CER experience were met, (2) exploring student and community partner perceptions of the course, and (3) collecting educational continuous quality improvement data to assess benefits and ways to improve for the required rotation.

DISCUSSION / REFLECTION / LESSONS LEARNED: Community-engaged curriculum development is unusual in medical education, and community partners are rarely compensated for their valuable time. This curriculum development process is designed to amplify the voices of those who live the consequences of health disparities, but this remains difficult given longstanding assumptions about who is an expert. Additionally, community partners and students who choose to join the working group or participate in the pilot may have different perspectives from other members of their respective groups.

LEARNING THEORY VS. PRACTICE: HOW DO INTERNAL MEDICINE RESIDENTS STUDY?

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NEEDS AND OBJECTIVES: Learners in high-performing settings such as residency training are presumed to have the learning skills needed to be successful. Currently, there is no standardized curriculum to teach learning principles during medical training. Understanding the study habits of residents may improve study habits and improve board preparation. Our aim was to evaluate the study habits of Internal Medicine (IM) residents to better understand how they apply key learning theories for the American Board of Internal Medicine (ABIM) exam preparation.

SETTING AND PARTICIPANTS: The study was performed at Tufts Medical Center in Boston, Massachusetts. Following IRB approval, all 75 IM residents were approached via e-mail and were asked to complete a curriculum survey.

DESCRIPTION: The survey included 12 questions on IM resident study habits for the ABIM exam. Data were collected on demographics [gender, post-graduate year (PGY), USMLE Step 2 CK score range], perceived level of preparedness, confidence in test-taking, resources used to study, application of spaced learning, interleaving and retrieval practices. Likert scales were used where applicable.

EVALUATION: Of 75 residents, 69 (92%) responded to the survey and 34 (49%) were males. Question banks (90%) were the most frequently used study resource followed by textbooks (37%) and online videos (31%). Most residents (68%) started studying at least 3 months prior to the exam. A majority (61%) of the residents felt they were "not at all prepared" for the exam; the proportion of these residents decreased with

increasing levels of training (84% of PGY1 residents, 65% of PGY2 residents and 33% of PGY 3 residents). Of the respondents, 46 (69%) applied spaced learning, 44 (64%) applied interleaving, 44 (66%) applied retrieval, and 32 (48%) residents applied elaboration practices for exam preparation. There was a significant association between USMLE Step 2 CK score and use of the elaboration technique (p=0.017), but not with other study techniques. There was no significant correlation between gender and perceived level of preparedness or confidence.

DISCUSSION / REFLECTION / LESSONS LEARNED: We analyzed how IM residents apply key learning strategies in their ABIM exam preparation: spaced learning, interleaving, elaboration & retrieval practice. A significant proportion of residents use learning theories to improve their knowledge retention.

Although spaced learning and retrieval practice are often built into question banks, the high percentage of residents reporting the use of interleaving suggests that most have an awareness of this learning theory. Our study reveals that despite more than 2 years of residency training, 33% of PGY3 residents report being "not at all prepared." This suggests that some residents believe clinical training does not adequately prepare them for succeeding on the ABIM certification examination. The association of elaboration practice with higher Step 2 CK scores is hypothesis-generating and requires further study.

LEGISLATIVE "HILL DAY" FOR INTERNAL MEDICINE RESIDENTS

Ayrenne Adams, Priscilla Wang, Fabiola Molina, Jennifer Hong, Maria Patanwala, Zoe Tseng. Internal Medicine, Brigham and Women's Hospital, Boston, MA. (Control ID #3392656)

NEEDS AND OBJECTIVES: Physicians witness the human impact of an imperfect healthcare system and are ideally positioned to be patient advocates. The majority of internal medicine residency training, however, focuses on biologic disease interventions without explicit curricula teaching physicians how they can address social barriers to health. Effective patient advocacy includes the ability to advocate for and against health policies that will have significant implications for patient health.

The primary objective of this curriculuar component is to enable internal medicine trainees to graduate residency equipped with foundational knowledge and skills necessary to advocate for patients at the legislative level.

SETTING AND PARTICIPANTS: Primary care PGY-1, PGY-2, and PGY-3 residents at Brigham and Women's Hospital (26 individuals)

DESCRIPTION: We designed a peer-led legislative advocacy curriculum grounded in adult learning theory with active participation. Each session included (1) a brief didactic component, (2) interactive breakouts, and (3) a group activity to build an advocacy tool-kit

Sessions include:

1) Structured education about patient stories

2) Guidelines for meeting with legislators

Didactic sessions culminated with Hill Day, allowing residents to participate in pre-organized meetings with state legislators about a health topic and practice skills learned during educational sessions.

EVALUATION: Residents completed a pre-survey prior to the curriculum, followed by post-session feedback forms. Pre and post-responses were matched and compared using anonymous personal identifiers. Additionally, we collected qualitative feedback regarding resident experience with Hill Day and its related didactics. Themes in the post-survey and qualitative feedback included appreciation of interactive sessions and the focus on practical applications.

DISCUSSION / REFLECTION / LESSONS LEARNED: Our Hill Day demonstrates that resident comfort with legislative advocacy can be increased through concise, practice-based sessions as well as experiential learning

LET'S DEBATE THE GUIDELINES! ENGAGING INSTRUCTIONAL DESIGN

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NEEDS AND OBJECTIVES: Primary care physicians often find themselves navigating disparate clinical practice guidelines (CPGs). To reconcile conflicting guidelines, physicians must understand the supporting data, and the value systems underlying the recommendations. However, most internal medicine residency curricula do not address critical appraisal or comparison of CPGs, leaving physicians at risk of using an uninformed approach (Akl, 2009).

Our objective was for participants to appraise and apply CPGs using a debate format as a way to engage the learner. In addition to becoming familiar with the data informing CPGs, participants were challenged to consider how recommendations in CPGs may be tailored to accomodate different paitent preferences.

SETTING AND PARTICIPANTS: As part of our resident ambulatory care didactics, we held three debates with groups of six to twelve residents and three faculty moderators.

DESCRIPTION: Participants received an introduction to the activity one week in advance, and were divided into teams of three. Each team was assigned a breast cancer screening CPG—specifically those published by the US Preventative Services Task Force, the American College of Obstetrics and Gynecology, and the American Cancer Society. Teams were given dedicated time to research their guidelines and prepare for the debate.

The 90-minute debate began with opening statements from each team, describing their CPG and the evidence that was used to create it. Subsequently, the moderators directed questions at each team in a rotating fashion, challenging them to argue in support of certain aspects their guidelines, such as age cutoffs and screening modalities. After a round of closing statements, the moderators deliberated and determined a winner based on how well each team's arguments supported their recommendations.

EVALUATION: About a week after the debate, participants took part in an OSCE involving a 42-year old woman requesting mammogram screening. The standardized patient scored the participants on an array of case-specific skills, including assessing risk factors, counselling on risks and benefits of screening, and deftly arriving at an appropriate shared decision.

In a preliminary analysis performed on a convenience sample, residents who participated in the debate prior to the OSCE case scored higher on this composite score than control residents who did not (71.1% vs 59.6%, p = 0.12, n = 10).

DISCUSSION / REFLECTION / LESSONS LEARNED: In reflecting on the exercise, debate participants felt more prepared to counsel their patients in an evidence-based fashion regarding mammogram screening.

One resident stated that after the debate, she "was able to discuss major screening guidelines with confidence in the context of shared decision making." Another resident stated that the debate made her feel more prepared to discuss the various pros and cons of screening.

LEVERAGING OPEN-ACCESS DIGITAL CONTENT FOR DIAGNOSTIC REASONING EDUCATION

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NEEDS AND OBJECTIVES: Medical educators have emphasized the need for learner-centered innovations, such as open-access online content, and have additionally recommended teaching diagnostic reasoning (DR). We aim to leverage web-based platforms to disseminate open-access DR education.

After participating in this innovation, learners will be able to:

-Describe core principles of DR

-Perform DR in simulated cases

-Apply problem representations, diagnostic schemas, illness scripts, and Bayesian reasoning in their own DR

-Evaluate educational DR content

SETTING AND PARTICIPANTS: This innovation occurs on three of the Clinical Problem Solvers' (CPS) web-based platforms: (1) Twitter (2) website and (3) phone app. Participants include the CPS' Twitter audience (~11,000 followers at the time of submission), website visitors (500 unique visitors/day), and phone app users (3,500 downloads). This includes trainees and clinical faculty at medical centers across 143 countries.

DESCRIPTION: This innovation uses web-based DR content on the CPS' Twitter page, website, and phone app. Twitter content focuses on learning and applying DR through clinical cases. The website and phone app feature diagnostic schemas, illness scripts, and blog posts focused on utilizing diagnostic frameworks and applying DR principles.

EVALUATION: We use pre and post-test multiple choice questions on Twitter to assess learners' understanding and application of DR principles in simulated cases. We also use free-response, survey-based feedback, and plan to use focus groups to elicit how learners apply and analyze DR tools, such as diagnostic schemas and illness scripts.

DISCUSSION / REFLECTION / LESSONS LEARNED: Web-based educational innovations expand the classroom to learners across many institutions while maintaining direct communication between learners and educators. Crowdsourcing feedback supports rapid, peer-reviewed refinement of DR content, learner participation in the creation and appraisal of DR content, and community development.

This learner-centered, multimedia approach allows for spaced and "just-in-time" learning, and increased DR practice. Learners appreciate the ability to access materials regardless of location or clinical duties. Several residency programs have incorporated our web-based content into structured learning sessions, such as morning report. Clinical faculty report using web and app-based content as a clinical and teaching tool during rounds with housestaff. The "unregulated classroom" is a limitation of this innovation that makes it difficult to assess individual learner progress.

ONLINE RESOURCE URL (OPTIONAL): https://clinicalproblemsolving.com

LONGITUDINAL CARE OF A VIRTUAL FAMILY- NOVEL WAYS TO ENHANCE STUDENT LEARNING OF HEALTH SYSTEMS SCIENCE AND PRINCIPLES IN CHRONIC DISEASE PREVENTION AND MANAGEMENT

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NEEDS AND OBJECTIVES: Rising healthcare costs and demands related to chronic care demands adequate physician training to address chronic disease in a collaborative and cost-effective manner. While specific disease states are addressed in the curriculum through problem-based learning cases and organ system lectures, the health system science (HSS) dimensions essential to chronic disease management and prevention (CPDM) are not addressed. Medical students get little exposure to longitudinal care experiences which are the key settings in which chronic disease care occurs. To address this curricular gap we created a longitudinal case-based curriculum employing a virtual family affected by chronic disease using the CDPM learning objectives created by the Accelerating Change in Medical Education (ACE) Consortium[1], which are based on Wagner's Chronic Care Model [2,3].

SETTING AND PARTICIPANTS: Dell Medical School at the University of Texas, during an accelerated first year preclinical curriculum, which includes an integrated basic science courses integrated with clinical medicine, interprofessional education, clinical skills and leadership courses. Students begin clinical clerkships during July of the second year.

DESCRIPTION: A virtual Latino family affected by type 2 diabetes and other chronic conditions was created with members at different stages of life and disease. Students 'meet' the family on the first day of medical school, learning about the family's socioeconomic and health status, and family dynamics. Encounters occur with different family members, and students follow evolving clinical scenarios throughout the patients' lifespan. There are 10 class sessions with clinical and basic science faculty, and interprofessional care team members from local community groups. Assignments include developing and modifying a patient- centered care plan, considering changing clinical conditions and family needs. Cases are strategically interspersed throughout the first year and purposefully incorporate the learnings of the basic science curriculum and are also woven through the pre-existing problem-based learning cases.

EVALUATION: Over two years of implementation, 94 students completed the evaluation survey. Mean scores were similar across both years with means ranging from 4.0 to 4.5. In both cohorts, 96% of students strongly agreed or agreed that they had learned the influences of socioeconomic factors, access to resources and family support in diabetes care

DISCUSSION / REFLECTION / LESSONS LEARNED: The curriculum has provided a unique systems perspective closely integrated with the basic and clinical science curriculum. Further curriculum development includes continuing the family experience during the primary care clerkship didactic sessions in year two. We also plan to expand the evaluation to assessment of the chronic disease OSCE given in year 3, specifically comparing the performance of the 2 classes that completed the curriculum to the one that did not.

MAKING EPIC YOUR FRIEND IN THE CLINIC

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NEEDS AND OBJECTIVES: It is well established that electronic medical records (EMRs) are an important factor in the epidemic of provider burnout in the United States. Resident trainees are even more susceptible to EMR burnout given competing priorities to learn clinical medicine in various settings. As a former chief resident and current PCP at my institution, I identified a need for a longitudinal curriculum to teach residents practical EMR optimization in the primary care setting, which is not currently a standard offering in internal medicine (IM) training programs. This innovation aims to increase EMR efficiency, improve physician- patient clinical interactions, and to mitigate burnout.

SETTING AND PARTICIPANTS: Target participants are first year IM residents at the Cambridge Health Alliance (CHA), which is a Harvard-affiliated training program that has a strong emphasis on primary care training. Due to the 4+2 block schedule, the residents are split into 3 ambulatory cohorts and practice in 3 different clinics at CHA, all of which use Epic as the EMR.

DESCRIPTION: At the beginning of each intern cohort's first ambulatory block, I co-teach a session with an IT trainer to orient interns to the ambulatory context of Epic. During this session, I demonstrate a clinic visit encounter and share note templates and shortcuts. We also review in-basket management, telephone calls, results management and medication refills.

During the interns' early ambulatory blocks, I lead didactics and direct observations in the clinic. Didactics often take place in a computer lab, and are open-ended sessions to reinforce previously taught skills/topics and address any ongoing questions and problem areas.

I also observe each intern during one clinic session, giving them feedback on how they are using the EMR during their visits with patients while continuing to reinforce core topics of the curriculum. Towards the end of the intern year, I offer optional in-clinic refresher sessions for those interested in further optimizing their use of Epic in the clinic.

EVALUATION: The interns receive formative feedback during direct observations in the clinic. The curriculum is evaluated based on surveys and feedback forms from the interns. Reviewing trends in interns' Epic efficiency data was considered but this was limited due to the parameters of data collection.

DISCUSSION / REFLECTION / LESSONS LEARNED: Currently in its 3rd year, the curriculum has been well received, especially with the addition of co-training with IT and direct observations in clinics. There were challenges associated with having to teach 3 intern cohorts in 3 different clinics. It also revealed the need for better longitudinal training for faculty PCP's, for whom I acted as an informal resource. Besides EMR skills, this curriculum has also been able to naturally integrate other skills such as physician-patient communication and working with care teams in a patient centered medical home.

ONLINE RESOURCE URL (OPTIONAL): https://docs.google.com/document/d/1L1BrtUKUju-uErGGkrGdD-aXcSl4sOD9Cn96SjL7X1Q/edit?usp=sharing

MAKING POPULATION HEALTH MORE POPULAR: IMPROVING PREVENTIVE HEALTH THROUGH A NOVEL PERSONALIZED PANEL MANAGEMENT CURRICULUM

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NEEDS AND OBJECTIVES: Panel management (PM) within primary care is a proactive, preventive care delivery model that continues to be optimized with the advent of the electronic medical record (EMR). Previous PM curricula for Internal Medicine (IM) residents have demonstrated improved resident confidence in PM with associated improvements in quality metrics. To our knowledge, IM resident PM curricula have not fundamentally utilized integrated EMR-based tools. We sought to improve our PM curriculum through a novel redesign utilizing EMR-developed weekly individualized performance feedback reports in conjunction with resident-directed goal setting.

SETTING AND PARTICIPANTS: The curriculum was delivered to 35 IM residents at all levels of training during their continuity clinic week, which is structured in a 4+1 block schedule.

DESCRIPTION: The curriculum included an introductory educational session, once-weekly 30-minute preceptor-attended sessions, individualized resident performance reports of care gap closure, direct access to resident panel registries and reference guides highlighting current evidence-based standards of care for health maintenance topics. Residents were surveyed to ascertain perceived successes and barriers to PM, as well as resident confidence in care delivery. During the 30-minute sessions, residents review their individualized performance reports, developed personalized PM goals for that clinic week and strategized subsequent self-study, in-reach and out-reach to accomplish their goals.

EVALUATION: Analysis of success will include both qualitative and quantitative analyses of resident responses to the curriculum and patient outcomes. After 4.5 months of the curriculum, preliminary results demonstrate a significant increase in closure of patient care gaps (baseline=16±7%, 3-month follow- up=24±13%, $p<0.01$). Additionally, we have observed an improvement in residents' confidence in performing PM on a scale of 0-100% (baseline=42±22%, 3-month follow-up=54±17%, $p<0.001$). Subjective feedback from residents and direct observation during this time has highlighted unanticipated outcomes, including increased knowledge sharing amongst residents and increased sense of panel ownership.

DISCUSSION / REFLECTION / LESSONS LEARNED: Implementation of the curriculum has led to improvements in completion of quality metrics, as well as increased confidence amongst residents in practicing PM. Future assessments are planned to evaluate the impact of this curriculum on patient disease- related outcomes. Additionally, we plan to incorporate resident feedback to revise the curriculum, such as improving interdisciplinary coordination between medical assistants, support staff and clinic preceptors.

MAKING THE CONNECTION: AN INDIVIDUALIZED MENTORSHIP PROGRAM FOR JUNIOR HOSPITALISTS

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NEEDS AND OBJECTIVES: Mentorship is critical for junior faculty scholarship, career advancement, retention, and job satisfaction. Effective, longitudinal mentoring can be challenging for hospital medicine (HM) faculty given the field's paucity of senior hospitalists and heterogenous scholarly interests. New faculty often lack a network of experienced faculty who are ideally suited to serve as mentors. Assigned mentorship dyads are rarely durable or effective. Our aim was to create an individualized, sustainable mentorship program for junior hospitalist faculty.

SETTING AND PARTICIPANTS: All 38 hospitalist faculty at the University of Washington Medical Center were eligible for the survey; 29 were eligible for the mentorship program (excluding the HM director, author ND, HM fellow, and departing faculty).

DESCRIPTION: Thirty-six (95%) faculty responded to an online, anonymous survey to assess current mentoring relationships, satisfaction, desires, and obstacles. 31% reported having a mentor and being satisfied with their mentorship. Most desired features of mentoring were "promotes career growth" (92%), offers "guidance on projects" (83%), "increases professional visibility and opportunities" (81%), and provides a "longitudinal relationship" (75%). Major obstacles to mentorship were "finding a mentor" (72%) and "time to engage in mentoring" (75%). Faculty preferred finding a mentor through "facilitated connections" (40%).

These data supported our proposed strategy to establish 7 mid-career HM faculty as "Connectors," who use their robust colleague networks and institutional knowledge to connect junior faculty to well-suited senior mentors. In a 1 hour workshop, Connectors were trained to elicit junior faculty professional goals through exploration of career and personal histories, authenticity and meaning, and specific professional interests. Junior faculty (21/22) were randomly assigned to a Connector. Connectors meet individually with junior faculty to assess their needs and aspirations, refer them to senior faculty with the goal of establishing longitudinal mentoring relationships, and follow up on the success of the connection.

EVALUATION: Connectors scheduled meetings with 20 junior faculty; 13 meetings have occurred to date. After the Connector meeting, 90% (9/10) of junior faculty agreed that their professional goals were identified and appropriate mentorship referrals were made. The majority of Connectors agreed that they had accurately identified their junior faculty's professional goals (83%), what brings them satisfaction (83%), and a suitable mentor (75%).

DISCUSSION / REFLECTION / LESSONS LEARNED: Based on confidence of connectors and satisfaction of junior faculty, it appears that Connectors can be quickly trained to effectively elicit the career goals and mentorship needs of junior faculty. The durability, efficacy, and satisfaction associated with mentoring relationships will be reassessed one year after program implementation.

MAXIMIZING FEEDBACK ON FACULTY DIDACTIC LECTURES WITH QUICK RESPONSE (QR) CODES

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NEEDS AND OBJECTIVES: The Accreditation Council for Graduate Medical Education mandates that residency training programs (RTPs) provide regularly scheduled didactic sessions. Noon conference is a core educational activity across most RTPs. However, residents express concern that these didactic sessions are not always board relevant; moreover, mechanisms to give constructive feedback regarding content are not robust. Additionally, faculty have commented on the lack of feedback given to improve their didactic presentations. On the 2018 University of Tennessee Health Sciences Center (UTHSC) annual faculty survey, internal medicine faculty requested more feedback regarding didactic presentations given as part of the Internal Medicine Noon Conference curriculum. As such, we endeavored to use a QR code survey that faculty members embed in their lectures to obtain real time feedback from residents with a customizable report given to faculty by the end of the month during which they presented their lecture.

SETTING AND PARTICIPANTS: All categorical UTHSC internal medicine and internal medicine- pediatric residents who attended weekly noon conference sessions were included in this intervention along with the presenting faculty.

DESCRIPTION: The QR code survey consisted of a five item survey. Four items were Likert scale questions assessing the organization, presentation, audience interaction, and overall value of the didactic presentation. The fifth item was an open response box for comments. The survey results were collected into Google Forms with results exported to Microsoft Excel. Individualized feedback reports were provided to each faculty member based on the individual survey responses.

EVALUATION: During this six-month period, 66 unique lectures were provided by faculty members with residents providing feedback on 51 lectures (77% response rate). Fifty-four lectures were provided by unique faculty and ultimately, 75% of participating faculty received resident feedback. In the previous academic year, only 3% of faculty presenting in noon conference received feedback. Twenty-one of 39 faculty receiving feedback completed an evaluation regarding the usefulness of this feedback (54% response rate). Overwhelmingly, faculty found the feedback helpful and actionable. Specific comments on improvement from surveying faculty included making their lecture more clinically based or tailoring it to the allotted time.

DISCUSSION / REFLECTION / LESSONS LEARNED: Using QR codes during faculty didactic lectures has significantly increased the percentage of faculty receiving individualized feedback regarding their presentations. Additionally, residents also have an anonymous mechanism to give feedback to faculty regarding their presentations.

MAXIMIZING YOUR AMBULATORY MORNING REPORT CURRICULUM IN A X+Y STRUCTURE

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NEEDS AND OBJECTIVES: The Accreditation Council for Graduate Medical Education requires residency training programs (RTPs) to balance exposure to inpatient and outpatient internal medicine. However, RTPs struggle to ensure appropriate exposure in these two arenas while ensuring breadth and depth in training. The University of Tennessee Health Science Center (UTHSC) Internal Medicine Residency Program transitioned to a "3+1" schedule in 2016, increasing both the amount and regularity of ambulatory time. In the fall of 2018, we collectively engaged internal medicine residents and faculty to review our ambulatory education efforts. Faculty and residents expressed the need for dedicated time for formal didactic sessions on ambulatory medicine topics. In response, we created an ambulatory morning report curriculum described here. The new morning report incorporates podcasts, interactive case discussions, and online self- paced ambulatory modules. This multi-modal approach to ambulatory education is novel and has not previously been described in the literature.

SETTING AND PARTICIPANTS: All categorical UTHSC internal medicine residents were included in the intervention, which was implemented in the resident schedules starting August 2019

DESCRIPTION: The central aim of our Ambulatory Morning Report Curriculum is to maximize learning of core ambulatory topics via a multimodal approach. The ambulatory faculty and chief residents chose 10 core ambulatory medicine topics that would be taught in four-week blocks to residents during their respective ambulatory week. Each topic was addressed in three ways: an internal medicine podcast relevant to the topic, case-based teaching, and corresponding online ambulatory modules. A podcast served as the first point of engagement with the topic. After listening to the podcast, all residents were expected to come to ambulatory morning report at their respective site. During this report, residents worked in teams through cases created by our ambulatory medicine faculty highlighting key pearls for diagnosis and management within the specific topic, with the final case emphasizing the application of evidence-based medicine (EBM) principles in clinic. The third component was having residents complete the corresponding online module on the topic of the week after attending the morning report.

EVALUATION: Feedback from residents and faculty have been overwhelmingly positive, noting an enriched learning environment and greater emphasis on didactic education in the ambulatory setting. Additionally, residents find the morning report content applicable to their practice. Constructive feedback regarding ambulatory morning report logistics have been addressed.

DISCUSSION / REFLECTION / LESSONS LEARNED: Beyond simply implementing a 3+1 system with regularly spaced ambulatory

time, weekly didactic sessions using adult learning principles improved the teaching environment during ambulatory weeks. Utilizing multimedia formats such as podcasts and modules together with in person case-based teaching improves residents' educational experience.

MEASURING THE DIFFERENCE IN RESPONSE TO ONLINE STRUCTURAL COMPETENCY TRAINING BETWEEN MEDICAL RESIDENTS AND PUBLIC HEALTH STUDENTS

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NEEDS AND OBJECTIVES: Structural competency equips healthcare providers with tools to understand how societal structures produce worse health outcomes for racial and ethnic minorities. There is a gap in the medical education literature on best practices for structural competency training for learners. We administered an online healthcare disparities course to resident-physicians and public health students, and measured changes in awareness of structural determinants of health and the role of implicit bias on health outcomes before and after the course.

SETTING AND PARTICIPANTS: Participants were selected from the Yale Internal Medicine residency program and a Health Disparities course at the Yale School of Public Health (YSPH). The online course was introduced and partially completed in person. Participants were asked to complete the modules and the post- module survey after a two-week period.

DESCRIPTION: The course used for this intervention was the "Healthcare Disparities" course published in the AAMC's MedEdPortal. We included a pre-course survey, 3 training Modules on (1) Introduction to Racial & Ethnic Disparities in Healthcare, (2) Unconscious Associations, and (3) Patient-centered communication, and a post-course survey.

The pre-course survey and Module 1 were conducted in person with internal medicine residents. Residents were asked to complete Module 2 and the post-course survey, with a $25 Amazon gift card as an incentive.

Our control group consisted of YSPH graduate students enrolled in 'Health Disparities'—a seminar focused on structural determinants of health. The pre-course survey and Module 1 were conducted in class. Faculty required Module 2 and the post-course survey to be completed without financial or academic incentive. After the completion of the modules and post-module survey, students engaged in a group discussion based on the course's required supplemental readings.

EVALUATION: Forty-nine residents completed the pre-course survey and Module 1. The average score of the initial survey was 16.3/25 points. Nineteen residents (39%) completed the post-course survey with an average score of 16.7/25 (sd=4.78). In the control group, 22 students took the pre-course survey, averaging a score of 16.3/25. After completing the Modules, 17 students took the post-course survey (88%). Their average score was 19.6/25 (sd=4.38). YSPH students' post-course survey average was higher than that of the medical residents with statistical significance (t=4.06, p=.000137).

DISCUSSION / REFLECTION / LESSONS LEARNED: Our findings suggest that integrating structural competency training with core curricular activities may contribute to further engaging learners. While initial scores were similar, there was a substantial increase in the control group's post-course completion scores. Standardizing of this teaching method in medical training may improve learners' structural competency and contribute to addressing health inequities reified by implicit bias.

ONLINE RESOURCE URL (OPTIONAL): http://disparitiescourse.info/story_html5.html?lms=1

MEASURING THE IMPACT OF AN INTERACTIVE COMMUNICATION SKILLS CURRICULUM ON INTERNAL MEDICINE RESIDENTS: A CLUSTER RANDOMIZED EDUCATIONAL STUDY

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NEEDS AND OBJECTIVES: Effective communication with patients is recognized as an essential skill for healthcare providers and as a core competency in medical education. Yet it is unclear which postgraduate communication skills curricula result in improve communication in real patient interactions. Thus, we conducted a cluster-randomized controlled trial to compare a novel communication curricula for internal medicine residents to a standard curricula and measured patients' perceptions of their communication skills.

SETTING AND PARTICIPANTS: This study was conducted at a single academic medical center in the United States. Participants were PGY2 and 3 internal medicine (IM) residents and their primary care clinic patients.

DESCRIPTION: This cluster-randomized controlled trial compared a novel communication course (intervention) to a standard communication course (control) for internal medicine residents and measured their communication skills as rated by patients.

The intervention course focused on specific skills used in communication (reflective listening, responding to emotion, and providing information) and was taught using interactive techniques inspired by improv comedy. The control course focused on common communication challenges (bad news, prognosis, and talking to patients about pain) and was taught using traditional didactic techniques. Both control and intervention course consisted of three, hour-long sessions delivered over a 4-month period.

EVALUATION: The primary outcome was the Communication Assessment Tool (CAT), a 15-item survey measuring communication as perceived by patients. As secondary outcomes, we collected patient PHQ-9 scores, blood pressure, and frequency of missed appointments, cancelled appointments and hospitalizations, before and after their clinic appointment. 72 of 107 eligible residents (67%) consented to participate in the study. 339 of 913 (37.1%) eligible patients completed surveys. The mean CAT Score was 4.3 (95% CI 4.2-4.4) for the control group and 4.3 (95% CI 4.2-4.4) for the intervention group. There were no statistically significant differences between groups in secondary outcomes.

DISCUSSION / REFLECTION / LESSONS LEARNED: This study used rigorous methods such as the inclusion of a control group, and given that the courses were mandatory, selection bias was reduced. Furthermore, the same lecturers taught both courses, and our patient population was diverse. The study's chosen outcome of patient-reported quality of communication is arguably a more meaningful outcome than the intermediate endpoints often reported in the literature, such as resident self-report or results of standardized patient encounters. Despite these strengths, scores on the primary outcome from both groups were indistinguishable. While it's possible that finding no difference in CAT scores between the two groups was due to study limitations, we conclude that no meaningful differences existed and future research should investigate this finding.

MEDICAL EDUCATION EPIDEMIOLOGY IN RESIDENCY: PRACTICE HABITS AS A DRIVER OF CURRICULAR INNOVATION

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NEEDS AND OBJECTIVES: Residency training requires both structured didactics and clinical exposure. While didactics can deliver diverse core content in a standardized manner, ensuring a similarly diverse complementary clinical experience is challenging. We developed a method to track inpatient practice habits and clinical exposure based on American Board of Internal Medicine (ABIM) content areas and describe how this strategy can foster rational curriculum design.

SETTING AND PARTICIPANTS: The study period was Jul 1 to Dec 31, 2019. Participants included house-staff in the Internal Medicine Residency Program at NYU Langone Hospital-Brooklyn. Inpatient structured didactics were daily noon conferences and weekly afternoon reports. Inpatient clinical exposure was based off our institutional analytics dashboard and included general medicine patients on the teaching services. The ABIM certification exam is based on a blueprint of 18 content areas.

DESCRIPTION: Didactics were categorized into one of 18 content areas based on the subject matter. Clinical exposure was determined by the patient's primary problem ICD-10-CM code at discharge using a conversion table (Table 1). Combined, this provided program-wide inpatient practice habits data for our residency (Fig. 1).

Individual attendance at didactics was recorded using unique QR codes synced with New Innovations. And attribution of patient diagnoses to housestaff was possible by cross-referencing among their call schedule, assigned attendings, and the analytics dashboard. Combined, this provided individual-level inpatient practice habits data (Fig. 2).

EVALUATION: Program-wide, the frequency of content areas taught through didactics closely mirrored content areas seen in clinical practice. ABIM content areas associated with inpatient medicine like cardiovascular disease or infectious disease were most common in didactics (21% and 15%) and in patient exposure (16% and 17%, respectively), while underrepresented areas included Allergy/Immunology, Obstetrics/Gynecology, Ophthalmology, and Otolaryngology. Individual resident data was variable, driven by attendance and their respective rotation schedules.

DISCUSSION / REFLECTION / LESSONS LEARNED: In this pilot observational study, we mapped how residents are exposed to required core content through their inpatient experience – whether through didactics or patient care. We revealed similarities as well as discrepancies in the frequency of representation of content in our explicit curriculum and our patient population. Our program-wide data will help generate a rationally-designed inpatient didactice curriculum and our individual resident data will help tailor individualized learning plans and has the potential to augment remediation. Next steps will target the limitations of this study, notably the lack of outpatient practice habits and the crude methodology to convert ICD-10 codes to ABIM content areas.

MICROAGGRESSION RESPONSE TRAINING WORKSHOP FOR INTERNAL MEDICINE RESIDENTS

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NEEDS AND OBJECTIVES: Microaggressions, defined as verbal or non-verbal communications that convey hostility, invalidation or insult based on an individual's marginalized status in society, are ubiquitous and harmful, polluting the clinical learning environment. Prior work has shown that microaggressions remain difficult to respond to, especially for trainees. The objectives of this workshop were to increase internal medicine residents' comfort with identifying microaggressions, understanding of their impact, and confidence in responding to them using a Microaggression Response Toolkit.

SETTING AND PARTICIPANTS: The workshop was led by a PGY3 resident (HF) and delivered three times to approximately 85 residents (15 to 40 residents per session) of mixed post-graduate years during April and May 2019.

DESCRIPTION: The workshop lasted 50 minutes. Participants read aloud excerpts from published narratives to prompt small-group discussions on definitions and impact. This was followed by a brief review of the literature and large-group discussion of barriers to response. We then introduced the Microaggression Response Toolkit, which was developed based on literature review and in consultation with a resident working group and describes strategies for responding to microaggressions experienced as a target or witness. The participants practiced using the Toolkit to respond to scenarios developed from examples in published works and prior resident-reported microaggressions.

EVALUATION: We administered optional pre- and post-surveys to participants, with a total of 55 responses to the pre-workshop (65% response rate, N = 85) and 37 responses to the post-workshop surveys (44% response rate). In comparing post- and pre-survey responses on a 1-5 Likert scale, residents reported increased comfort with identifying microaggressions (mean 4.1 post- vs 3.1 pre-), improved understanding of the impact of microaggressions (mean 4.3 post- vs 3.6 pre-), and increased confidence in responding to microaggressions (mean 3.7 post- vs 2.5 pre-). On the pre-survey, 75% of residents agreed or strongly agreed that training on microaggressions should be part of the residency curriculum, and on the post-survey, 97% of residents agreed or strongly agreed that the workshop was a worthwhile use of their time (rated as 4 or 5 on a 1-5 Likert scale).

DISCUSSION / REFLECTION / LESSONS LEARNED: Participation in this workshop using a Microaggression Response Toolkit was associated with improvements in residents' self-reported comfort identifying microaggressions, understanding their impact, and confidence in responding to them. Participants found the workshop valuable and strongly desired such training in the residency curriculum. Future work is needed to determine the durability of these benefits and whether reported comfort and confidence translates into real-world experiences.

MIND THE GAP: TEACHING LIFELONG LEARNING THROUGH METACOGNITIVE AWARENESS

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NEEDS AND OBJECTIVES: Clinical practice provides multiple opportunities for medical trainees to identify gaps in knowledge and skills, yet these learning opportunities are often missed. The objectives of this curriculum were to: 1) explicitly reframe the conflict of service *versus* education into service as educational opportunity, 2) identify metacognitive strategies that can be incorporated into a lifelong learning curriculum, 3) recognize the importance of knowledge gap identification in lifelong learning and 4) develop the shared mental model of patient care as learning opportunity.

SETTING AND PARTICIPANTS: Large academic medical center. 200 internal medicine PGY-1s, 2s and 3s over five years.

DESCRIPTION: Three paired sessions of curriculum are presented over the intern year. Each pair of sessions consists of an introductory workshop in which two patient cases are presented and interns generate as many clinical questions as possible. Questions are prioritized and four are chosen to investigate in small groups. At the second of the paired sessions, each small group discuss their assigned clinical question, presenting search strategies, answers, and conclusions. Similar sessions continue in the PGY-2 and PGY-3 years with resident-generated cases and prioritized questions through peer discussions. They individually search and present the answers to these questions.

EVALUATION: Chief residents conducted focus groups (two with interns and two with second year residents) to obtain qualitative feedback on the curriculum. Transcripts were anonymized and coded for themes. Across both training years, themes included an expectation that gaps in knowledge exist and are expected, patient care drives identification of knowledge gaps, and active participation in learning is effective (examples included teaching a poorly understood topic and considering "what ifs"). In addition, residents commented that the existence of the curriculum increased awareness of their own learning process, that the curriculum gave the role of resident context and set the expectation for lifelong learning. Interns identified differences between learning as a medical student and as a resident.

DISCUSSION / REFLECTION / LESSONS LEARNED: A curriculum on learning as a practicing clinician is an effective means to raise trainees' metacognition and implementation of effective learning strategies. Explicit clinical question-asking is one means to bring out these skills. With priming from this curriculum, residents develop a strategy for identifying knowledge gaps in the midst of patient care in both the inpatient and outpatient setting, leading to understanding and appreciation of these concepts and skills. Thus, it is important to develop a shared mental model among faculty in diverse clinical settings to have the greatest impact on medical trainees.

MITIGATING BIAS TOWARDS TRANSGENDER PATIENTS: CURRICULAR DESIGN FOR EMPATHY DEVELOPMENT

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NEEDS AND OBJECTIVES: Barriers transgender persons face accessing healthcare include insufficient insurance, mistreatment and bias by clinicians, and clinician discomfort and inexperience. Needs assessment identified a paucity of literature on strategies to educate physicians and assessment of our internal medicine curriculum identified that transgender medicine was not found in the established curriculum in the prior 2 years. We sought to address the educational deficit by creating a curriculum based on guidelines from the AAMC, WPATH, and UCSF Transgender Center of Excellence.

OBJECTIVES:

- Appreciate the range of experiences transgender persons have with the health care system

- Gain confidence in asking a patient's gender identity

- Develop communication skills based in cultural humility to lead discussions about gender identity

- Understand the differences in sex, gender identity and sexual orientation

- Identify ways you can reduce stress and anxiety for transgender patients in a clinical setting

SETTING AND PARTICIPANTS: A 90-minute required multi-modal education session for Internal Medicine Traditional, Primary Care, and Medicine-Pediatrics residents. Sessions were facilitated by residents with faculty oversight. Each session contained 15-30 residents.

DESCRIPTION: The curriculum was developed to increase residents' knowledge of transgender medicine and augment empathy. We included the following empathy building strategies based on literature review: communication skills training, role playing, humanities and Balint training. The session contains communication skills and pertinent terminology and concepts, a doctor-patient roleplay with debrief, and a panel discussion with individuals with diverse gender identities and expressions.

EVALUATION: Evaluation was by a pre-post online survey where participants rated comfort in "communicating with patients about their gender identity" and optional free text comments. On a scale of 1-100, the mean resident rating of personal communication comfort on the pre-survey was 45 (n=57) with a standard deviation of 20. Post-survey mean score was 70 with a standard deviation of 16 (n=11).

DISCUSSION / REFLECTION / LESSONS LEARNED: The framework for a resident curriculum based in empathy-building exercises is feasible and reproducible. The most positive feedback was about the opportunity to ask questions of persons from the transgender community. While our quantitative data suggests a trend toward improved self-perceived comfort communicating with this population, response rate is too low for conclusions. To address these issues, we have instituted a raffle incentive for survey completion and are using a validated survey instrument, the Transgender Knowledge Attitudes and Beliefs Scale.

MOCK ROOT CAUSE ANALYSIS TO ACTIVELY ENGAGE RESIDENTS IN MORBIDITY AND MORTALITY CONFERENCE

Jessica Donato. Hospital medicine, Cleveland Clinic, Beachwood, OH. (Control ID #3390700)

NEEDS AND OBJECTIVES: Morbidity and mortality (M&M) conferences have been a tradition in patient safety education, taking multiple structures and forms ranging from in-depth reviews of adverse events to quick fire pearls from safety events. The goal of safety conferences like M&M is to educate trainees about patient safety terminology, methodology and to promote open discussion and education from adverse events and near misses. In order to enhance trainee patient safety knowledge, we introduced a novel conference during our M&M, which included a brief patient safety didactic and resident completion of a mock root cause analysis (RCA).

SETTING AND PARTICIPANTS: This novel conference was presented during our monthly 1-hour M&M conference, which targets all post-graduate levels (1-3) in our large internal medicine training program in October of 2019.

DESCRIPTION: The one-hour conference started with a brief didactic, which reviewed key patient safety terminology including culture of safety, adverse events and near misses. The didactic also included an overview of safety event reporting and root cause analysis including the purpose, steps and key tools such as fishbone diagrams and 5 why's. The trainees in attendance then completed a mock root cause analysis in small groups of 5-8 residents led by a peer facilitator. Our facilitators were chief residents, core faculty or residents who volunteered and completed a 45-minute training session prior to the conference. The facilitators utilized a facilitator guide to coach participants through the steps of a RCA. The groups utilized post-it notes to complete a fishbone diagram on a poster board, and then identified the root causes for the case with utilization of the 5

why's. The conference concluded with a large group debrief of the fishbone diagrams, root causes and overall experience. The case utilized for the conference was a near-miss case at our institution with a root cause analysis previously completed so that all information provided during the mock RCA was accurate.

EVALUATION: There were 66 trainees in attendance (41% PGY1, 35% PGY2, 24% PGY3). Eight facilitators and groups participated in the session. Feedback from participants and facilitators was positive.

DISCUSSION / REFLECTION / LESSONS LEARNED: Patient safety is a key component of systems based practice education. We incorporated a mock Root Cause Analysis into our longitudinal M&M conference as a means of educating our residents on key terminology and methodology through experiential and standardized learning. Experiential education on root cause analysis is ideal, but many large training programs struggle with meaningful involvement of trainees in the completion of root cause analyses. A mock RCA allowed for experiential learning to solidify understanding of the methodology to a large group of trainees, and use of a real case allowed accurate consideration of institutional culture and processes.

MONEY TALKS: PROMOTING FINANCIAL WELLNESS AT 3 INTERNAL MEDICINE RESIDENCY PROGRAMS

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NEEDS AND OBJECTIVES: Financial wellness education has become a topic of interest among Internal Medicine (IM) residency programs as studies have shown high educational debt is associated with increased burnout and lower quality of life. A 2018 survey of IM trainees revealed that residents have a strong interest in receiving financial education, but data are lacking on how to best deliver these curricula. We assessed the efficacy of financial wellness programs at three university-based IM programs to improve resident financial planning skills.

SETTING AND PARTICIPANTS: 277 residents from Stony Brook (SB), Montefiore, and Johns Hopkins Bayview IM residency programs were invited to participate in financial wellness programs at their institutions between June 2017 and June 2019.

DESCRIPTION: Financial wellness programs included a 90-minute interactive workshop that covered various topics such as loan repayment, budgeting, and retirement planning. Workshops were led by 2 faculty champions at each institution. Financial advisors were present at the SB and Montefiore workshops. At SB, residents had a mid-year financial wellness check-in with program directors. Residents were provided education materials including investigator-created financial planning checklists and resources at their local institutions.

EVALUATION: Participants were invited to complete a pre- and post-workshop survey and year-end survey to assess for change in financial behaviors. Surveys were based on the modified Financial Industry Regulatory Authority (FINRA) Investor Education Foundation questionnaire used in Wong et al's 2018 study.

Survey completion was 135/227 (48.7%) pre-workshop, 130/227 (46.9%) post-workshop, and 61/227 (22%) at year-end. Most participants were interns (86.7%) and had $100,000 or more in student debt (74.3%). The most frequent financial planning actions taken after the workshop were saving for an emergency fund (27.6%), budgeting (22.4%), and consolidating loans for Public Service Loan Forgiveness (20.7%). Among PGY1s, there was an increase in emergency funds (38.3% vs 60.9%, p=0.0065) and retirement contributions (11.2% vs 47.8%, p= 0.0004). Workshop feedback was positive, as 96% of participants found the program helpful and 97.6% requested additional workshops.

DISCUSSION / REFLECTION / LESSONS LEARNED: Financial wellness programs are important in residency programs, but more research is needed to assess optimal delivery. Our findings suggest that early intervention at the PGY1 level can improve positive financial planning behaviors and that debt level can influence content needs. Residency programs should consider performing a targeted needs assessment to tailor financial workshop topics and implement programs early in training.

MONTHLY MUST READS IN MEDICAL EDUCATION: HELPING YOU KEEP UP WITH RELEVANT MEDICAL EDUCATION SCHOLARSHIP

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NEEDS AND OBJECTIVES: Medical education research output is expanding. Clinical evidence reviews and digests help providers keep up with advances in clinical care yet there is nothing comparable in medical education. Our objective is to alert medical educators to some of latest and most disruptive advances in medical education scholarship

SETTING AND PARTICIPANTS: In October 2019, our team, including assistant to full Professors, fellows, and a nursing educator, applied a systematic method of identifying the most impactful peer-reviewed medical education publications from the prior month

DESCRIPTION: Our plan was developed and revised based on feedback from local medical education experts, intended to be implemented without external funding, and designed to be feasible to replicate monthly. After consultation with an informationist, PubMed was searched for articles published from the prior month using education-related keywords (e.g."education, medical, health professional"). Many recently published articles were not immediately indexed by search engines, so we also included articles from 8 prominent medical education journals. All titles and abstracts were loaded into the Covidence systematic review platform. Each reviewer independently voted to advance articles for further consideration based on 3 criteria: rigor, novelty and relevance to a broad audience of medical educators. Full texts were retrieved for articles receiving multiple votes. In this second phase, each criterion was rated on a 5-point scale by all team members. A meeting to review scores and achieve consensus was held.

EVALUATION: 385 titles and abstracts were identified and screened. 13 articles (3%) garnered 2 or more votes and had their full texts reviewed and rated across the 3 criteria. After discussion, we reached consensus on 4 articles. We plan to refine our approach and disseminate the first public monthly "must reads" on our website and Twitter by the time of the annual SGIM meeting. Over time, we will validate our selection process using measures including Altmetric scores and citation rates.

DISCUSSION / REFLECTION / LESSONS LEARNED: While we developed the process to address an unmet need among medical educators, our team found that the process of reviewing the medical education literature for practice-changing articles was edifying. Over time, we hope to recruit an even more diverse group of individuals to screen articles; this will increase the likelihood that the 'must reads' will be of interest to a broad audience.

NARRATIVE ETHICS IN MEDICAL EDUCATION: USING LIFE STORIES TO PROMOTE PHYSICIAN WELL-BEING

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NEEDS AND OBJECTIVES: In this study, we wanted to assess a "proof-of-concept" and determine whether trainees who recount their experiences using a more redemptive mindset might be demonstrating a sort of inner resilience that has a protective effect with regards to burnout.

SETTING AND PARTICIPANTS: In the narrative ethics literature, life stories often contain basic narrative sequences that can be analyzed and correlated with measures of well-being. For example, people who tend to narrate life stories using redemption sequences tend to tell stories in which initially-bad situations are seen to produce a positive outcome. In contrast, people might tend to tell life stories using only what are called contamination sequences. These are narratives in which good situations become spoiled by negative events. Research suggests that people who tend to narrate their life experiences using only contamination sequences tend to be more depressed, more burned out, and less generous to others. In this presentation, we will present preliminary results from the Project on the Good Physician in which we collected qualitative data from 21 U.S. medical trainees across multiple medical schools. Based on this research, we also implemented pilot "life story" wellness workshop for an internal medicine residency program in a midwest community hospital (Jan-Feb 2018).

DESCRIPTION: For the research study, we collected life stories in a structured manner and adapted the McAdams Life Story Interview which provided a standardized way to elicit various experiences of a person's life journey through medicine, coding for the presence of Redemption Sequences and Contamination Sequences. We also developed a wellness workshop intervention that narrated a "life story" parable with content that contained redemptive mindset sequences in the narrative.

EVALUATION: Our initial findings from the national study suggest that medical trainees who recount their experiences using a more redemptive mindset might be demonstrating a sort of inner resilience that has a protective effect with regards to burnout. Moreover, our workshop findings also found that 98.2% residents [n=52] reported that the workshop addressed issues relevant to their "overall sense of well-being." Pre-and post-survey results showed statistically significant improvements in comfort level with addressing ethical and professional challenges at work.

DISCUSSION / REFLECTION / LESSONS LEARNED: Initiatives to reduce burnout should extend beyond the immediate medical school context and invite physicians-in-training to cultivate a redemptive mindset - learning to narrate "negative events" during their training in such a way that they can identify how such events contributed redemptively to their personal growth. Given the increasing awareness of shame and vulnerability in medical education, life stories from role model physicians may promote physician well- being.

ONLINE RESOURCE URL (OPTIONAL): Jenkins TM, Yoon JD. Stressing the journey: Using Life Stories to Study Medical Student Burnout and Resilience. Advances in Health Science Education. 2018 May 5.

NARRATIVE ONCOLOGY: AN INTERVENTION TO PROMOTE RESIDENT WELLBEING AND PATIENT-CENTERED CARE ON AN EMOTIONALLY EXHAUSTING INPATIENT ROTATION

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NEEDS AND OBJECTIVES: Physicians' ability to connect with patients' stories is a crucial competency and source of meaning that is undertaught and sometimes undermined in the time-constrained environment of Internal Medicine residency. Humanities training, including in Narrative Medicine, has been shown to improve burnout, empathy, and patient-centered attitudes among physicians, but data among Internal Medicine (IM) residents are lacking. We sought to integrate a thematically relevant Narrative Medicine curriculum into a demanding inpatient rotation, and to rigorously assess its impact on physician wellbeing and perceptions of meaning in work.

SETTING AND PARTICIPANTS: IM residents on an inpatient oncology service at an academic medical center.

DESCRIPTION: Inpatient oncology at our institution is considered a uniquely formative, stressful, and meaningful rotation for IM residents.

In AY 2017-2018 (Year 1) and 2018-2019 (Year 2), we administered wellbeing surveys to residents on their first and last weeks of inpatient oncology and peroidically to the entire residency program. In Year 2, just before completing post- surveys, oncology residents attended 45-minute Narrative Medicine workshops facilitated by humanities-trained faculty members. Workshops included an introdution to Narrative Medicine theory, close reading of cancer-related literary works, and guided writing about experiences on the rotation, which residents were then encouraged to share. At year's end, workshop participants also completed qualitative surveys.

EVALUATION: Wellbeing was measured using the Physician Well-Being Index (PWBI), chosen for its brevity and its ability to assess wellbeing across multiple domains. PWBI scores correlate inversely with wellbeing, and scores >=4 suggest severely low wellbeing.

In Year 1, mean wellbeing decreased (2.68->3.25) during inpatient oncology and the percentage of residents with severely low wellbeing increased (26.3->43.7%). In Year 2, mean wellbeing remained stable (3.25->3.39), and the percentage of residents with severely low wellbeing decreased (50.0%-> 39.3%). In small cohorts who completed both pre- and post-surveys, rates of severely low wellbeing tripled in Year 1 (1/5→3/5) and remained stable in Year 2 (1/5→1/5). In qualitative surveys, residents described workshops as helping them to "remember how to pause and reflect" and "to process emotions related to pain and suffering of others."

DISCUSSION / REFLECTION / LESSONS LEARNED: Our study confirmed that inpatient oncology poses emotional challenges which can be measurably mitigated with a humanities intervention. In qualitative surveys, this intervention was felt to promote the empathy, connection, and reflection that are essential to patient and provider satisfaction.

Limitations include low return rates for our surveys, which, because we strove for brevity, measured a limited number of outcomes. Outcomes such as meaning in work and patient-centeredness were not directly measured.

NEAR-PEER COACHING: USING SMALL GROUPS TO FACILITATE SELF-REFLECTION ON STRESS MANAGEMENT TECHNIQUES TO PREVENT BURNOUT

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NEEDS AND OBJECTIVES: Burnout is prevalent among medical students. Though the literature is robust on the prevalence of burnout, there is limited evidence available to guide meaningful interventions to prevent and address this problem. Near-peer wellness initiatives can be a positive intervention and offer students the autonomy and self-efficacy to lean on their peers. In addition, this focus on peer support may be protective if continued into training and beyond. We developed and implemented mandatory small group sessions led by fourth-year medical students for third-year medical students focused on self-reflection to improve stress management techniques.

Our objectives are:

1) To evaluate student engagement and satisfaction with the use of near-peers to help guide self-reflection of stress management techniques in a mandatory small group format in the clerkship year

2) To determine if small group sessions led by near-peers can facilitate self-reflection on stress management techniques and burnout prevention among medical students

SETTING AND PARTICIPANTS: The setting was a U.S. medical school. The participants were third- and fourth-year medical students.

DESCRIPTION: Using a coaching model, fourth-year medical students each facilitated small groups of approximately 10 third-year medical students. Third-year students were prompted using a vignette to reflect on signs of burnout and stress management strategies to prevent it. Responses were recorded in an open-ended pre-session survey. Next, the fourth-year students facilitated a discussion about these topics and also invited third-year students to share suggestions on how the medical school administration could improve student wellbeing. Students completed a similar survey post-session.

EVALUATION: Evaluations of the sessions by third-year students were overwhelmingly positive. Key positive themes included appreciation of near-peer leadership and facilitation of the small group sessions. Students identified many stress management techniques.

DISCUSSION / REFLECTION / LESSONS LEARNED: Small group sessions of third-year medical students led by fourth-year medical students can serve as an ideal opportunity for near-peers to reflect and discuss stress management techniques. Near-peer-led small group sessions can be implemented and highly effective during the clerkship years. Scheduling can be challenging if students do not have shared time. Additionally, the quality of a session depends on student participation and may vary.

NUTRITION EDUCATION MODULE FOR HEALTH PROFESSIONS STUDENTS

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NEEDS AND OBJECTIVES: Nutrition is the greatest risk factor for all-cause mortality in the U.S., indicating the need for health professionals to have a good understanding of nutritional counseling. The objectives of this project are to demonstrate efficacy of a recorded lecture intervention on nutritional counseling in improvement in two areas: objective nutrition knowledge and self-reported confidence in providing nutrition counseling.

SETTING AND PARTICIPANTS: Students from the following health professions schools at The University of Texas Health San Antonio (UTHSA) were invited as volunteers to participate in the study: Medicine, Nursing, School of Health Professions. Preliminary data is presented in this abstract as data collection is continuing. As of abstract submission, 16 students completed the intervention.

DESCRIPTION: A 45 minute lecture on nutritional epidemiology, motivational interviewing, and basics in nutritional counseling was created with principles from the USDA Dietary Guidelines, USDA MyPlate, and DHHS Physical Activity Guidelines, and input from selected faculty (UTHSA Culinary Medicine co- directors: Kenneth Stone, MD and Jason Rocha, MD; Registered and licensed dietician Liset Vasquez, PhD, RD, LD). The lecture was recorded, uploaded to YouTube, and presented within a Redcap survey that allowed for administration of a pre- and post-intervention survey.

EVALUATION: Evaluation of the intervention was assessed by a survey composed of a 14-question knowledge assessment (KA) based on the lecture intervention and a 15-question self-reported confidence assessment. Confidence assessment questions were formatted on a 7-point Likert scale, and confidence was assessed in 4 areas: providing nutrition counseling to others, using nutrition guidelines (USDA, DHHS), counseling evidenced based diets (DASH, Mediterranean), and satisfaction with current nutrition knowledge. Pre-/post-intervention data was analyzed using paired t test and 95% confidence intervals.

DISCUSSION / REFLECTION / LESSONS LEARNED: In our sample size of 16, an average self- satisfaction score of 3.3 on a 7-point Likert scale suggests overall dissatisfaction with students' current level of nutrition knowledge. Watching the lecture intervention significantly improved the KA score by 2 points ($p<0.01$, $t=5.16$, 95% CI [1.31, 2.69]). Confidence in providing nutrition counseling to strangers significantly improved by approximately 1 point on a 7-point Likert scale ($p<0.01$, $t=2.80$, 95% CI [0.28, 1.59]). Furthermore, confidence in providing nutrition counseling utilizing USDA and DHHS guidelines, motivational interviewing, dieticians, and DASH and Mediterranean evidence-based diets all significantly improved from baseline at the $p<0.05$ level after the lecture intervention. These results indicate that the health professions students in our sample were able to significantly improve their confidence and knowledge in nutrition counseling, allowing them to be more comfortable to start dietary conversations with patients. **ONLINE RESOURCE URL (OPTIONAL):** Survey link: https://redcap.uthscsa.edu/REDCap/surveys/?s=D88K7T8WD4

OP-ED WRITING AS AN INTERPROFESSIONAL TEAM PROJECT

Anna Reisman[1,2]; Leila Haghighat[3]; Sumit Kumar[1]; Rene Russell[4]; Caroline Falker[1]; Benjamin Lu[1]; Devin Pray[2]; Matthew Ringer[1]; Christine Hsueh[1]; Rebecca Brienza[2,1]. [1]Internal Medicine, Yale School of Medicine, New Haven, CT; [2]Internal Medicine, VA Connecticut Healthcare System, West Haven, CT; [3]Internal Medicine, Yale New Haven Hospital, New Haven, CT; [4]Kansas University, Kansas City, KS. (Control ID #3391325)

NEEDS AND OBJECTIVES: 1. Describe purpose and structure of an op-ed.

2. Identify a topic of interest to an interprofessional team.

3. Collaborate in small groups to co-write sections, and edit as a large group.

4. Pitch and submit to one or more publications.

SETTING AND PARTICIPANTS: VA-based Center of Education (CoE) in Interprofessional Primary Care; two interprofessional groups of trainees on immersion block schedule.

DESCRIPTION: As part of the interprofessional CoE, two groups of internal medicine residents and nurse practitioner residents participate in intermittent immersion blocks that include half-days of required didactics. Writing sessions in this program have included narrative writing,

reflective writing, and op-ed writing. We developed a model for writing a team op-ed due to limited time outside didactics as well as varied enthusiasm for writing individual op-eds. The goal was to write a draft in one or two 2-hour sessions. Groups of 9-12 residents were oriented to the basic elements of an op-ed. Afterward, they brainstormed potential topics and divided into subgroups of 3-4. Each subgroup researched and wrote one of the op-ed sections. Toward the end of the session, the group reconvened and reviewed the draft piece as a whole. After the session, two residents provided additional edits, with continued faculty mentoring and feedback from group members, and submitted the op-ed for publication. Some op-eds were published in lay publications and others in health professions publications.

EVALUATION: Informal feedback from the residents was generally positive. One group published three large team-authored op-eds in 2018 and 2019. Topics included deprescribing, the importance of taking a military history, and a critique of "wellness". The other group published several smaller co-authored op-eds, including why tampons are an essential healthcare item and why residents should receive buprenorphine training.

DISCUSSION / REFLECTION / LESSONS LEARNED: Team-written op-eds can provide an opportunity for lively debate and collaboration in an ultimately democratic process among residents of different training levels and backgrounds. Having responsibility for a smaller chunk of a written piece appeals to group members who have limited time to complete a writing project, or who may be less confident about their writing skills. With some groups, a modified goal of several smaller co-authored op-eds is an alternative to the team-authored approach. Learning to create an op-ed as a team, through consensus, is valuable whether or not residents remain in an academic setting.

OPTIMIZING CLINICAL TEACHING AT A NEW ACADEMIC MEDICAL CENTER: A FACULTY DEVELOPMENT WORKSHOP

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NEEDS AND OBJECTIVES: Since the creation of an affiliate medical school four years ago, our Internal Medicine (IM) faculty have experienced more teaching responsibilities. As a former community-based hospital, there was no existing faculty development (FD) program within the Department of IM. A 2018 survey indicated that 85% of IM faculty were satisfied with FD to supervise and educate residents, compared to a national average of 96%. This year, IM faculty ranked medical education as their top priority for FD programming. Therefore, we created a FD Workshop with the following objectives:

1. Improve IM faculty confidence in bedside teaching
2. Build IM faculty skills in coaching for performance improvement and feedback
3. Improve IM faculty satisfaction with FD to supervise and educate residents

SETTING AND PARTICIPANTS: Workshop topics were determined by student and resident evaluations, in which IM Faculty ranked below national means in expectation setting and feedback. We developed a half-day workshop, hosted by the Department of Hospital Medicine, open to all IM Faculty. Our 30 attendees consisted of hospitalists, primary care providers, subspecialists, and chief medical residents.

DESCRIPTION: Our 4.5-hour workshop contained three core sessions: 1. Building & Setting Expectations, 2. Effective & Efficient Clinical Teaching, and 3. Coaching for Performance Improvement. Each session was led by a separate faculty member. Sessions began with a brief lecture, followed by reflection, small-group discussion, and/or role play with standardized patients and learners. Lunch was provided, and we offered CME Credit for one session.

EVALUATION: Participants completed pre- and post- workshop surveys to assess their knowledge of topics addressed in the workshop and their confidence in clinical teaching skills. Initial results are promising, indicating a positive response in both categories. For example, before the workshop, 15% of participants were "very confident" that they could prepare for teaching at the bedside, compared to 56% of participants post- workshop. Course evaluations have also been positive, with 100% of participants agreeing that "the information presented will be useful in my practice." We have been invited to host a Spring Workshop based on this positive feedback.

DISCUSSION / REFLECTION / LESSONS LEARNED: By first demonstrating that IM Faculty wanted FD in clinical teaching, we were able to gain institutional support from the medical school, residency program, and Department of IM. This strengthened our workshop because it enabled us to utilize leaders from across the medical center, and it gave us access to resources such as standardized patients. We were pleased by the diversity of IM faculty that attended, and we hope to expand to other departments in the future.

OSCE CASE BANK INVENTORY 2001-2018: PROGRAMMATIC EVALUATION OF PERFORMANCE BASED ASSESSMENT CASE CHARACTERISTICS

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NEEDS AND OBJECTIVES: Objective Structured Clinical Examinations (OSCEs) are commonly used to teach and evaluate clinical skills. These cases provide a standardized curricular approach to ensure all learners have the same opportunity to interact with a Standardized Patient (SP) trained to consistently portray a case. Until recently, case trends and evolution of cases within our medicine training programs remained undocumented. We sought to catalogue and describe trends in an OSCE case bank created to provide training and assessment to Primary Care (PC) residents in an urban based residency program from 2001-2018 (n=181).

SETTING AND PARTICIPANTS: An internal medicine residency training program located within an urban-safety net hospital system. All cases from 2001-20018 were catalogued.

DESCRIPTION: Using a structured framework, research assistants characterized OSCEs cases. Cases were organized by SP demographics, encounter type, domains of learner assessment, and social determinants of health. Descriptive analysis of cases, instructions and checklists were conducted using SPSS and Microsoft Excel.

EVALUATION: Average SP age was 45.6 years old (range: 19-87). The most common ethnicity was Hispanic (12%), though 78% of the cases did not specify. Most cases focused on cisgender female or male- related care (52% and 42%, respectively), but 2% of cases focused on transgender care. 55% were heterosexual-care specific. 13% included LGBTQ care; none of which were female.

A majority of cases took place in-person (86%). Smaller percentages have were via phone call (13%) or video (1%). 39% of the cases were located in the Urgent care/ walk-in clinics, 44% outpatient and 17% inpatient settings. Most cases were direct patient-provider interaction (76%), while other types included teaching/ precepting (15%) or interprofessional interactions (5%).

Every OSCE case assessed core communications (information gathering, rapport building and patient education) and case specific items and global ratings. In addition 53% of cases included specific patient education assessment, while 57% had treatment plan/management assessment, and 30% specific history gathering assessment. Some included interprofessional collaboration, physical examination, and professionalism domains (9%, 14%, and 17%, respectively).

Since inception, cases have included aspects of social determinants of health (SDOH) to introduce learners to the unique needs of the patient population within the safety-net hospital system. The most common SDOH in cases were employment/income insecurity (37%), social isolation (14%), health care challenges (access/insurance) (10%) and education/literacy challenges (6%); only one case included food insecurity.

DISCUSSION / REFLECTION / LESSONS LEARNED: While we had initially intended to create a case inventory for internal tracking and sharing, we realized we may not have as diverse a set of SP and case characteristics as we intended. Introducing a case cataloging system will expose explicit and implicit programmatic trends and help to plan future cases to meet the needs of the community.

OVERVIEW OF AN ARTS-BASED CURRICULUM ON MITIGATING BURNOUT IN MEDICAL TRAINEES

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NEEDS AND OBJECTIVES: Physician and trainee burnout is an epidemic within the medical community. Recognizing the significance of burnout, the Association of American Medical Colleges and the Accreditation Council for Graduate Medical Education both advocate for well-being and resiliency initiatives during training. In recent studies, interventions that employ narration and communicating one's experiences are described as potential methods of increasing empathy and emotional awareness. Building on these principles, our institution developed and studied a student well-being curriculum.

SETTING AND PARTICIPANTS: The University of Tennessee College of Medicine Chattanooga partnered with Hunter Museum and Southeast Center for Arts Education to develop a curriculum that uses creative exercises and narrative medicine to provide resiliency and well-being training. Third and fourth-year medical and physician assistant students participate in a monthly 3 hours session with 15-20 participants.

DESCRIPTION: The program identifies and addresses issues that cause burnout, provides a safe space for reflection, informs about healthy coping strategies, and fosters a community. Sessions focus on a theme that is used to select a work of art from the museum collection or develop a creative exercise. The facilitators employ an emergent curriculum that adapts discussions to the dynamic needs of participants. Students reflect on their mood with three words before and after the experience, participate in group activity and discussion, and respond to prompts related to the theme. We performed qualitative data analysis on written open response questions.

EVALUATION: Between August 2016 and August 2019, 369 students participated in sessions centered around themes such as empathy, the bystander effect, and sensitivity to patients etc. Seventy-three participant surveys showed students transitioned from feelings of being tired (n=29, 39.7%), excited (n= 19, 26.0%), and curious (n=11, 15.1%) to feeling more relaxed (n=58, 79.5%), happy (n= 15, 20.5%), and creative (n=9, 12.3%). Students noted that the sessions provided a safe setting and built solidarity amongst peers.

DISCUSSION / REFLECTION / LESSONS LEARNED: This program had similar findings to other studies that employed art-based practices in reducing emotional exhaustion, increasing emotional awareness, and developing a sense of community. Students participated in activities such as writing, drawing, and taking pictures which highlight potential communication tools and coping mechanisms to deal with stressors of medical training. Through group sharing, a community develops among participants which decreases feelings of loneliness, also noted to be an independent driver of burnout.

PANEL MANAGEMENT: A VENUE FOR TEACHING AND IMPROVING POPULATION HEALTH

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NEEDS AND OBJECTIVES: Panel management (PM), a core function of high performing primary care practices, is a venue for teaching improvement in population health. Learners feel empowered to improve by reviewing data on their patients. We piloted a curriculum using Performance Based Learning and Improvement (PBLI) competencies to help learners reflect on their practice patterns and test changes to improve clinical outcomes.

Resident Learning Objectives:

Reflect on performance on a population level

Identify deficiencies in care delivery and systematically address them

Apply evidence-based care to a specific patient panel

SETTING AND PARTICIPANTS: The curriculum was constructed at the Center of Outpatient Education (COE) at the Louis Stokes Cleveland VA from July – December 2019. The weekly two hour curriculum is delivered to IM and NP residents over a longitudinal 12-week rotation by didactive, interactive discussion, reflection, and case-based learning. Learners practice in Patient Aligned Care Teams (PACTs) with continuity panels of approximately 200 patients.

DESCRIPTION: Each learner is given a performance report card (PRC) for their continuity panel with quality metrics for chronic disease management, access and continuity. In a faculty led session, learners reflect on their PRC, select a metric for improvement, and consider a practice change. Before implementation, learners solicit feedback from their PACT during weekly team huddles. In subsequent sessions, learners develop a Performance Improvement Plan (PIP) based on the Model for Improvement and perform at least one Plan, Do, Study, Act (PDSA) cycle during the rotation. During implementation, learners receive individualized coaching from QI faculty with a special emphasis on hypothesis testing. An updated PRC is distributed monthly to follow progress.

EVALUATION: On a Likert scale of 1-5, residents reported that the curriculum facilitated self-reflection on practice patterns (4.1/5) and analysis of clinical data (4.3/5) to improve practice. We collected clinical outcomes data for 15 residents on the same rotation from July 1 to October 1, 2019. Each resident selected one primary metric for improvement. Over the 12-week block, 13/15 (87%) improved [their] selected metric. Overall, residents improved their selected metrics and to a greater degree than those who worked on other metrics. For example, residents who chose hypertension (n=8) had 4.1% improvement in average percentage of patients with blood pressure < 140/90, versus -1.4% change amongst peers (n=7).

DISCUSSION / REFLECTION / LESSONS LEARNED: A PM curriculum for interprofessional ambulatory learners linked to a PBLI framework led to meaningful clinical improvement. Residents valued

feedback from performance report cards, were motivated to improve, and were engaged in the process. We recognized that real-time coaching led to more robust and directed hypothesis testing. Future directions include developing a scalable model for delivering the curriculum in a variety of ambulatory settings.

PATIENT SAFETY DAY: A RESIDENT-LED, INTERDISCIPLINARY, INTERPROFESSIONAL APPROACH TO QUALITY AND PATIENT SAFETY EDUCATION AND SCHOLARSHIP IN A LARGE, MULTI-HOSPITAL ENTERPRISE

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NEEDS AND OBJECTIVES: Objectives are threefold: First, encourage trainees to engage in patient safety, high-value care, and just culture. Second, promote an interdisciplinary, interprofessional collaborative approach to solving complex issues within healthcare delivery systems. Third, highlight the patient safety and quality improvement projects pioneered by medical trainees and other healthcare professionals.

SETTING AND PARTICIPANTS: The event takes place at the tertiary care center of a large, multi-hospital enterprise. All caregivers are invited to attend, including administration, nursing, pharmacy, and information technology. The Steering Committee is an interprofessional team of medical trainees, staff physicians, nurses, nursing leadership, pharmacists, and administrative staff from the departments of risk management and Graduate Medical Education. The committee is led by a resident. Subcommittees, also each led by residents, focus on abstract peer-review, workshop development, advertising, and communication.

DESCRIPTION: Patient Safety Day is a resident-led annual half-day event composed of an external keynote speaker, a peer-reviewed poster competition, and an interprofessional workshop. Speakers focus on Steering Committee-selected topics: high performance teams, psychological safety in high reliability organizations, and the impact of human error. Speakers include a former Navy SEAL, a documentary filmmaker, and a NASA human systems engineer. Interactive workshops focus on interprofessional team building, conducting a mock root cause analysis, and recreating different patient safety initiatives that have succeeded within the hospital enterprise.

EVALUATION: A survey is sent to all participants regarding feedback from the day, with data compiled at the end of each year and presented to the hospital's QPS committee and used to guide change for the following year's event. Of the 66 survey responders from 2019, over 90% said that the day was well worth their time and that they will return the following year. Just fewer than 90% said that the day gave them an appreciation of teamwork and the utility of interdisciplinary projects within QPS. Over 70% said they are now more likely to get involved in a QPS project, and they are more likely to take an interprofessional approach.

DISCUSSION / REFLECTION / LESSONS LEARNED: As the data suggest, Patient Safety Day is a successful platform to provide education and garner enthusiasm for quality and patient safety initiatives within the hospital. The past three years have focused on expanding to include the regional hospitals, diversifying trainee participation, and improving the impact of the poster session. Involvement of departmental representatives in 2020 has proven essential to garnering input from a variety of trainees, spreading the word to satellite campuses, and creating an event that is both meaningful and amenable to different resident schedules. Increasing abstract submissions requires a variety of modes of commucation, including direct email, electronic bulletins, and the help of program leadership.

PAUSE: A TOOL FOR STRUCTURED DEBRIEFING IN AN INTERNAL MEDICINE RESIDENCY PROGRAM

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NEEDS AND OBJECTIVES: Residents who train at academic medical centers are at the frontline of patient care. They are frequently involved in high stakes clinical events such as delivering bad news, participating in rapid responses and codes, and pronouncing patient deaths. There is often little time to debrief these emotionally challenging events. Few residency programs provide dedicated training for residents to lead post-event debriefings. Therefore, such debriefings are often happenstance, unstructured, and focus on aspects of clinical care rather than clinicians' emotions. If unaddressed, the emotional impact of these events can contribute to burnout and a sense of isolation. It is critical to remedy this gap in medical training.

With this in mind, we developed an innovative curriculum, with four main objectives: 1) Create a tool (called PAUSE, which stands for: Prepare, Analyze, Understand, Sentiment, Educate) to facilitate debriefings after high stakes events, 2) Train residents to lead debriefings using the tool, 3) Implement the training on inpatient services to encourage interdisciplinary debriefings, 4) Examine PAUSE's utility and its effect on resident wellbeing.

SETTING AND PARTICIPANTS: PAUSE is being piloted at Brigham and Women's Hospital among residents in the cardiac ICU and inpatient medicine teams. The pilot includes other interprofessional clinical staff (nurses, pharmacists, and patient care assistants) who are critically involved in these events, and participate in PAUSE.

DESCRIPTION: The project consists of collaborating with Medical Education and Palliative Care experts to design the PAUSE tool, developing training materials via an instructional video and in-person training, teaching residents to use the tool, and inviting participants to give their opinion regarding its impact through surveys and focus groups.

EVALUATION: Residents who lead the debriefings, and other team members who participate in the debriefings, are invited to complete a confidential survey on the tool's usefulness, its influence on communication between team members, and fostering of feelings of support and decreasing burnout. Residents also will be invited to participate in focus groups to offer in-depth qualitative perspectives and suggestions.

DISCUSSION / REFLECTION / LESSONS LEARNED: This project has garnered support from the Internal Medicine Residency Program and Partners Graduate Medical Education leadership. Using literature and expert advice, we have developed the tool, created training materials, and embarked on the implementation phase. We anticipate initial survey data in Spring 2020.

PGY-2 BOOTCAMP: A NOVEL CURRICULUM FOR IM RESIDENTS' TRANSITION TO THE PGY-2 YEAR

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NEEDS AND OBJECTIVES: Traditionally our residency program has a focused one day retreat in PGY-2 year that provides basic tools for the difficult transition from internship to supervising resident, but time constraints have limited expansion to additional concerns. Practical skills including work-flow efficiency, addressing interpersonal conflicts, and

assisting struggling interns were identified through resident feedback as specific PGY-2 challenges. Our goal was to provide a series of interactive sessions to address these common concerns.

SETTING AND PARTICIPANTS: 41 PGY-1 Residents at University of Alabama Hospital

DESCRIPTION: Our curriculum was developed using Kern's model including a targeted needs assessment through a 20 question survey identifying the current PGY-1s confidence of handling common scenarios faced by a supervising resident. This survey was developed internally through feedback from current residents. Questions ranged in content addressing efficiency, reflection, intra-team dynamics, inpatient skills, and outpatient management. Responses were measured on a 5 point scale (1-very unconfident to 5- very confident). Three one-hour sessions addressing the main areas of concern were created and held during the final month of the PGY-1 year. The sessions were led by our program leadership and chief medical residents. The first session was "Difficult Conversations", the second "Efficiency on the Wards", and the final was "Helping the Struggling Learner". All sessions were a combination of brainstorming, foused cases, brief lecture and small group discussion followed by debriefing. The same questions from the pre-survey were sent to participants after completion of the third session as a post survey.

EVALUATION: There was a 97.5%(39/40) response rate with the pre-survey and a 57.5% (23/40) response rate on the post-survey. All questions had an increase in confidence level of the resident on the post-survey responses. The question with the highest post-survey response level regarded co-managing a ward team including overseeing a patient list. We noticed the largest improvement in confidence scores with questions regarding the utilization of available resources at our clinic site, managing personal clerical work while managing a team, and leading the team in debriefing when the unexpected occurs.

DISCUSSION / REFLECTION / LESSONS LEARNED: Our results suggested improved confidence of residents across all questions. The multimodal approach allowed reinforcement of key ideas and concepts and individual tailoring. Our residents felt least confident about logistical aspects of PGY-2 year, and most confident about their ability to reflect on experiences. Our study is limited by the decrease in response rate between the pre and post survey, as we are unable to demonstrate statistical significance. However, the improvement seen in post-survey responses with this intervention is promising. We felt the most important component was providing a space for our interns to discuss concerns and share ideas for tackling expected challenges about their new responsibilities.

PHARMACOGENOMICS: CLINICAL REASONING FOR THE 21ST CENTURY MEDICAL STUDENT

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NEEDS AND OBJECTIVES: The next generation of healthcare providers will be tasked with implementing genomic technology into the front-lines of clinical care through the delivery of precision medicine (Powell KP et al., 2012). The integration of genomics education into medical education has been slow and inadequate. Only five U.S. medical schools offer a curriculum on precision medicine in undergraduate medical education (Caryn Kseniya Rubanovich et al., 2018). Pharmacogenomics (PGx) is an important topic as over 300 drugs have FDA approved PGx information in their labeling and 85-95% of the population will have an actionable PGx variant (Bush WS and Crosslin DR et al., 2016). No formal core curriculum about genomics and precision medicine exists in the pre-clinical years at the University of Pittsburgh School of Medicine (UPSOM). To address this gap, we created a mini-elective to teach medical students about PGx as a use case for the application of practical genomic skills early in their academic careers.

SETTING AND PARTICIPANTS: The Test2Learn™ program uses a participatory genomic testing model developed at the University of Pittsburgh School of Pharmacy. Learners use real genetic data to learn about PGx and clinical decision making within an online platform. The curriculum has been adapted for various audiences, and was modified to fit the UPSOM mini-elective structure. The course was led by two expert faculty from the School of Pharmacy and the Department of Family Medicine. We used anonymized real genetic data from the Test2Learn™ educational platform as opposed to medical student data for this first deployment.

DESCRIPTION: The mini-elective consisted of four weekly two-hour evening sessions. Sessions had a didactic portion led by faculty followed by a small-group workshop for application of concepts. Students accessed the Test2Learn™ online portal for practical experience analyzing real, anonymized PGx data. Course objectives included:

- Develop a nuanced understanding of the opportunities and limitations offered by PGx testing
- Practice and apply fundamental pharmacokinetic and pharmacodynamic principles
- Demonstrate competency in interpreting PGx information
- Discuss ethical, legal, and social issues inherent within precision medicine

EVALUATION: 5 MS-1 and 1 MS-2 students enrolled and completed the course. It was well received by students in a post-class survey. One student reported "This mini elective fit so well into MS1 because we already had a working knowledge of pharmacology and genetics and were able to apply these concepts to incredibly current and relevant issues."

DISCUSSION / REFLECTION / LESSONS LEARNED: This innovation is an exciting way to incorporate clinical decision making skills early on in undergraduate medical education. It highlights the clinical relevance of basic science concepts and allows students to develop connections between genetics and pharmacology. Early exposure and competency in understanding and applying PGx information will benefit medical students of many different future spectialties.

ONLINE RESOURCE URL (OPTIONAL): https://www.test2learn.org/

PILOT ASSESSMENT OF A SELF-DIRECTED PUBLIC HEALTH LEARNING MODULE FOR PRECLINICAL MEDICAL EDUCATION

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NEEDS AND OBJECTIVES: Teaching social determinants of health is necessary to train medical students to address health inequity as future physicians and leaders. One challenge is integrating public health material into preclinical curricula. We created an online, interactive learning module that teaches public health topics relevant to existing content in the preclinical curriculum. We hypothesized that the module would offer an appealing self-directed way to increase students' knowledge of public health concepts.

SETTING AND PARTICIPANTS: Potential pilot participants included all second-year medical students at Columbia University Vagelos College of Physicians and Surgeons. All students received an online learning module on infectious diarrhea that they could complete independently while enrolled in their required "Microbiology/Infectious Disease" block.

DESCRIPTION: The module was a case-based sequence of ten interactive multiple-choice questions. It focused on global burden of disease, malnutrition, and water, sanitation, and hygiene via a hypothetical case of acute diarrheal illness in Nigeria. Users received instruction through immediate, detailed feedback on each question. Participation was voluntary and anonymous.

EVALUATION: Two single-best-answer, knowledge-based questions were provided as pre- and post-test assessments for each module question. Mean scores were calculated. For subjects who completed both assessments, paired t-tests tested change in assessment score. Time to complete the module was calculated in minutes with median and interquartile range (IQR). Likert scores were reported as percentages.

DISCUSSION / REFLECTION / LESSONS LEARNED: All students who completed the module improved their score. Of 140 eligible students, 21 (15%) completed the pre-test, 18 (13%) completed the post-test, and 16 (11%) completed both. For paired subjects, scores increased from 3.1/10 to 9.0/10 (mean change 5.9, 95% CI 4.8-6.9, $p<0.0001$). Median completion time of the module was 6.6 minutes (IQR 5.1-12.7). Of 16 students who completed the survey, 13 (81%) were satisfied with the difficulty, material presented, and effectiveness of the module; 12 (75%) with the time to complete the module; 11 (69%) with outside resources and relevance to medicine; and 10 (62%) with the connection to lecture material.

While limited by low voluntary participation, we anticipate significantly higher student uptake with formal, grade-based inclusion into the preclinical curriculum and expansion into other preclinical courses.

ONLINE RESOURCE URL (OPTIONAL): https://www.publichealthcommute.com/infectiousdisease

PILOT THEMATIC ANALYSIS OF WEEKLY PSYCHOSOCIAL ROUNDS CASES IN PRIMARY CARE RESIDENCY: FOR WHICH CHALLENGES DO RESIDENTS SEEK HELP AND SUPPORT?

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NEEDS AND OBJECTIVES: A challenge during residency is learning to cope with complex medical and psychosocial situations in order to manage patient care and maintain wellness. Psychosocial rounds (PSR) are a defining element of NYU School of Medicine Internal Medicine Primary Care Residency Program (PC), and allow residents to share difficult issues and reflect on their own reactions. They receive peer and faculty support and problem-solving guidance in response to their challenge. We use notes from PSR discussions to understand some of the issues that residents struggle with most from their own perspective, and how they process them.

SETTING AND PARTICIPANTS: PSR is facilitated by a faculty member and Chief Resident who take semi-structured notes. During the session 1-2 residents (of 8-15 in attendance) volunteer to share challenging experiences with patients or team-members, then receive support and feedback from the group. Faculty and Chiefs' notes were compiled into a deidentified database of 191 cases spanning 2010-2019.

DESCRIPTION: A pilot sample of 23 cases have been analyzed by a team, including a Clinician-Educator, psychologist, and data associate, using a thematic qualitative approach to understand the kinds of issues that residents self-identify as challenging. The team analyzed notes individually, developed codes to categorize the case themes, and compared and refined codes in an iterative process. The pilot codebook contains 19 parent codes with 1-8 sub-codes.

EVALUATION: "End-stage care" was the most prevalent code, occurring in 39% of cases (n=9). "Patient-provider relationship" occurred in 35% of cases (n=8). Code co-occurrence indicates that existing patient or provider issues exacerbate residents' ability to care for dying patients. 7 of 9 (78%) PSR cases about end- stage care also included "Poor patient/family understanding", "Ethics" (using life-prolonging measures), or "Medico-legal concerns." In one case representative of the ethical and psychosocial complexity residents often raise during PSR, the wife of a Chinese man with metastatic prostate cancer asked the medical resident to deliver a less "serious diagnosis" to "protect" him. Faculty and residents asked questions such as, "Is it legal" to misinform a patient about their diagnosis?, "Do they have a right *not* to know" their diagnosis?, and how cultural difference affected the situation. Through this discussion the resident was able to reframe the experience and modulate her emotional reaction in order to refocus on patient and family care.

DISCUSSION / REFLECTION / LESSONS LEARNED: Analysis of PSR notes indicates that end-stage care prompts high levels of emotional/moral distress among PC residents. They repeatedly seek peer and faculty guidance to assist in their care of dying patients, especially when there are complicating psychosocial factors. As we code further other challenging situations will be identified, allowing for a deeper understanding of issues residents face, and intervention in areas in which residents may be underprepared for independent practice.

POCUS FACULTY I-SCAN PROGRAM DESCRIPTION AND ONE-YEAR EVALUATION

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NEEDS AND OBJECTIVES: Point-of-care ultrasound (POCUS) is gaining acceptance in general medicine due to a reduction in procedural complications, an increase in diagnostic accuracy, and an availability of less expensive devices. As formal POCUS curricula for medical students and internal medicine residents are advancing there is a shortage of faculty with the expertise to supervise these trainees. We developed the Integrated Sonography Course at NYU (I-ScaN) to train faculty in POCUS.

SETTING AND PARTICIPANTS: Twenty three hospitalists from 4 academic hospitals participated in I-ScaN.

DESCRIPTION: I-ScaN began with a 2-day course consisting of lectures and hands-on training covering views of the heart, lungs/pleura, abdomen, and leg veins. The faculty then participated in a year-long program with three components: 1. hands-on teaching sessions led by local experts 2. monthly conferences to review scans and 3.creation of an online image portfolio.

We evaluated the impact of I-ScaN using knowledge tests, hands-on tests, confidence and satisfaction surveys given before and upon completion of the two day program and at 1-year. We also assessed barriers to use of ultrasound.

EVALUATION: Eighteen participants completed the year long program and uploaded a total of 2787 clips. Participant confidence was unchanged immediately after the 2-day course and at 1-year (2.9 and 2.8, respectively, out of a possible 4). Participant knowledge increased from before the 2-day course to post-course (56% and 82% correct, respectively, $p<0.001$), without a significant decay at one year (78% correct). There was no difference in the hands-on test scores from immediately after the 2-day

course to one-year (74% and 74% well done). Performance on the 1-year knowledge test correlated highly with results on the 1-year hands-on test (r=0.80, p<0.001). There was a moderate correlation between passing the 1-year hands on test and attending hands-on teaching sessions (r=0.66, p=0.003), with attending monthly conferences (r=0.53, p=0.019), and with the number of clip uploads (r=0.61, p=0.007).

DISCUSSION / REFLECTION / LESSONS LEARNED: Performance on the 1-year hands-on and knowledge tests did not decay suggesting I-ScaN is effective at promoting knowledge and skill retention. Course elements correlating with a passing score on the hands-on test, our measure of participant success, included clip uploading, attendance at hands-on sessions, and attendance at monthly conferences. Assessments correlating with passing the hands-on test included passing the final knowledge test and confidence ratings.

Time was reported as the principal barrier both to overall use of POCUS as well as to uploading clips.

For POCUS programs targeting faculty, it is important that participants participate in key course elements following an introductory course including hands-ons scanning sessions, monthly conferences as well as to practice regularly and upload clips.

PRACTICE MAKES PERFECT: SIMULATION BASED EDUCATION IN ACUTE CARE MANAGEMENT OF SICKLE CELL DISEASE

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NEEDS AND OBJECTIVES: Sickle cell disease (SCD) affects approximately 100,000 Americans and is the most common autosomal recessive genetic disorder worldwide. Despite being a genetic hemoglobinopathy, SCD is a diffuse vascular disease and complications such as acute chest syndrome (ACS), sepsis and stroke are the most common causes of death. Many internists experience relative discomfort in managing SCD patients and we proposed to use simulation based learning, a highly effective tool for hands on management of real time clinical scenarios, to impact education of internal medicine housestaff. We developed a simulation based curriculum on the diagnosis and management of acutely ill hospitalized patients with SCD.

SETTING AND PARTICIPANTS: Different groups of 4-5 2nd year internal medicine residents underwent the 2 hour simulation session using LEAP_Laerdal Learning Application Program for 3G Instructor software and the SimMan 3G patient simulator over four weeks. Each resident completed a pre-test to assess baseline knowledge. After each case simulation, there was a debriefing with discussion of the learning objectives. Residents received the pre-test via email 30 days after the simulation activity (post-test). 17 residents had complete data with a pre-test and post-test and were considered for analysis (an additional 10 surveys were submitted without a matching identifier). Data were considered complete if a pre- and post-test using the same identifier was collected. Data were analyzed using GraphPad software.

DESCRIPTION: Cases of a SCD patient admitted with a vasoocclusive crisis who develop an acute stroke, acute chest syndrome or severe sepsis were created and reviewed by a multi-disciplinary team comprised of internal medicine housestaff, adult and pediatric hematologists, adult pulmonary/critical care physicians and a pediatric emergency medicine physician. Each case had ten learning objectives.

EVALUATION: Seventeen of 27 participants (63.0%) had complete data sets. The mean pre-test score was 34.4% (SD 14.5%). There was a sizeable increase in the post-test score to 60.2% (SD 18.3%) which reached significance as calculated with a paired t test (p=0.0001). Interestingly these results are mirrored when the unmatched pre- and post-test surveys were considered (pre-test score of 34.5% (SD 14.5%) and post-test score of 51.6% (SD 20.1%)). Additionally, A Likert scale of "1 (not very confident) to 5 (very confident)" in managing patients with SCD was conducted across several domains and this increased from 2.6 (SD 0.8) in the pre-test to 3.5 (SD 0.4) in the post-test (p=0.02).

DISCUSSION / REFLECTION / LESSONS LEARNED: We present here an easy-to-implement educational tool that effectively expands education and management of complications of SCD which may be underrecognized in their early stages. This simulation-based curriculum was well received by internal medicine residents and resulted in nearly a two-fold increase in knowledge that was sustained for over 30 days.

PREPARING THE 21ST CENTURY PHYSICIAN: AN INNOVATIVE COURSE IN THE FOUNDATIONS OF SOCIAL, BEHAVIORAL, AND POLICY SCIENCE

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NEEDS AND OBJECTIVES: The UCSF Bridges curriculum seeks to prepare medical students to address the health and healthcare needs of the twenty-first century. Over 50% of premature morbidity and mortality is attributable to social and behavioral causes. Traditional medical curricula do not address these issues. We sought to develop an innovative social and behavioral sciences (SBS) curriculum that would provide first year medical students with foundational SBS knowledge and prepare them to effectively address social and behavioral causes of ill-health.

SETTING AND PARTICIPANTS: 155 first year students in the School of Medicine.

DESCRIPTION: We used the Kerns 6-step model for curriculum development. We reviewed published literature to develop a map of content areas and themes. Based on this review, we recognized a need to develop an innovative curriculum to provide students with the scientific foundation of SBS. In addition, we identified a need to expand and integrate curriculum on health systems, policy, and advocacy to prepare students to effectively address these causes of ill-health. The literature review also identified a need for coverage of content related to patient/provider identity, behavior change, social/structural determinants of health, and health disparities. Expert and student reviews shaped sessions maximizing learner engagement and scientific rigor.

EVALUATION: In year 1 (AY 2016-17), we implemented a two block, 8-week curriculum: 4 weeks on Health & the Individual (HI) and 4 weeks on Health & Society (HS). In subsequent years, we refined each course in response to student evaluation and feedback. We shortened each course to 3 weeks and improved placement and integration within the broader curriculum. Substantive innovations in the HI/HS curriculum included: a longitudinally-followed "standardized family"; panels on chronic pain, addiction, physician payment, and health insurance; lectures and small groups on intersectional sources of health determinants and disparities; just-in-time small groups on current policy issues; a book club; and enhanced small group facilitator training. In students' overall quantitative evaluation, HI/HS tended to score lower than basic science courses (3.0-4.0 of 5 for HI/HS compared to 4+ for comparator courses). Qualitative comments indicated that students valued HI/HS content and innovations. However, they struggled with the learning materials and small group facilitators. HI/HS course leadership has focused on these areas for year-

over-year improvement and were able to improve facilitator performance while continuing to struggle with student dissatisfaction with learning material differences.

DISCUSSION / REFLECTION / LESSONS LEARNED: Students appreciated in-depth coverage of SBS, noting its relevance to high quality care. Challenges included need for facilitators with topic expertise and abilities to guide discussions of topics such as race and bias. Additional difficulties exist in tailoring the scope of the curriculum to meet the needs of students with a wide range of existing knowledge of these topics.

PRIMARY CARE 101: A MULTIDISCIPLINARY ROTATION DESIGNED FOR FIRST YEAR RESIDENTS

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NEEDS AND OBJECTIVES: Internal Medicine residents are choosing careers as primary care physicians at decreasing rates. Our goal was to create a 2-week rotation during the first year of residency that would expose Internal Medicine residents to patient care services offered by our Division of General Internal Medicine (GIM) as well as familiarize them with the inter-professional collaboration that takes place within the division.

SETTING AND PARTICIPANTS: All first year residents participated in this rotation. The faculty included members of our GIM division, subspecialty physicians in the Department of Medicine, physicians in other departments, and other members of the interdisciplinary team.

DESCRIPTION: This rotation was introduced for the 2018-2019 academic year. We aimed to include experiences that would showcase the inter-professional nature of primary care as well as expose residents to environments they may have had little prior experience with. Residents worked with nurses and pharmacists at our ambulatory sites to more fully understand their roles. Other sessions included home visits, psychiatry crisis center, diabetes wellness visits, smoking cessation groups, obesity medicine visits, stress test observation, and HIV/PrEP clinic. We included self-guided sessions focused on evidence based medicine and advocacy. Based on feedback from the 2018-2019 academic year, we added exposures to heart failure clinic, medical billing, and management of sickle cell disease in a primary care setting.

EVALUATION: Residents were surveyed before and after participating in this rotation regarding their career plans, satisfaction with the experience, and ideas for improvement of the rotation. As of mid-academic year, 19 residents have participated in the 2019-2020 primary care rotation and 12 (63.2%) completed the post- rotation survey. Based on the post-rotation survey, 63.6% of residents were very satisfied with the faculty and 66.7% of residents were very satisfied with the overall rotation. Residents were most satisfied with their experiences in obesity medicine, outpatient sickle cell disease management, and stress test observation. When questioned about career plans after residency, zero residents noted interest in primary care on the pre-rotation survey, but after completing the rotation, 1 (8.3%) resident endorsed primary care as their intended future career.

DISCUSSION / REFLECTION / LESSONS LEARNED: This rotation has exposed residents to the multidisciplinary and varied nature of primary care and furthered their understanding of what a career in modern primary care can entail. Their experiences span the nurse's work station, the patient's home, the physical therapist's treatment room, and the cardiologist's heart failure clinic. They also have been able to strengthen their understanding of evidence based medicine, advocacy, and medical billing.

PROJECT ECHO CANCER SURVIVORSHIP: DESIGNING A CURRICULUM TO PREPARE PRIMARY CARE PHYSICIANS (PCPS) TO MEET THE EVOLVING NEEDS OF CANCER SURVIVORS

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NEEDS AND OBJECTIVES: Primary Care Physicians (PCPs) are increasingly sharing responsibility for cancer survivorship care, but do not feel adequately prepared to provide such care.[1]It has been recommended that specialists create survivorship care plans (SCPs) to guide PCPs on appropriate follow-up treatment, but national data reveals that a majority of PCPs do not receive such documents. The goal of this Project ECHO (Extension for Community Healthcare Outcomes) curriculum is to teach PCPs a structured approach to delivering follow-up care to cancer survivors. Project ECHO is an interactive model of tele-education that has been validated as a successful method for bridging knowledge gaps between specialists and PCPs.[2]

SETTING AND PARTICIPANTS: The targeted learners of the curriculum will be internal medicine and family medicine residents in Reading, Pennsylvania. The curricular sessions will be facilitated by faculty from the Johns Hopkins Primary Care for Cancer Survivors Program using a video conference format.

DESCRIPTION: Using the Project ECHO model, this curriculum will teach PCPs a standardized approach to managing cancer survivors in primary care clinic. Approximately 10 one-hour video conferences will be held over one academic year. Sessions will be a mix of didactic and interactive case presentations in keeping with the Project ECHO format.[2] The curriculum will be divided into three modules—i.e., on breast, colon, and prostate cancer—and will weave common themes in survivorship care including: secondary surveillance, management of late and long-term effects of cancer treatment, health promotion, psychosocial well-being, and care coordination. Residents will be introduced to a protocolized management approach using a templated care plan designed by our team. The didactics and resident presentations will be formatted to align with the template. Subject matter experts will attend sessions as needed to provide expert opinion on challenging topics. The first session is scheduled for May 2020.

EVALUATION: Project ECHO provides an online application that tracks session attendance and ratings. After 5 sessions, participants will be asked to provide specific suggestions for improving the curriculum. Program success will be evaluated by measuring individual responses on pre- and post-curriculum self- assessment forms about managing the essential elements of cancer survivorship care. At the end of the curriculum, participants will also complete an online knowledge test to objectively assess management decisions across a range of clinical scenarios. Responses will be analyzed to identify areas in need of curricular revision.

DISCUSSION / REFLECTION / LESSONS LEARNED: Because oncology is a dynamic field, the curriculum does not focus on imparting cancer knowledge. Rather, it aims to teach PCPs a standardized approach to caring for cancer survivors, and allows them to hone their skills with the assistance of specialist facilitators.

ONLINE RESOURCE URL (OPTIONAL): 1. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3755767/

2. https://echo.unm.edu/about-echo/model/

PROMOTING STUDENTS' STRUCTURAL COMPETENCY BY CHALLENGING THEM TO ADDRESS THE OPIOID EPIDEMIC FROM AN INSTITUTIONAL PERSPECTIVE

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NEEDS AND OBJECTIVES: Physicians have key roles in health-system change. We introduced an innovative session for students to equip them to (1) Apply principles of health equity and structural competency to public health; (2) Describe roles of physicians as advocates for health-system change; (3) Describe institutional resources and data sources to prioritize patient populations for interventions; (4) List methods of systems-level intervention; (5) Analyze data to assess success of institutional interventions, and (6) Recognize limitations of healthcare systems ability to solve public health problems.

SETTING AND PARTICIPANTS: Sept-Oct 2019, second year medical students (n=107) at Weill Cornell Medicine learned about the US healthcare system and social and healthcare needs of various vulnerable patient populations. Following this, we introduced an interactive session for students to propose and discuss institutional responses to the opioid epidemic.

DESCRIPTION: Prior to the session, students read a case of a patient with opioid use disorder (OUD) raising structural issues including transitions of care, implicit bias, iatrogenesis and social constructs of illness, culminating with the plan for a hospital task force to address OUD. At the start of the session, students were oriented and divided into groups of 21 with a faculty member with relevant experience. In teams of 4, students played task force members. They were provided with hospital and NYC Department of Health data and asked to describe subpopulations of patients with OUD. With additional information, they then designed initiatives to address gaps in managing OUD, received program evaluation data and reflected on initiative impact.

EVALUATION: 7 weeks later, students wrote essays describing an issue in healthcare of interest, and how they could promote relevant system change. Thematic analysis of these essays was performed.

DISCUSSION / REFLECTION / LESSONS LEARNED: The opioid epidemic topic was compelling. Due to time, students received selected data; still, they had to sort through it and consider how it could inform institutional decisions. The complexity of materials and novelty of assignment heightened the importance of clear instructions. Issues of interest in students' essays included healthcare access (21%), disparities in healthcare among vulnerable populations (20%), and addressing healthcare costs (15%). Students described themselves promoting systems-change using approaches they had discussed in the interactive session, including physician-led education programs in structural competency (36%), advocacy through evidence- based policy changes (33%), and technology use (16%).

QUALITY NOT QUANTITY: IMPLEMENTATION OF A BRIEF, RESIDENT-DRIVEN, EXPERIENTIAL QUALITY IMPROVEMENT CURRICULUM

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NEEDS AND OBJECTIVES: Our goals were: to create an engaging curriculum that gave residents an understanding of QI methods and hands-on experience with their own project and to provide interested residents with opportunities to gain additional skills.

SETTING AND PARTICIPANTS: 162 internal medicine residents participated in the curriculum over the 3-year measurement period (July, 2016 to June, 2019). 47 residents were exposed to the curriculum twice (via a consolidated version during their first year) and 18 residents served as project leads.

DESCRIPTION: Our curriculum consisted of four one-hour sessions over two years. Each of our five firms were required to select, design, and implement a QI project. Residents from each firm volunteered as leaders to work on the project between sessions during protected administrative time. Leads received additional mentorship and teaching. Each large group session used the selected project to highlight QI themes, including defining and prioritizing problems, completing a current state analysis, creating aims and metrics, performing a root cause analysis, and testing solutions.

Residents were evaluated before and after the curriculum using a self-assessment of knowledge and skills and the QI-KAT-R instrument to assess knowledge application. QI-KATs were graded by two independent reviewers and the change in the mean score was compared before and after our intervention.

EVALUATION: 128 out of 162 (79%) residents completed a pre- and a post survey. Self-reported confidence increased significantly. For example, at baseline, only 27% of residents agreed they could write a problem statement, whereas 75% felt they could do so after curriculum exposure ($p<0.001$). Confidence was greatest among project leads, 100% of whom felt they could write a problem statement by the end of the study. Average scores on the QI-KAT-R increased from 18.2 (out of a possible 27) to 20.8 ($p<0.001$). Residents who experienced the curriculum twice improved the most (18.2 to 22.3, $p<0.001$) as compared to residents who experienced the curriculum only once (18.2 to 20.2, $p<0.001$). Leaders improved their scores (19.8 to 22) but this difference was not significant ($p=0.14$). All 5 projects produced meaningful results and made it through at least one PDSA cycle.

DISCUSSION / REFLECTION / LESSONS LEARNED: A resident-driven, project-based QI curriculum delivered in just four hours over two years can lead to significant gains in confidence and knowledge among residents. Those who were exposed to the curriculum across all 3 years of residency performed the best, suggesting that skills increase with every year of exposure. Though our project leads demonstrated high confidence, improvements in their QI-KAT score were similar to their peers.

RAPID RESPONSE TEAM TO THE CLINIC BATHROOM!: CAN RESIDENTS IDENTIFY AND MANAGE OPIOID OVERDOSE?

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NEEDS AND OBJECTIVES: Opioid overdose deaths in the U.S. have risen 5-fold in the past 2 decades from 8,048 in 1999 to 47,600 in 2017. At our health center we responded to 6 opioid overdoses within the clinic in a 3-month period. Opioid agonist treatment (OAT) is an effective therapy for opioid use disorder and treatment after overdose has been shown to reduce all-cause mortality. However only a small percentage of patients receive treatment at the time of overdose. We developed an Objective Structured Clinical Exam (OSCE) case to assess our residents' skills in identifying and treating opioid overdose.

SETTING AND PARTICIPANTS: 34 Internal Medicine residents participating in an OSCE.

DESCRIPTION: The opioid overdose case, part of a 10-station annual OSCE, involved a young man found unresponsive in the clinic bathroom. A nurse, the first responder, is in the room when the resident enters. A highly trained standardized patient (SP) evaluated the residents on communication skills and case-specific skills: identifying opioid overdose, treating opioid overdose, assessing opioid use, and counseling on treatment options for opioid withdrawal and opioid use disorder. Assessment items used a behaviorally anchored scale with response options: not done, partly done, well done. Analyses are reported as frequencies of well-done items.

EVALUATION: Of the 34 residents who participated in the case, 91% of residents quickly identified the opioid overdose, 82% administered naloxone correctly, and 88% provided supportive care during the overdose. However only 26% of the residents assessed the patient's opioid use, 38% counseled on opioid withdrawal, 35% discussed short-term treatment options for opioid withdrawal and 32% counseled on long- term treatment options for opioid use disorder. Many residents reported difficulty addressing opioid use and treatment in the setting of overdose. The SP reported that most residents were supportive and non-judgmental but many did not address opioid withdrawal management or offer OAT.

DISCUSSION / REFLECTION / LESSONS LEARNED: While the majority of residents quickly and appropriately responded to the patient's opioid overdose, few residents adequately assessed the patient's opioid use or counseled on treatment options. Performance in this case highlights the need for increased training to improve residents' skills in treating opioid use disorder, particularly at the time of overdose. Given the prevalence of opioid overdose and the life-saving benefits of OAT, including offering treatment at the time of overdose, this is an important area of focus for future educational initiatives.

RE-ESTABLISHING A HEALING RELATIONSHIP: A BRIEF EDUCATIONAL INTERVENTION FOR RESIDENTS ON TREATING WITHDRAWAL AND PAIN IN INPATIENTS WITH OPIOID USE DISORDER

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NEEDS AND OBJECTIVES: Initiating medications for opioid use disorder (MOUD) in the inpatient setting may help minimize readmissions and mortality. Despite evidence supporting use of MOUD, there remain significant barriers to prescribing including insufficient training. Internal medicine (IM) residents, as the primary physicians caring for many inpatients with opioid use disorder (OUD), are optimally positioned to facilitate inpatient use of MOUD. We developed, implemented, and evaluated a brief educational intervention for IM residents with the goal of increasing knowledge and confidence about managing opioid withdrawal and pain in inpatients with OUD.

SETTING AND PARTICIPANTS: Participants included all interns and residents rotating on general medicine wards during November and December 2019 at two hospital sites of a large, urban, academic residency program.

DESCRIPTION: The brief educational intervention consisted of a chief-resident led 35-minute case-based presentation highlighting the basics of managing opioid withdrawal and pain in inpatients with OUD. Main learning points included choosing between methadone and buprenorphine as MOUD for treatment of withdrawal, initial dosing of methadone and buprenorphine, identification and treatment of precipitated withdrawal, and initial dosing of full opioid agonists for treatment of pain in patients on MOUD. This content was adapted from the Chief Resident Immersion Training in Addiction Medicine Program and was reviewed with local content experts to ensure concordance with local practices. The intervention was delivered during pre-existing required orientation sessions to minimize the need for additional teaching space and time.

EVALUATION: We developed a pre- and 1-month post-intervention survey to evaluate participants' knowledge and confidence, which included 5 multiple choice questions to assess knowledge and 5 Likert- scale questions (from 1=Not confident to 5=Extremely confident) to assess confidence. The mean number of knowledge questions correct and the mean confidence Likert-score for each question were compared pre- versus 1-month post-curriculum using paired Student's t-tests with 2-sided p-value<0.05 indicating significance.

Of 60 interns and residents participating in the educational intervention, 23 (38%) completed both surveys and were included in the evaluation. The mean number of knowledge questions correct out of 5 increased from 3.0 pre- to 4.4 post-intervention ($p<0.001$). Mean confidence increased from below 2 pre- to over 3 post-intervention on 4 questions ($p<0.001$ for all) and remained high (above 3.5 both pre- and post-) for the 5th question ($p=0.33$).

DISCUSSION / REFLECTION / LESSONS LEARNED: A brief educational intervention delivered during existing curricular time had a significant impact on residents' knowledge and confidence on inpatient management of opioid withdrawal and pain in patients with OUD. Time of delivery during orientation to an inpatient general medicine ward rotation was key, as the content was relevant and immediately applicable.

RELATIONSHIP BETWEEN SYSTEMS THINKING AND OTHER HEALTH SYSTEMS SCIENCE DOMAINS- RESULTS OF A QUALITATIVE ANALYSIS OF PATIENT NAVIGATOR STUDENT RESPONSES.

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NEEDS AND OBJECTIVES: Health Systems Science has emerged as a "third pillar" of medical education along with basic and clinical science and includes topics such as health policy, population health, social determinants of health and systems thinking. Patient navigation (PN) experiences has been described in literature as an effective method to teach health systems science concepts. However the relationship between the interlinking domain of systems thinking and the other HSS domains is not clear. We describe a PN elective for first year medical students and a qualitative analysis of student responses to better understand the relationship between specific health science domains and systems thinking.

SETTING AND PARTICIPANTS: First year medical students in a one-year PN elective were integrated in two high performing patient-centered medical home models. Students worked with interprofessional clinical teams to help veterans (VA) and refugee families (federally qualified health center) navigate the respecitve health systems.

DESCRIPTION: Students worked with interprofessional clinical teams to help veterans (VA) and refugee families (federally qualified health center) navigate the health system. Activities included but were not limited to, accompanying patients to medical and testing appointments, medicine reconciliation, phone follow-ups and home visits. Group work and didactics were embedded in the elective.

EVALUATION: Twenty-five students completed the year-long PN elective. Twenty-one (84%) participated in the focus groups. Analysis of the responses demonstrated that while all six core domains of HSS were noted by students, three core domains—population health, health system improvement, and value-based care were mentioned zero times as a single domain and when they were discussed, so was the linking domain of systems thinking.

DISCUSSION / REFLECTION / LESSONS LEARNED: Students participating in a PN elective confirmed that the experience addressed all six HSS domains. Although systems thinking can be part of all the core domains, the domains of health system improvement, value-based care and population health/public health inherently lend themselves to systems thinking. Conceptually, this makes sense as "systems thinking" refers to the knowledge and skills which allow one to have a holistic approach to care and recognize system interdependencies and these three domains inherently require an understanding of health system integration and interconnectedness.

REMAP: A NOVEL RESIDENT CURRICULUM AND COMMUNICATION FRAMEWORK FOR ADVANCE CARE PLANNING IN THE OUTPATIENT SETTING

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NEEDS AND OBJECTIVES: Residents are expected to conduct goals of care discussions and advance care planning (ACP) early in training, often without formal introduction to a communication framework specific to end-of-life discussions. Outpatient training is more limited, as the majority of resident-led goals of care discussions occur inpatient. A needs assessment among our residents revealed that barriers to conducting ACP discussions in primary care clinic included uncertainty around: a structured approach to discussions (84%), initiating the conversation (91%), appropriate language to use (81%), and navigating time constraints (76%). REMAP is a well-described teaching tool (Reframe, Expect emotion, Map out goals, Align with goals, Propose a plan) developed by VitalTalk® and is specifically aimed to assist clinicians in conducting end-of-life conversations. Our curricular intervention aimed to 1) introduce REMAP as a communication framework for ACP 2) increase resident confidence and knowledge around conducting ACP in a primary care setting and 3) increase ACP completion rates among residents at our clinic site.

SETTING AND PARTICIPANTS: Participants included 17 primary care and 14 categorical residents in the Internal Medicine program at a primary care clinic at the University of California, San Francisco. A control group of 15 residents who did not receive the intervention will be included in the quantitative and qualitative analysis.

DESCRIPTION: The curriculum includes a 1-hour presentation of the REMAP framework and case-based discussion among participants. Cases address common challenges to conducting ACP in the outpatient setting, including time constraints, patient/family member factors, initiating the discussion, heterogeneity of medical conditions, and uncertainty about appropriate language to use. As part of an ongoing panel management curriculum, residents are given dedicated time in a separate 1-hr session to identify and contact panel patients who would benefit from an ACP discussion. A third 1-hour simulation workshop with feedback from faculty trained in the VitalTalk® and REMAP methodology is pending.

EVALUATION: Residents completed a pre/post survey assessing confidence in conducting ACP discussions in the inpatient and outpatient setting. Preliminary data indicates increased confidence in eliciting patient goals and values, timing of ACP discussions, knowledge of concrete language or phrases to use, and providing a recommendation to patients. Final survey data and quantitative data comparing ACP completion rates between residents who received the intervention versus a control group will be available by the SGIM conference.

DISCUSSION / REFLECTION / LESSONS LEARNED: There is a gap in medical resident education around concrete frameworks for serious end-of-life discussions. REMAP is one effective communication tool that can be used in primary care settings to aid trainees in a step-wise approach to ACP discussions. Residents exposed to the REMAP framework are more likely to express confidence in initiating and conducting ACP discussions.

RESIDENTS AS EDUCATORS: IMPLEMENTATION AND EVALUATION OF A CROSS- DISCIPLINARY ELECTIVE

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NEEDS AND OBJECTIVES: The development of teaching skills has been identified as an important component of resident education by the Liaison Council and the Accreditation Council for Graduate Medical Education. Existing published interventions to promote residents' teaching skills primarily describe short, stand-alone programs in single departments. Consequently, we developed, implemented, and evaluated a cross-disciplinary, clinical teaching elective for residents.

SETTING AND PARTICIPANTS: This 2 week elective was piloted in January 2019 with 11, self-selected residents from the Departments of Internal Medicine, Pediatrics, and Neurology at Penn State.

DESCRIPTION: Curricular content included teaching skills, curriculum development, medical education scholarship, and professional development. We utilized multi-modal techniques with an emphasis on active learning, such as observed structured teaching exercises (OSTE) and observing peers' teaching sessions.

EVALUATION: Participants completed surveys measuring attitudes about teaching practice and careers in medical education using locally developed and the Conceptions of Learning and Teaching (COLT) instruments. Surveys were compared pre-course, immediately post-course, and three months post-course using Wilcoxon signed rank tests. Residents' teaching skills were directly observed by faculty in OSTE and peer teaching sessions using a performance rubric compared at the beginning and end of the course. Participants also completed daily exit tickets and a final course evaluation.

DISCUSSION / REFLECTION / LESSONS LEARNED: Nine residents completed course surveys at all time points. In comparisons over time, we found limited statistically significant change in reported attitudes towards education and in directly observed teaching skills. This may be because residents self-selected to participate and many had completed additional educator skill development programs. Evaluation of a comparison group of residents who did not participate in the elective could help clarify these results.

Course evaluations were highly positive with all residents reporting that they agreed or strongly agreed that the "course met my expectations and reasons for enrolling" and "my personal teaching benefited from participating in this course". Recommendations for improvement included recruiting faculty from more departments, increasing the clinical relevance of certain sessions, and adding content on curriculum development.

Key challenges encountered during implementation were balancing residents' varied clinical requirements, baseline knowledge levels, and applicable skills based upon their departments and teaching goals.

SEE ONE, DO ONE, TEACH ONE: COMMUNICATING CHALLENGING NEWS - AN INTERACTIVE RESIDENT AS TEACHER WORKSHOP

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NEEDS AND OBJECTIVES: Communicating challenging news to patients is a core set of skills for internal medicine residents, yet many have variable preparation and comfort level in this area. We believe that training in this skill should be integrated into an internal medicine residency's curriculum. By providing the framework of the SPIKES protocol through an initial interactive workshop, senior residents are then able to act as teachers to new 1st year residents in a subsequent "Resident as Teacher" session.

SETTING AND PARTICIPANTS: Internal medicine residents, including 1st, 2nd and 3rd years, participated in an initial interactive workshop about the skills involved in communicating challenging news during their ambulatory care didactic curriculum. In a follow up "Resident as Teacher" session, current 3rd year residents, who participated in the original workshop 8 months prior, now acted as teachers for the new 1st year residents.

DESCRIPTION: The initial interactive workshop was facilitated by palliative care faculty. It involved a didactic curriculum centered on the SPIKES protocol as a framework and an interactive role play scenario. The "Resident as Teacher" workshop 8 months later allowed now 3rd year residents to teach the SPIKES protocol to new 1st year residents. 2nd year residents acted as observers and assessed the teaching skills of the 3rd years. 1st years then participated in a role play scenario in which they applied the skills taught to them by the "teachers".

EVALUATION: Residents filled out surveys before and after the initial workshop assessing their skill in communicating challenging news. Post-survey self-reported knowledge was relatively better than pre-survey self-reported knowledge ($p < 0.0001$), as was self-reported comfort level ($p < 0.0001$). Preliminary results from the follow up workshops demonstrate that the majority have indicated that they had applied SPIKES since the previous workshop (61.11%), half of participants so far have recalled 4+ words from the SPIKES acronym (50.00%), and the majority agreed that they were more comfortable with the communication skill since the previous workshop (58.33%). Teaching skills of the 3rd years were assessed through the observer checklist filled out by the 2nd years, which demonstrated that 73.68% successfully displayed either 10 or 11 out of 11 of the checklist requirements. In addition, after either observing or teaching the "Resident as Teacher" workshop, the majority agreed that they felt more confident in this communication skill (52.63% for 2nd year observers and 58.82% for 3rd year teachers).

DISCUSSION / REFLECTION / LESSONS LEARNED: Through an interactive workshop, residents not only felt more confident in the skills involved in communicating challenging news, but they were also able to use these tools to act as teachers for new 1st year residents. Residents self-reported feeling more confident communicating challenging news after having the opportunity to teach the skills through the "Resident as Teacher" session.

SOCIAL DETERMINANTS OF HEALTH OSCE: ASSESSING STUDENTS' PATIENT-CENTERED COMMUNICATION AND ATTENTION TO CONTEXTUAL FACTORS

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NEEDS AND OBJECTIVES: Social Determinants of Health (SDoH) are the conditions in which our patients are born, grow, live, work and age[1]. These factors create social and economic inequities in our patients' lives. By understanding patient context and treating the person with the disease, not simply the disease itself, we can provide more effective and equitable care[2]. To assess medical students' ability to effectively elicit and empathically respond to patients affected by social determinants, we developed an objective structure clinical exam (OSCE) case focused on these concepts.

SETTING AND PARTICIPANTS: We have a longitudinal curriculum that addresses topics complementary to our clerkships including SDoH, transitions of care, cost effective care principles, among others. In January 2018, a working group of clerkship directors, an evaluation specialist, and clinical skills director designed and implemented a longitudinal clinical skills OSCE that includes standardized patient (SP) case scenarios in which students practice skills from our longitudinal curriculum. 407 students have participated in the case devoted to understanding SDoH contextual factors involved in patient communication.

DESCRIPTION: The SDoH case involves a patient with uncontrolled diabetes who is affected by poverty, low health literacy, lack of health education, living in an unsafe neighborhood, and challenges with transportation and access to care. Students are assessed on communication skills, identification and exploration of contextual factors, and whether or not the proposed care plan is comprehended by the patient.

EVALUATION: Majority of students (>90%) scored high in demonstrating patient-centered communication skills. Contextual factors discovered by students were variable: 79% identified patient was not taking medication due to expense; 72% explored challenges with diet; 67% explored challenges with transportation; 63% found patient lives in unsafe neighborhood; and 39% discovered patient lacks proper diabetes education. Nearly 90% of students' treatment plans were felt to be manageable and understandable. Student feedback shows >90% of agreed/strongly agreed that knowledge and skills assessed were clinically relevant, sufficient time was given, and setting/context of the case seemed authentic.

DISCUSSION / REFLECTION / LESSONS LEARNED: This is an effective method to observe learners' use of patient-centered communication techniques in a complicated social situation and assess their ability to address SDoH challenges. Student OSCE performance informed teaching of foundational SDoH principles through innovative approaches. We learned the importance of carefully crafting the case to authentically depict the patient's life and contextual factors to enhance student learning.

SOCIAL MEDICINE IMMERSION MONTH: DESIGN OF A SOCIAL JUSTICE AND COMMUNITY BASED CURRICULUM TO EXPAND THE CRITICAL CONSCIOUSNESS OF RESIDENT TRAINEES

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NEEDS AND OBJECTIVES: During the 2018-2019 academic year, a group of under-represented minority residents in the Residency Program in Social Medicine at Montefiore restructured existing social medicine orientation curricula using frameworks of critical theory, structural competency, and intersectionality. This restructuring intended to decenter the academic perspective, center community and activist voices, promote self-reflection and increase critical consciousness among trainees in order to sensitize them to barriers patients face, and highlight the resiliency and strength of the Bronx.

SETTING AND PARTICIPANTS: Over the course of three weeks, 26 trainees in social family medicine, internal medicine, pediatrics, and behavioral health participated in the Social Medicine Immersion Month (SMIM). There were a total of 27 one to two hour sessions, in the form of lectures, panel discussions, workshops, and reflection sessions, in addition to optional after-hours off-site activities.

DESCRIPTION: Session topics and learning objectives were designed to provide a theoretical foundation to understand illness through frameworks of power and oppression with the intent of informing future action in using medicine as a means to social justice. Themes included 1) forms of systematic family separation including immigration, mass incarceration, mandated reporting 2) anti-racism and racial equity within public health and medicine; 3) global health partnerships and imperialism; 4) labor movements in health care; and 5) activism, advocacy, and allyship in medicine. Facilitators were solicited by the core planning committee based on their involvement in local or city-wide activism and community organizing experience to ensure best-fit, and were compensated for their time. Most presenters were people of color who lived or worked in the Bronx.

EVALUATION: Pre- and post-course surveys were distributed to collect information on baseline and end-of-course knowledge, attitudes, and behavior. Weekly surveys were administered to collect impact and response to each individual session. A group nominal evaluation was conducted at the end of the course. In 24 out of 27 sessions evaluated, on average >93% of respondents thought the sessions should be repeated with no changes or only minor changes. Overall, participants felt that sessions facilitated needed conversations regarding physicians' power within healthcare delivery to minoritized and oppressed populations. They noted changes in their perception of power dynamics in healthcare within marginalized populations, as well as greater awareness of issues of segregation, critiques of health systems, and community self-determination. Comprehensive data analysis of all components is ongoing.

DISCUSSION / REFLECTION / LESSONS LEARNED: Critical race theory is an important framework for academic and medical curricula. SMIM demonstrates that an effective and impactful curriculum connecting community and clinic experiences can be designed by residents employing selected concepts of critical race theory, structural competency and intersectionality.

SO YOU THINK YOU CAN SUPERVISE?

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NEEDS AND OBJECTIVES: The Accreditation Council for Graduate Medical Education requires residency training programs (RTPs) to allow senior residents to practice with increasing levels of authority and responsibility. Part of this responsibility involves supervising of junior residents in the management of patients in the clinical setting. The transition to supervising resident is one of the most challenging in the life of an internal medicine resident. At the UTHSC Internal Medicine program, all categorical medicine interns participate in a half day retreat in June of intern year to discuss topics pertinent to the new supervising resident. While these retreats have been well received, supervising residents have noted the need for more training on the skills associated with being a supervising resident. In response, we developed the Transition to Supervising Resident Curriculum described here.

SETTING AND PARTICIPANTS: All categorical Internal Medicine and Internal Medicine-Pediatrics UTHSC interns not on night float, vacation, or ICU rotations were included in the intervention, which was implemented during the noon conference lecture schedule in July 2019.

DESCRIPTION: The Transition to Supervising Resident Curriculum consisted of nine interactive modules conducted during the month of July. Traditionally, the noon conference schedule in July is tailored to give our new interns foundational didactics in inpatient and outpatient internal medicine topics. Thus, senior residents (R2s) were excused from this conference to come participate in the supervising resident curriculum. Topics covered include teaching on the wards, discharge planning, time management, effective documentation, navigating transitions of care, feedback, maximizing your workflow, and wellness. During each one-hour session, residents would work in groups and discuss real life scenario cases that reflected the topic for that session. Internal medicine faculty were present to help moderate the session, providing real time feedback on the answers given by the new senior residents.

EVALUATION: 57% of residents turned in post session feedback forms administered using QR codes. Feedback has been tremendously positive, noting how each session gave these new supervising residents tools that could immediately be applied during their work on wards. Constructive feedback regarding topics to be included in future sessions were addressed.

DISCUSSION / REFLECTION / LESSONS LEARNED: Implanting a supervisor's curriculum during noon conference didactic time in July allowed more time to discuss topics pertinent to new supervising residents. These sessions have improved residents' perception of preparation for the transition to supervising resident. The rigor of second year scheduling may have limited participation by residents in July and moving the curriculum to the end of first year might be better suited for maximum impact.

SO YOU WANT TO START AN ASYLUM CLINIC AT YOUR MEDICAL SCHOOL? THE BROWN HUMAN RIGHTS ASYLUM CLINIC EXPERIENCE

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NEEDS AND OBJECTIVES:

Asylum seekers in the United States flee a range of physical and psychological trauma. Every year over 300,000 people from 150+ countries apply for asylum, yet the majority are unsuccessful. However, when asylum applications include a medical affidavit acceptance rates increase from 37.5% to 89%.

BHRAC aims to: Train medical and mental health professionals to conduct medical and psychological evaluations for asylum seekers; Develop a workflow to provide pro-bono affidavits to lawyers for clients seeking asylum; Offer medical students first-hand exposure to asylum medicine as scribes and affidavit-draft writers; Provide medical students with leadership, administrative, and advocacy experience; Work with local community organizations to expand evaluation services to victims of domestic violence, trafficking, and other crimes; Set up a REDCap database to track outcomes for research and evaluation.

SETTING AND PARTICIPANTS:

The Brown Human Rights Asylum Clinic (BHRAC) medical students work with over 100 medical and mental health professionals to create free evaluations and affidavits for clients seeking legal status in Rhode Island. BHRAC is part of an asylum clinic network through Physicians for Human Rights (PHR).

The Board comprises 11 medical students and one faculty advisor. Affidavit requests come from PHR, law offices, social service organizations, and free clinics. 82 practitioners and 27 students attended the 2019 annual training. Medical evaluations are conducted at a free clinic for undocumented patients, a domestic violence prevention agency, and the Wyatt Detention Center.

DESCRIPTION: Through BHRAC, medical students, lawyers, social service agencies, and health professionals work together to support clients seeking asylum. Students develop an appreciation for the social

determinants of health of asylum-seekers and the power of medico-legal partnerships. They gain mentorship and exposure to local human rights work. This innovative model can be adopted by medical schools across the U.S.

EVALUATION:

After asylum evaluations, evaluators debrief with scribes to discuss suggestions and ideas to improve the process and evaluators' approach. BHRAC students track case referral demographics and outcomes through REDCap.

DISCUSSION / REFLECTION / LESSONS LEARNED:

Challenges faced by BHRAC include: Asylum seekers are legal clients, requiring evaluators to maintain impartial relationships; Evaluators strive to obtain detailed and graphic accounts, which can be both difficult and therapeutic for clients; Evaluators and students can experience vicarious trauma from hearing client accounts, underscoring the importance of debriefing.

ONLINE RESOURCE URL (OPTIONAL): http://www.rimed.org/rimedicaljournal/2019/09/2019-09-17-global-health-zero.pdf

https://www.providencejournal.com/article/20140329/NEWS/303299994

STARTING THE CONVERSATION: ANALYZING RESPONSES TO A SINGLE QUESTION ENGAGING APPLICANTS IN DISCUSSIONS OF DIVERSITY ON INTERVIEW DAY

Devin Oller. Medicine, University of Kentucky, Lexington, KY. (Control ID #3388387)

NEEDS AND OBJECTIVES: Over the past decade, a growing number of applicants are considering geographic and institutional diversity when applying to residency programs (Dinh and Salas 2019). After analyzing its holistic review process, the University of Kentucky (UK) IM residency program implemented several changes to interview days to help foreground UK's commitment to training a diverse residency corps. A single question that invited applicants to share how they contribute to diversity at UK was introduced to the interview template to spur discussion about the unique experiences and attributes of the applicant.

SETTING AND PARTICIPANTS: Faculty interviewer notes and interview performance scores from IM faculty were reviewed for 189 Categorical and Primary Care resident applicants attending interview days at UK from 10/2019-01/2020.

DESCRIPTION: During one of two faculty interviews, applicants were asked to respond to the following prompt: "Our program is invested in having residents with diverse experiences and life stories. What perspective would you bring to our program?" Prior to their interviews, applicants were made aware that this question would be asked, with the prompt included in the program overview alongside information about diversity at UK and the program's mission statement. Following interviews, faculty were instructed to take notes on the applicant's response. These notes were reviewed with the goal of identifying the categories of experiences and attributes (using AAMC's E-A-M model) emphasized by applicants. Applicant performance scores were compared between the interviewer who asked the diversity prompt and the interviewer who did not.

EVALUATION: 173 of 189 applicants had notes recorded about their response to the diversity prompt. There was no significant difference in mean interview performance scores by interviewers who asked the diversity prompt compared to those who did not [11.22 vs 11.14 (out of 15), P=0.37]. The most common category of experiences or attributes cited by applicants was geography (21.3% of applicants), with family status and life experiences following closely. No applicants discussed sexual orientation, race, or gender identity.

DISCUSSION / REFLECTION / LESSONS LEARNED: Introducing a single prompt addressing diversity to interview templates resulted in discussions about a broad range of applicant attributes and experiences without a significant impact on interview performance scores. Geographic diversity and family status were emphasized by over 40% of applicants combined—with family financial difficulty and rural upbringing highlighted by many. While participants included individuals who commented on their sexual orientation and race in other sections of their applications, these attributes were not discussed by any applicant in response to the question prompt, pointing to the need for further study of both applicant-identified barriers to sharing these attributes and additional structural changes to our interview day that would aid a discussion of how best to ensure URM applicants' thrive at our institution.

STRENGTHENING THE PRIMARY CARE PIPELINE: LESSONS LEARNED FROM A PRE- HEALTH VOLUNTEER PROGRAM THAT ENGAGES STUDENTS IN AN URBAN, UNDERSERVED CLINIC

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NEEDS AND OBJECTIVES: There is a well-documented shortage of primary care providers in the United States, especially in underserved populations. At our adult primary care clinic in one of the nation's oldest public hospitals, we sought to (1) provide pre-health students with opportunities to connect with and learn from physician leaders and role models, and (2) integrate them into healthcare teams to transform the primary care clinic.

SETTING AND PARTICIPANTS: The primary care navigator program attracted students from New York City colleges. Volunteers (n=54/70 total volunteers in program to date) were predominantly female (62%); all were in college or graduate programs, 35% attend public colleges; 74% are non-white; 76% do not have a family member in medicine; 30% are first generation college students.

DESCRIPTION: We developed a student volunteer program in collaboration with many disciplines (physicians, nurses, MAs, clinic leadership). Volunteers help patients navigate the clinic, resupply patient education materials and respond to clinic needs. Students were invited to regular talks and workshops, including meeting with the chief of medicine, a Q&A on medical school admissions, and regular check-ins with program coordinators. We conducted surveys of current volunteers every 6-12 months to understand the impact of our program on the volunteers' career goals.

EVALUATION: When current 2019 students were surveyed (n=16) 80% said the program had made them "yes" or "maybe" more likely to pursue primary care, while all were "yes" or "maybe" more likely to pursue medicine.

DISCUSSION / REFLECTION / LESSONS LEARNED: We learned two key lessons. First, volunteer attendance and engagement increased when they were responsible to multiple team members. In this system, volunteers checked in routinely with a physician, administrator and research assistant. One volunteer expressed, "I was able to get a lot of patient interaction and see how healthcare is provided from different perspectives such as healthcare personnel and mainly the patients." Second, when we connected student volunteers to specific projects in the clinic (chronic disease initiatives, medical scribe pilot), they chose to work more shifts and stayed in the program longer. Most importantly, working in our primary care navigator program reinforced their desire to pursue careers in medicine, specifically primary care, "working as a PC navigator has made me see the beauty of primary care."

SUPPORTING THE DEVELOPMENT OF WHOLE PHYSICIANS THROUGH IMPLEMENTATION OF A LONGITUDINAL, SPIRAL, SKILLS-BASED WELL-BEING CURRICULUM IN ARCH WEEKS

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NEEDS AND OBJECTIVES: Medical students experience a high prevalence of burnout1, depression1, and anxiety2. Studies of structured curricula addressing these issues suggest that offering a variety of evidence- based skills training is more effective than mandating training in any one area.3 At the University of California, San Francisco (UCSF), School of Medicine, eight ARCH Weeks (Assessment, Reflection, Coaching, and Health) over four years provide dedicated curricular time for a well-being curriculum designed to meet the following objectives: 1) to generate awareness of the structural and individual factors that predispose medical students to burnout and other mental health challenges, and 2) to develop students' well- being skills that can be incorporated into everyday routines.

SETTING AND PARTICIPANTS: The UCSF Bridges Curriculum includes an 18-month foundational curriculum (F1) with the first four ARCH Weeks. During ARCH weeks, students reflect on their professional development, participate in assessments, explore career opportunities, and, as of 2019, engage in an integrated well-being curriculum. The class of 2023, which includes approximately 160 students, is the first class to participate in the longitudinal ARCH Week skills-based curriculum.

DESCRIPTION: During ARCH Week 1, students receive a foundational didactic on well-being trends and are encouraged to individually reflect on how they attend to their own well-being. Students then choose at least one mandatory well-being skill selective to explore during ARCH weeks 1 through 4 as a foundational self-care practice. Led by local experts, examples of skills trainings offered for exploration include mindfulness, mind-body medicine, outdoor exercise, and reflective writing.

EVALUATION: Outcomes are assessed via student surveys measuring burnout and resilience, evaluations of skill selectives, de-identified individual well-being SMART (Specific, Measurable, Action-Oriented, Realistic, Time-bound) goals, and responses from student focus groups. Initial evaluations from ARCH Week 1 show high ratings for skills selectives (3.55 out of 5, 5=rated highest quality). 28% of students who voluntarily took the Maslach Burnout Inventory showed burnout in at least one domain. Assessment of SMART goals showed 54% of students created a time-bound wellness-related SMART goal after engaging with the wellness curriculum.

DISCUSSION / REFLECTION / LESSONS LEARNED: The well-being curriculum within ARCH Weeks is a novel approach to introducing and incorporating wellness training in medical school. Students showed significant engagement with, and uptake of, this curriculum. Providing protected curricular time to develop well-being skills is critical to the curriculum's success and communicates that the administration values arming students with healthy habits of mind. This well-being curriculum can impact students' intentional engagement with their wellness and the activities that promote it.

REFERENCES:

1. Dyrbye LN. *Academic Medicine*. 2014.
2. Mousa OY. *PLoS One*. 2016.
3. Dyrbye LN. JGIM. 2017.

TAKING TRANSITIONS OF CARE HOME: AN INNOVATIVE HOME VISIT CURRICULUM FOR MEDICAL STUDENTS CARING FOR SUPER-UTILIZER PATIENTS IN A SAFETY-NET SYSTEM

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NEEDS AND OBJECTIVES: Improving transitions of care (TOC) is a critical objective with increasing demands to improve quality of care as patients transition from inpatient settings to outpatient settings. Despite this, relatively few medical schools and residencies have formal curricula on TOC. We aimed to develop an innovative longitudinal curriculum in TOC, including home visits, for students enrolled in a Longitudinal Integrated Clerkship (LIC) at a large urban safety-net institution.

A local needs assessment consisted of a survey of 91 faculty as well as a survey of LIC students who participated in the program prior to the development of this curriculum to assess gaps and inform desired outcomes.

The goal of the curriculum is to improve the knowledge, skills, and attitudes of students in transitions of care. The multi-modal curriculum includes small group didactics and discussion, participation in one non-medical home visit accompanied by a primary care provider and a reflective writing assignment.

SETTING AND PARTICIPANTS: Pre-curriculum surveys were collected from prior cohorts of LIC students as well as the intervention group prior to their start of the TOC curriculum. Students received an introduction to TOC including an inter-professional panel discussion with a social worker, care navigator and pharmD. The session was followed by a TOC workshop where students practiced written communication to PCPs on hospital discharge. All students completed a non-medical home visit and reflected on this experience through writing and small group discussion.

DESCRIPTION: Students are encouraged to complete a home visit for a patient they cared for in both outpatient and inpatient settings. 9 out of 10 of students visited a patient they cared for in primary care in the first year of the program. Students reflect on the home environment including access to food, as well as neighborhood resources and challenges after completing the visit. The majority of patients were cared for in Denver Health's hospital super-utilizer clinic (Intensive Outpatient Clinic – IOC) providing ample opportunity for students to participate in various transitions.

EVALUATION: The curriculum was highly rated. In the pilot year, students demonstrated increased confidence in communicating with primary care physicians on hospital discharge for issues requiring follow- up. 90% of students agree or strongly agree that the home visits increased their awareness of the impact of the home environment on the patient's health.

DISCUSSION / REFLECTION / LESSONS LEARNED: Transitions of care curricula are well suited to longitudinal integrated clerkships where students are expected to follow patient care longitudinally. The partnership with the IOC has been critical to the program's success in helping students connect to patients agreeable to home visits. Faculty participation with the students on home visits poses logistical barriers.

TEACHING EMPATHY WITH ALL WE GOT

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NEEDS AND OBJECTIVES: The aim of this intervention was to assess if a low cost intervention in the form of a modified large group 4 hour workshop for MS4 students transitioning into various residencies would result in improved communication skills.

SETTING AND PARTICIPANTS: A 4 hour workshop was offered to 38 medical students in their 4th year at Wayne State University School of Medicine.

DESCRIPTION: Due to limitations of time and resources all 38 students had to be accommodated in a single 4 hour session based on the Vital Talk™ format facilitated by trained faculty. The workshop consisted of a brief didactic followed by an encounter with a simulated patient. Since such sessions are generally held in smaller setting, a group of 7 students was brought forward twice and the rest remained part of the larger audience. Approximately 4 learners from each of the small groups were able to participate in a simulated patient encounter addressing goals of care. Questions and feedback were welcome from the entire group as part of the learning experience. Pre and Post surveys were obtained

EVALUATION: 20 (52%) of the participants were male.5((13%) had a prior rotation in palliative medicine.

89% Agreed/Strongly Agreed that they would recommend a Vital Talk™ Communication Skills course to a colleague, 97% Agreed/ Strongly Agreed that the faculty created an atmosphere where they could learn from their peers, 100% Agreed/Strongly Agreed that the course taught skills useful in residency. Competencies were assessed on a Likert scale (1 to 5) in the domains of preparedness to deliver bad news, negotiate an agenda, respond to emotion, discuss goals of care and deliver a plan of care that includes hospice. Pre and Post means were compared all of which showed significant improvement in the post-test assessment ($p<0.05$)

DISCUSSION / REFLECTION / LESSONS LEARNED: Our low-cost intervention demonstrated that learning from peers and faculty can occur in larger groups in the setting of a structured approach and effective format. While we strive to achieve an ideal learning environment with small groups and experiential learning, smaller efforts to incorporate communication skills training may also have meaningful impact for our learners and must be pursued

TEACHING MEDICAL STUDENTS THE SOCIAL DETERMINANTS OF HEALTH THROUGH SERVICE-LEARNING

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NEEDS AND OBJECTIVES: Service-learning in medical education is a promising modality to teach medical students the necessary skills to recognize how patients' social contexts influence their lives, their health, and affects their choices. At the Warren Alpert Medical School of Brown University (AMS), we aimed to: 1) implement a longitudinal, two-year, mandatory service-learning component within AMS's Doctoring (clinical skills) Program, 2) develop students' knowledge, attitudes, and skills to identify and to address the social determinants of health, and 3) establish best practices for required service-learning activities that respond to both institutional and community needs.

SETTING AND PARTICIPANTS: All first- and second-year Doctoring students are required to participate in service-learning in a community-based organization that offers resources to underserved patients or clients.

External partners include community residents, community-based organizations, and state agencies. Ten community sites collaborate in the program, in addition to those that are involved in pre-clerkship electives and sites that students identify on their own.

DESCRIPTION: All first- and second-year Doctoring students complete a minimum of four hours of service-learning at a community site each year. We used the LCME's definition of service-learning to develop the program, which includes medical students' 1) service to the community in activities that respond to community-identified concerns; 2) preparation; and 3) reflection. To prepare students for service-learning, AMS hosts orientation sessions led by community experts from organizations partnering in the initiative. Following completion of the activity, students write a reflective field note on key insights that they gained about their role as future medical professionals in teamwork, leadership, and community partnership and engagement.

EVALUATION: Data from course evaluations show that 87% of second-year Doctoring students ($n = 131$) rated service-learning as "good" or better on a 5-point Likert scale, with 19% rating it as "outstanding" ($M = 3.56$, $SD = 0.98$). We are in the process of creating a toolkit consisting of key components for developing a service-learning program, lessons learned from implementation, and characteristics of community-based organizations to consider when selecting sites that other medical schools can use to develop, implement, and evaluate their own service-learning programs.

DISCUSSION / REFLECTION / LESSONS LEARNED: A clinical skills program provides a natural entry point and the curricular structure for service learning. The option to participate in a longitudinal service-learning project allows for deeper student engagement at community sites and a pipeline of students to help advance the work. Results from our pilot project and current program have shown that interacting with community members in locations where they are receiving services, i.e. "on their own turf," encourages students' flexibility, nimbleness, and perspective-taking that students would not otherwise experience in the classroom.

TEACHING PANEL MANAGEMENT AND QUALITY IMPROVEMENT IN THE CLINIC

Amanda Cox, Tammy Ellies, Katie Grzyb. Internal Medicine, University of Michigan, Brighton, MI. (Control ID #3392713)

NEEDS AND OBJECTIVES: Participation in panel management and quality improvement (QI) activities is a requirement of internal medicine residency programs. Due to emphasis on inpatient work, residents have limited opportunities to engage in population health initiatives in the ambulatory setting. Lack of faculty with QI expertise limits the capacity of training programs to provide guidance for projects in the resident clinic setting.

SETTING AND PARTICIPANTS: A curricular intervention was developed to increase resident engagement in panel management and QI activities within their continuity clinics while providing faculty guidance. The setting was a university based internal medicine residency program with 131 residents, with continuity clinics across 6 sites (VA, University Hospital, and 4 academic ambulatory clinic sites), and 50 teaching faculty.

DESCRIPTION: A video module with narrated slide deck was developed covering panel management and the A3 problem solving method. This was viewed by residents and faculty during dedicated clinic teaching time. Residents were asked to set a goal for improving a performance measure in their panel of patients. A facilitator's guide was provided, including a partly pre-filled A3 worksheet for the measure. Using the Kirkpatrick framework for learner outcomes, initial program evaluation occurred with a post-module survey focused on Level 1 (satisfaction) and Level 2 (knowledge and skills acquisition) outcomes. During a later

continuity clinic teaching session, the residents again reviewed their patient panels and quality data. A follow-up survey was used to obtain longitudinal feedback on the program.

EVALUATION: The post-module survey was completed by 29 residents and 8 faculty. Regarding knowledge and skills, 17/23 (74%) residents and 6/8 (75%) faculty agreed the module helped them understand how scientificproblem solving methods can be applied in the clinic. Further, 24/29 (83%) residents reported the module helped them understand the components of panel management. Additionally, 27/29 (93%) residents reported reviewing their own panel data during the module, and 21/27 (78%) residents set a goal to improve the selected measure. Regarding satisfaction, 25/27 (94%) residents and 7/7 (100%) faculty rated the module complexity as “about right". In the follow-up survey 38/48 (79%) residents agreed the session was a valuable part of their training, and 30/54 (55%) received updated panel data, though only 14/53 (26%) could identify a practice change that was implemented. Comments were positive in general about the content, but indicated that more time for it would be helpful.

DISCUSSION / REFLECTION / LESSONS LEARNED: A video module with narrated slide deck and facilitator’s guide was an acceptable method to introduce internal medicine residents and faculty to panel management concepts and A3 problem solving methodology. The format supported faculty in providing the material. Future similar curricula could improve resident engagement in panel management and QI activities, and increase faculty expertise in teaching these concepts.

TEACHING SOCIAL DETERMINANTS IN THE REAL WORLD: A NOVEL RESIDENT ROTATION

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NEEDS AND OBJECTIVES: Faculty observed that internal medicine residents at the University of Virginia (UVA) had limited experience with vulnerable or disadvantaged populations outside of traditional hospital and clinic settings. Residents desired a more practical anchoring of teaching of health disparities; additionally, program leadership was interested in creative ways to address burnout by increasing meaningful experiences in training for residents. We designed a novel rotation to build resident confidence and skills in advocacy and care for vulnerable populations with reflection and service time interwoven with clinical experiences.

SETTING AND PARTICIPANTS: Participants are PGY3 internal medicine residents at UVA. Clinical settings include community-based organizations (local free clinic, a resident-developed outreach clinic at a homeless day shelter, two sites affiliated with a federally funded rural community health center, a telemedicine clinic to geographically isolated Appalachian coalminers, a Ryan White HIV clinic, a local addiction clinic, and home visits with a resident’s own primary care patients.

DESCRIPTION: Prior to the rotation's diverse clinical experiences, residents undergo a newly expanded longitudinal curriculum including small group seminars on advocacy, health disparities, social determinants of health, racism and implicit bias. Non-clinical experiences on the rotation include: 1) discussion of literary works (fiction, poetry and essays related to poverty and health) led by UVa faculty; 2) debriefing participants’ own implicit bias; 3) time with a local attorney in a district courtroom where patients with unpaid hospital bills are prosecuted by the hospital or face evictions; 4) protected time for community service, cooking food at a homeless day shelter and/or working at a low income home construction site.

EVALUATION: Residents are surveyed on the program’s impact on their confidence recognizing and addressing barriers to health and healthcare delivery in vulnerable populations/communities. Residents also share in text or photo format a description of a meaningful experience on the rotation. Residents also undergo annual burnout survey and anonymous rotation evaluations.

DISCUSSION / REFLECTION / LESSONS LEARNED: This novel rotation has been well-received. Partnering with organizations outside of the academic setting has been invaluable to residents. Caring for our most vulnerable populations and seeing their needs upclose has allowed residents to better understand the barriers to health these patients face and to deepen knowledge of healthcare systems and advocacy. Community organizations have expressed positive feedback as well. Ensuring regular resident attendance and minimizing absences has been crucial to success with these partners. We believe a continuous presence as opposed to a volunteer-based elective is vital to these patients and community partners. Additionally, we feel this rotation provides unique educational value across ACGME competencies that can be otherwise difficult to teach in a holistic, real-world way.

THE BEST OF BOTH WORLDS: A MODIFIED PROBLEM-BASED LEARNING CURRICULUM TO IMPROVE RESIDENCY EDUCATION, INCREASE KNOWLEDGE RETENTION, FACILITATE COLLABORATION, AND GUIDE CLINICAL REASONING SKILLS

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NEEDS AND OBJECTIVES: Adult learners require different teaching modalities not regularly employed in residency programs. Large programs rely heavily on large group didactics that have proven to have low retention rates. Problem-based learning (PBL) is a learner-centered approach where learners work in groups to solve a problem using an active and iterative process in which knowledge gaps are identified by the learners. While this concept is regularly used in undergraduate medical education, it is not regularly used in residency programs as a longitudinal curriculum. Our objective was to create a residency curriculum using adult learning theory that engages learners and allows for better knowledge retention while allowing for expert opinion in order to shape reasoning patterns.

SETTING AND PARTICIPANTS: Sessions take place at a large academic medical center that hosts over 180 internal medicine residents. All second and third year residents take part in the longitudinal mPBL curriculum that occur during an academic half day within protected learning time during their longitudinal clinic week using a 4+1 block scheduling model.

DESCRIPTION: In the Modified PBL structure, the focus lies on forming self-directed learning and discussion of discrete learning objectives (LOs) derived from a 2 year loop of complex clinical cases in the presence of an expert used to guide and provide appropriate feedback on clinical reasoning and diagnostic schema. Our mPBL consists of two sessions that allow learners to become familiarized with the cases and set discrete learning objectives within small groups. The second session the following day revolves around discussion of LOs with active facilitation to ensure case based learning with input from specialists. The learning is led by residents, while faculty facilitation is centered on more concrete understanding of medical concepts as well as correct interpretation of information, literature, and forming diagnostic schema. The small group discussions allow learners to make the transition from knowledge

gathering to analysis, application and practical utility of knowledge with the ultimate goal of having the learner apply the assimilated knowledge into clinical practice.

EVALUATION: Twenty-nine surveys were collected from second year residents indicating that >75% of participants "agreed" or "strongly agreed" that PBL had supplemented their education. Residents overwhelmingly enjoyed the content expert and the interactive case-based learning. Comments indicated that knowledge retention increased and that residents were made aware of knowledge gaps during discussion with their peers.

DISCUSSION / REFLECTION / LESSONS LEARNED: Based on survey data, we modified cases to incorporate complex differentials allowing for broad learning objectives with expert opinion weigh-in to apply important clinical reasoning framework concepts that can be used in a larger subset of cases.

THE CLINICAL PROBLEM SOLVERS – A DIAGNOSTIC REASONING VENTURE

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NEEDS AND OBJECTIVES: Diagnostic reasoning is at the core of practicing medicine, however this complex process is rarely modeled as deliberate teachable habits. It most often is a passive byproduct of clinical experience. The Institute of Medicine's *Improving Diagnosis in Health Care* report, identified the lack of focus on developing clinical reasoning as a "major gap in education within all health care professions," which can contribute to diagnostic error.

A systematic review (PMID 23619071) concluded that interventions using social media tools were associated with improved knowledge, attitudes, and skills. They identified podcasts along with Twitter and blogs as social media platforms used to engage learners.

The gap identified in clinical reasoning education and the far-reaching power of social media inspired us to create *The Clinical Problem Solvers (CPSolvers) - an internal medicine venture* dedicated to improving diagnosis through a case-based, iterative process. Our aim is to analyze, teach, and democratize the art and science of diagnostic reasoning.

SETTING AND PARTICIPANTS: The *CPSolvers* is a multimodal venture featuring a weekly podcast, email summaries, tweetorials and blog posts that can be accessed by anyone for free.

DESCRIPTION: The podcast has four types of episodes: 1) Schema based in which the focus is teaching a systematic approach to commonly encountered problems through patient cases, 2) An unknown format where a blinded expert discussant is presented a case wherein she shares her clinical reasoning extemporaneously, 3) Trainee-led reasoning series, in collaboration with the *Human Diagnosis* project, where trainees paired with a mentor share their clinical reasoning while solving a Global Morning Report case and 4) Spaced learning series where previously covered schema are reviewed in the context of a new case. In addition, our website has downloadable versions of discussed schemas in PDF format with video explanations for the majority of the schemas. Furthermore, through our summary emails, tweetorials, and blog posts we further expand on some of the learning points raised in these episodes.

EVALUATION: Since the launch of *CPSolvers* in December 2018 we have produced 15 schema based, 22 unknown, 21 trainee-led reasoning, and 2 spaced learning episodes. We have created 11 tweetorials and 6 blog posts.

DISCUSSION / REFLECTION / LESSONS LEARNED: *CPSolvers* on average attracts 12,000 listeners per episode in 143 countries. Our website has >300,000 visits to date. We have ~1300 e-mail subscribers and ~10,700 twitter followers. Furthermore, our products have been used as curriculum at multiple institutions worldwide. Our trainee-led reasoning episodes have featured trainees from 12 different programs.

ONLINE RESOURCE URL (OPTIONAL): https://clinicalproblemsolving.com/

THE CLINIC AND THE COURTROOM: A MEDICAL-LEGAL INTERPROFESSIONAL EDUCATION PROGRAM

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NEEDS AND OBJECTIVES: Undergraduate interprofessional education (IPE) helps medical students develop collaborative skills and improve attitudes towards team-based care. IPE initiatives partnering medical and law students have been primarily classroom based and included medical ethics and social determinants of health (SDH). We sought to build a medical-legal IPE program beyond the classroom that embeds students in a primary practice site for both professions: the clinic and the courtroom.

SETTING AND PARTICIPANTS: Medical and law school faculty planned the IPE program alongside students. A two-pronged approach included a mock trial competition and a medical-legal partnership (MLP) in the student-run clinic. The student-run clinic serves an uninsured, largely undocumented urban population. The mock trial competition partnered medical and law students to discuss and debate a medical-legal case, written in the context of current social and ethical issues. Law students from ten schools served as trial lawyers and for the first time, fourth-year medical students from one medical school served as expert witnesses.

DESCRIPTION: Teams of law and medical students and a law coach prepared arguments together. The competition was held in a county courthouse, with a judge presiding and faculty serving as the jury. Medical students participated in expert witness training focused on the basics of a civil case. To avoid professional blame, the trial focused on medication side effects rather than malpractice.

Students screened patients at the student-run clinic for social needs using a validated tool. This allowed a targeted appropriation of legal resources according to patient needs and preferences. To minimize use of legal resources, a HIPAA-compliant Zoom tool was used for initial meetings between lawyers and patients.

EVALUATION: Fifteen fourth year medical students and 39 law students from 10 different law schools participated in the mock trial. A post-trial survey of the participants had a response rate of 57% (51% among law students, 73% among medical students). 83% of respondents reported a positive change in attitudes toward working with students from the other profession. 96% reported the experience would make them more comfortable in interprofessional interactions in future practice.

Twenty screenings were completed during 2019. Among these, 11 patients reported difficulty affording medical services, 8 reported difficulty affording medications, 4 reported employment/workplace issues, 1 reported trouble paying utility bills, and 1 requested help with housing or immigration.

DISCUSSION / REFLECTION / LESSONS LEARNED: Through support from administration, faculty, and students, we designed a two-pronged practice-based medical-legal IPE. Lessons learned include the need for time for collaborative work between students to clarify roles and debunk myths, importance of support from administration, using topics other than medical malpractice, use of evidence-based social needs screening tools, and importance of patient needs and preferences in designing the legal partnership.

THE DEVELOPMENT OF A TRAINING COURSE FOR HOME CARE WORKERS CARING FOR ADULTS WITH HEART FAILURE

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NEEDS AND OBJECTIVES: Home care workers (HCWs) are increasingly providing post-acute and long- term care to adults with heart failure (HF). Although highly involved in HF patients' self-care, our prior qualitative studies have found that many HCWs lack HF training and do not feel confident caring for HF patients. We aimed to elicit HCWs' educational needs on HF, and based on these findings, design a HF-specific training course for HCWs.

SETTING AND PARTICIPANTS: This study was conducted in partnership with the Home Care Industry Education Fund, an education focused benefit fund of the 1199 Service Employees International Union United Healthcare Workers East, the largest healthcare union in the United States. We recruited 41 English and Spanish speaking HCWs to participate in structured group discussions using a nominal group technique.

DESCRIPTION: To be eligible, HCWs had to have cared for at least one HF patient and have at least one year of experience on the job. In moderated small groups, participants were asked to generate a list of responses to 3 questions: When caring for a HF patient*: (1) What information do you want to understand? (2) What symptoms worry you most?* (3) *What situations do you often struggle with?* With lists generated for each prompt, participants ranked the responses in order of priority using a point system. Data were then consolidated by question.

In response to the first question, participants ranked HF signs and symptoms most highly, followed by HF treatment and HF medications. For question 2, chest pain was most worrisome, followed by neurologic changes. For question 3, participants struggled with encouraging their patients to follow lifestyle recommendations and the care plan.

Informed by these results, an interprofessional team developed a HF training course for HCWs. Based on feedback from HCWs themselves and Education Fund Staff, a 3-hour course was designed. The course covered the topics they wanted to learn about (HF signs and symptoms, managing symptom escalations and emergencies) through case-based learning and role-playing scenarios. Motivational interviewing techniques were taught so HCWs could use this approach to counsel on diet and exercise.

EVALUATION: HCWs' HF knowledge, contribution to HF self-care, and caregiving confidence will be assessed before and after the training course using a survey comprised of validated instrument.

DISCUSSION / REFLECTION / LESSONS LEARNED: HCWs wanted formal training on the signs and symptoms of HF and ways to assist patients with HF self-care. From these findings, and with feedback from our community partner, we designed a novel HF training program for HCWs. This course, which will be piloted and evaluated, has the potential to improve HCWs knowledge and self-efficacy and eventually impact patient care.

THE IDEAL OUTPATIENT PRECEPTOR: RESIDENTS' EXPERIENTIAL PERSPECTIVES

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NEEDS AND OBJECTIVES: Many residents will become outpatient preceptors (OPs) after residency. While inpatient medicine has an intrinsic system of graded responsibility (intern to senior resident), a system does not exist in outpatient medicine. Resident education is more oriented towards inpatient rather than outpatient training (Sisson et al., 2007). Few residents thus receive formal education to become OPs.

Resident input would be critical in the creation of such a curriculum. There are many studies in the literature regarding residents' preferences for OPs (Kisiel et al., 2010 & Peccoralo et al., 2013). However, there are no reports from an "experiential" perspective from after they have taken the role of OP. This study seeks to fill this gap.

SETTING AND PARTICIPANTS: The study population was 26 internal medicine 3rd-year residents participating in a teaching elective. These residents spent time as OPs for other residents with attending oversight. The settings were outpatient primary care clinics at a major academic medical center, Veterans Affairs hospital, and county hospital.

DESCRIPTION: Qualitative surveys were administered to residents before and after their experience as OPs. These included questions about preferred OP attributes, barriers to learning, and tailoring precepting based on learner level. Pre- and post-surveys were anonymized but remained linked.

EVALUATION: After data were collected, a codebook was created using concepts from the literature and open coding of a subset of surveys. Next, a preliminary analysis was performed for emerging themes and associations. The codebook was revised, and all interviews were re-coded. Checks from the senior researcher were used to ensure consistency. Memos and concept maps were created from code reports.

DISCUSSION / REFLECTION / LESSONS LEARNED: In the pre-survey, residents appreciated several OP qualities: adaptability, giving discrete learning points, systems knowledge, strong medical knowledge, empathy/ support, and time cognizance. Time was felt the biggest barrier for learning. In the post-survey, residents also identified time cognizance and adaptability as important attributes. Finally, residents strongly desired a framework for learning outpatient precepting, focused on delivering timely/effective feedback and asking focused/clarifying questions of trainees.

Residents' preferred attributes of OPs were consistent with those described elsewhere in the literature (Kisiel et al., 2010 & Peccoralo et al., 2013). These attributes remained consistent after their outpatient precepting experience. Residents also wished for a specific framework to become better OPs. This study demonstrated that residents desire additional training in outpatient precepting including giving feedback and asking questions.

THE SELF- REPORTED EFFICACY OF A CADAVER-BASED PROCEDURAL SKILLS LAB FOR INTERNAL MEDICINE RESIDENTS

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NEEDS AND OBJECTIVES: The purpose of this study is to analyze the efficacy of using cadavers in procedural-based skills sessions in internal medicine residency programs by comparing pre- and post-session self-reported confidence with performing various procedures.

SETTING AND PARTICIPANTS: This study was conducted at UAB Hospital with 29 participants, all of whom are part of the UAB Tinsley Harrison Internal Medicine residency program, ranging between their PGY1-PGY3 years. Cadavers were obtained through UAB Anatomical Donor Program. This study analyzes data collected from surveys sent both pre-, immediately post-, and 4 to 6-week post-procedural skills session to analyze resident comfort levels with performing landmark-based and ultrasound-guided arthrocentesis of various joints.

DESCRIPTION: Cadaver-based simulation has been used in many surgical and subspecialty fields to teach procedural skills. However, there is a lack of current data supporting or analyzing the use of such skills sessions for internal medicine residents. We developed a cadaver-based simulation curriculum to enhance internal medicine residents' comfort with arthrocentesis.

EVALUATION: On each survey, participants were asked to rate comfort level on a likert scale of 1-5 (1 representing zero comfort, and 5 representing expert/total comfort) with obtaining ultrasounds for the glenohumeral and patellofemoral joints as well as performing glenohumeral arthrocentesis via posterior and lateral landmark approaches, and patellofemoral arthrocentesis via suprapatellar and infrapatellar landmark approaches.

DISCUSSION / REFLECTION / LESSONS LEARNED: The average number of arthrocentesis performed prior to the skills session across PGY levels was 1.63. On average, participants had a comfort level of 1.74 across all of the aforementioned procedures prior to the skills session, which indicated a comfort level between 1 (zero comfort) and 2 (comfort with maximum supervision). Following the skills session, participants reported an average comfort level of 2.94, indicating a comfort level between 2 and 3 (comfort with moderate assistance). With 4-6 week follow up, participants reported an average comfort level of 2.96. Overall confidence level increased by 70.11% from before the skills camp to the 4-6 week out point. Prior to the skills session, 60.87% of participants averaged a comfort level between 1 and less than 2, with 36.96% between 2 and 3, 2.17% between 3 and 4, and 0% averaging a score between 4 and 5. Following the skills session, only 5.56% of participants reported a comfort level between 1 and less than 2, 38.89% with a comfort level between 2 and 3, 55.56% with a score between 3 and 4, and 0% between 4 and 5. After 4-6 weeks following the session, comfort levels remained higher than pre-skills session quantities, with the majority of participants reporting a comfort level between 2 and 4. Thus, by comparing the pre- and post- skills session surveys, it can be concluded that the cadaver-based procedural skills sessions increase resident comfort level with performing these procedures.

THE VIRTUAL OSCE: PREPARING TRAINEES TO USE TELEMEDICINE AS A TOOL FOR TRANSITIONS OF CARE

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NEEDS AND OBJECTIVES: The transition of care between inpatient and outpatient settings represents a particularly vulnerable time for patients. Telemedicine has the potential to help bridge this transition by offering real-time post-discharge surveillance, virtual medicine reconciliation, and coordination of multidisciplinary care. Formal telemedicine curricula do not yet exist in graduate medical education training programs, however will be an essential component of training in the near future. We sought to introduce trainees to a realistic application of telemedicine and to assess what telemedicine-specific learning needs exist in our training program.

SETTING AND PARTICIPANTS: Seventy-eight resident physicians from the NYU Internal Medicine Categorical, Primary Care, and Brooklyn Community Health tracks participated in this case as part of a multi-station observed structured clinical examination (OSCE).

DESCRIPTION: We modeled the case after a remote, synchronous visit between a resident and highly trained standardized patient (SP). The SP was recently hospitalized for decompensated cirrhosis during which diuretics were adjusted and new discharge medications were prescribed. Following discharge the SP began to experience subtle signs of fluid reaccumulation and scheduled a post-discharge video visit. Residents were tasked with taking a history, gathering objective data including a virtual physical exam and making a triage and management plan during a 10 minute scenario.

EVALUATION: We developed a behaviorally-anchored assessment tool that evaluated not only core communication and management skills but also unique telemedicine skills including items reflecting proficiency with the audio/video interface, remote patient identification, virtual physical exam maneuvers, and non-verbal communication. Response options comprised 'not done,' 'partly done,' and 'well done.'

DISCUSSION / REFLECTION / LESSONS LEARNED: Residents performed well in core communication domains: when analyzed in the aggregate, residents received 'well done' evaluations in 95% of assessment items within the Information Gathering domain; 91% of items within Relationship Development; and 78% of items within Education and Counseling. There were only two total assessment items (<1%) evaluated as 'not done' within these domains.

However, residents struggled with telemedicine-specific items. Residents received 'well done' evaluations in only 45% of items within the Telemedicine Skills domain. Specifically, fewer than 25% (n=19) of residents assessed technical barriers during the video visit, and only 18% (n= 14) attempted a virtual physical exam. Only 16% of residents (n=13) received 'well done' evaluations for using video to augment information gathering – a key item that included virtual medicine reconciliation and discussing care plans with onsite collateral. These findings were consistent when data were stratified by training track and training year – there were no significant associations between telemedicine skill evaluation and training track (p=0.57) or post- graduate training year (p=0.91).

TIME TO TAKE ACTION: EMPOWERING TRAINEES THROUGH EDUCATION ABOUT SEXUAL HARASSMENT

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NEEDS AND OBJECTIVES: Sexual harassment is prevalent in academic medicine, but resident education in how to recognize and act upon incidents of sexual harassment is lacking. The objectives for this innovation were to ensure that residents would be able to (1) define sexual harassment, (2) identify examples of sexual harassment, (3) report an incident of sexual harassment, and (4) engage in bystander interventions.

SETTING AND PARTICIPANTS: The audience included PGY-1, 2, and 3 residents in a university- affiliated community Internal Medicine residency program.

DESCRIPTION: The authors developed a 90-minute workshop for Internal Medicine residents aimed at increasing their understanding of sexual harassment and empowering them to act when they experience or witness harassment. The workshop leaders presented four case scenarios illustrating sexual harassment. The case scenarios were written by the

workshop leaders and were based on actual events with names redacted. Each case was followed by a series of discussion questions, which the residents discussed in a large group format.

EVALUATION: Workshop participants were anonymously surveyed before and after the workshop and asked to rate their own ability to perform each of the objectives. Thirty-two out of thirty-eight (84%) residents participated in the survey evaluation. The percentage of respondents who rated their ability as "excellent" increased for all four learning objectives: ability to define sexual harassment increased from 13% before the workshop to 50% after the workshop; ability to identify examples of sexual harassment increased from 19% to 56%; ability to report an incident of sexual harassment increased from 9% to 31%; and ability to engage in bystander intervention increased from 9% before the workshop to 41% afterward. The median score increased by exactly 1 Likert point and was a statistically significant increase at the <.001 or .001 level for all 4 items.

DISCUSSION / REFLECTION / LESSONS LEARNED: Internal Medicine residents who participated in the 90-minute workshop reported an increase in their ability to define and identify examples of sexual harassment. They also rated their ability to report sexual harassment and engage in bystander intervention higher than they did before the workshop. However, more intervention is needed to empower trainees to take action and engage them in actively promoting a culture of zero tolerance for this behavior.

TRAINING TO CURE – IMPLEMENTING A NOVEL HEPATITIS C CLINIC CURRICULUM IN PRIMARY CARE RESIDENCY TRAINING

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NEEDS AND OBJECTIVES: With chronic hepatitis C virus (HCV) infection affecting approximately 2.4 million people in America, a shortage of treatment expertise and referral resources contribute to the challenges of eliminating HCV as a public health threat. Since the introduction of direct antiviral agents, general practitioners are now positioned to help alleviate the treatment bottleneck for patients with HCV. However, internal medicine residents currently have limited exposure to HCV management during training. The Yale Primary Care Hepatitis C (YPC HCV) clinic curriculum was developed to provide internal medicine residents with the training to appropriately treat and provide access to care to patients with chronic HCV infection.

SETTING AND PARTICIPANTS: The YPC HCV clinic is housed in the Adult Primary Care Center at Yale, a resident and faculty-staffed patient-centered medical home within an urban, academic medical center. Learners are residents in the Yale Primary Care/Medicine-Pediatrics residency programs.

DESCRIPTION: Launched in 2015, the YPC HCV clinic is interdisciplinary and staffed by a general internist, an infectious disease-certified attending physician, 2 to 3 residents, a social worker, and a pharmacist. Patients with chronic HCV with or without compensated cirrhosis are seen on a referral basis.

Residents spend 2 half-days during a month-long ambulatory block in the HCV clinic. Prior to clinic, residents review the *YPC HCV Clinic Primer* for a comprehensive summary of screening, evaluation, and management points based upon national guidelines, and also attend interactive pre-clinic didactic sessions which highlight the assessment and treatment of patients with HCV. Supervised patient care includes gathering HCV infection history and risk factors, evaluating for presence of liver fibrosis, initiating direct antiviral agents, drug safety monitoring, as well as patient counseling and education regarding chronic liver disease.

EVALUATION: Between 2015-2017, 34 residents rotated through the clinic. Residents completed pre-clinic (n=34), immediate post-clinic (n=22), and 3-month post-clinic (n=23) surveys regarding their knowledge and confidence in HCV management. Knowledge scores improved from 58% pre-clinic to 76% immediately post-clinic (p<0.001), and remained higher than baseline at 66% 3 months later (p=0.006). More residents felt confident managing HCV immediately post- and 3-months post-clinic compared to baseline. Preliminary patient data show that since launch of the clinic, 53 patients were started on therapy: 33 have been cured, 1 had treatment failure, and 19 are on therapy or awaiting confirmation of cure.

DISCUSSION / REFLECTION / LESSONS LEARNED: An internal medicine residency program, primary care-based HCV clinic experience is feasible. Our curriculum results in residents with increased knowledge and confidence regarding HCV management, and a high cure rate (97%) in patients started on therapy. Our curriculum could be adopted at other institutions to grow the pipeline of internists trained to cure HCV.

ONLINE RESOURCE URL (OPTIONAL): http://tiny.cc/ypcHCVclinic

USING COMICS TO HELP MEDICAL STUDENTS SHARE EXPERIENCES ON THEIR SURGERY ROTATION

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NEEDS AND OBJECTIVES: Medical students encounter considerable stress on their clerkships. The surgical clerkship has classically been a very difficult environment for medical students. To counter stressors in medical education, reflection can be helpful. Comics, a form of reflective writing has been used at the Medical College of Wisconsin to help students and residents reflect on stress in other courses. The surgical clerkship director requested the use of reflective cartooning within the clerkship due to dissatisfaction of the students with the course. The objectives of the cartooning session was to 1. Provide a safe space to allow students to express some of their experiences on their surgery rotation, and 2. Provide time for students to reflect on experiences they have had on the surgery rotation either individually through depiction in their comic or together through the sharing of comics with the class.

SETTING AND PARTICIPANTS: There were 164 third year medical students who took part in cartooning sessions in the surgical clerkship from February of 2019 through October of 2019.

DESCRIPTION:

The surgical clerkship offered a 1-hour session on reflective cartooning after the first month of the two-month rotation. The sessions started with a comic jam as a warm-up activity. participants would start with a simple shape on their paper then transform it into a character in a medical scene. The comic was then passed to their neighbor to draw the next scene of the comic. Students then had an opportunity to share their comic with the rest of the class. Following this activity participants got a brief explanation about comics. Students then had 20-30 minutes to draw comics. They were prompted to draw a comic about a positive and a negative experience on their surgical rotation. The last 10 minutes of the class students were allowed to share their comic creations. Templates were provided for those who did not want to draw their own.

EVALUATION: After the session participants received a link for an online survey. There was completion of the post survey by 91 (55%) participants. 26(29%) reported being highly stressed and 53 (59%) reported being stressed on the surgery clerkship. 72 (80%) reported decreased levels of stress after completing the cartooning session. 79 (88%) reported that is helped them reflect on the situations they depicted. 16 (18%) of participants drew a comic about a negative experience they had not shared before. 43 (49%) and 33(38%) were highly satisfied and satisfied respectively with the session.

DISCUSSION / REFLECTION / LESSONS LEARNED: Overall, the session is successful in helping students reflect and share about their experiences. They have been able to share situations they have not shared before. Participants reported it helped reduce their stress levels. Additionally, satisfaction with the sessions was high. Overall, the session helps participants in a short time to process some of the challenges in a safe and structured environment.

USING TEAM-BASED LEARNING TO IMPROVE THIRD YEAR INTERNAL MEDICINE CLERKSHIP STUDENTS' ECG SKILLS

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NEEDS AND OBJECTIVES: The 2005 Clerkship Directors in Internal Medicine (CDIM) Survey found medical schools lacked formal instruction on ECG interpretation. In 2013, half of CDIM reported no changes in ECG instruction in the previous five years (Jablonover & Stagnaro-Green, 2016). One study reported 87% of IM interns felt that ECG training was insufficient (Eslava et al., 2009). We created ECG team-based learning (TBL) modules as an innovative and interactive approach to teach third year IM clerkship students common emergent and non-emergent ECG patterns

SETTING AND PARTICIPANTS: Three sessions of ECG TBL were prepared for use during the IM Clerkship didactic sessions with an IM faculty to lead the sessions.

DESCRIPTION: ECG TBL follows the standard format consisting of three parts: 1) individual readiness assurance test (iRAT), a quiz of six to ten multiple choice questions with clinical vignettes/ECG strips, 2) group readiness assurance test (gRAT), where the iRAT cases are discussed and answers agreed upon as team, and 3) the application exercise containing cases with cardiac pathology and varied ECG morphology, allowing the students to apply the ECG knowledge acquired from prior sessions. At the start of the rotation, ECG reading materials are provided. Students complete the iRAT and gRAT, and the application cases during the three sessions. The faculty facilitator leads the timing, logistics and discussion of rationale for the answers.

EVALUATION: Statistical analysis of the quantitative scores from the iRAT, gRAT, and application exercise will be performed. We will also survey students at the end of the clerkship to assess the impact of the ECG TBL session on their ability to interpret ECG in the clinical setting.

DISCUSSION / REFLECTION / LESSONS LEARNED: We are piloting the ECG TBL as a new modality to teach ECG interpretation as part of a broader institutional initiative to revise clerkship didactic sessions using a more interactive and integrated pedagogy for medical students. This TBL is well suited for clerkship level students because it offers the advantage of engaging students and faculty in a team based interactive approach to reason through clinical problems to obtain a deep understanding of ECG pathology with faculty guidance.

UTILIZING A LONGITUDINAL QI CURRICULUM TO BUILD QI SKILLS AND INCREASE SCHOLARLY OUTPUT IN A COMMUNITY-BASED INTERNAL MEDICINE RESIDENCY PROGRAM

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NEEDS AND OBJECTIVES: Quality improvement training and scholarly activity are required elements of internal medicine residency training but can be difficult to implement and achieve in community-based training programs due to limited time, resources, and faculty expertise. We implemented a longitudinal QI curriculum to provide residents with the basic skills required to identify, develop, implement, and evaluate quality improvement in health care while also fulfilling ACGME-driven scholarly activity requirements.

SETTING AND PARTICIPANTS: ChristianaCare is a community-based university-affiliated internal medicine residency program headquartered in Newark, Delaware. There are 36 residents in the categorical internal medicine program, each of whom participated in this required curriculum annually.

DESCRIPTION: In July 2016 we implemented a longitudinal outpatient QI curriculum as part of our ambulatory half-day education series. Year 1 involved three one- hour didactic sessions and culminated in the development of a team-based QI project. Over the subsequent two years we expanded the program to include six hours of didactic sessions annually on topics to include QI basics (e.g. PDSA cycles, A3 diagramming), root cause analysis tools, measure selection, intervention selection, data analysis, and abstract writing/ poster presentation skills. These didactic sessions also included protected time for residents to work on their QI projects and culminate in the development of an abstract submission and poster or oral presentation.

EVALUATION: Our QI program has grown tremendously over a three-year period. The number of projects associated with the curriculum increased from three to nine concurrent projects annually. The number of faculty project mentors has grown from one to eight. Our "QI Day" grew from an in-class presentation to a statewide symposium sponsored by the Delaware Chapter of the American College of Physicians. Our program's QI-based scholarly output also grew significantly during this period. During the 2016-2017 academic year, residents delivered 10 intramural QI presentations only. During 2018-2019, residents delivered 27 regional and state presentations, 12 national presentations, and received a $10,000 grant all related to QI work.

DISCUSSION / REFLECTION / LESSONS LEARNED: We used annual lessons learned to make incremental improvements to our program to enhance the experience for both residents and faculty. We also utilized the curriculum as an opportunity to develop robust, high-quality scholarly projects and scholarly presentation forums. In the process, we have developed a program culture that values and recognizes QI work among trainees and faculty.

UTILIZING CHAMBER MUSIC AS A MEANS OF TEACHING NON-VERBAL COMMUNICATION TO MEDICAL STUDENTS

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NEEDS AND OBJECTIVES: Nonverbal communication is an underappreciated component of medical education. Chamber musicians rely on nonverbal communication to synchronize their performances, and could

serve as potential instructors for medical students. We invited two renowned string quartets to perform and asked a group of third year medical students to take note of any nonverbal communications used by professional musicians.

SETTING AND PARTICIPANTS: Seventy-two third-year medical students on their Internal Medicine clerkship attended the rehearsals of both novice and expert string quartets, the Thalea and Emerson String Quartets, respectively, held at the Wayne State University school of Medicine auditorium.

DESCRIPTION: Pre and post surveys were developed by two medical students (G Marusca and L Hall) with input from communication and education experts, to determine the impact of the seminar on student's clinical education. Questions focused on student's observations of nonverbal cues by the aforementioned quartets to convey musical intention and to determine how students might use these skills clinically.

Questions were open ended and designed to encourage reflection. Two final questions asked students to rate using a 4 point Likert-type scale their confidence (1-high, 2-moderate, 3 slight, 4-no) in identifying non verbal cues in interactions with other health professionals and in interactions with patients. Open-ended responses were reviewed. Likert-type questions were analyzed using two-sided t-tests.

EVALUATION: Of the 72 attending students, 63 performed both pre- and post-surveys (63/72, 87.5% response rate). Thirty-five students, (48.6% of the students) reported no musical background. Comparison of pre- and post-survey results yielded a significant improvement in the students' ability to discern nonverbal interactions both among healthcare professionals ($p<0.01$) and between healthcare professionals and patients ($p<0.01$).

DISCUSSION / REFLECTION / LESSONS LEARNED: Following the workshop, many students commented that they began to appreciate the similarities between nonverbal cues among musicians and medical professionals, and identified specific situations where non-verbal communication would improve interprofessional and teamwork and care delivered to patients.

Chamber music, within the scope of a defined medical curriculum, may serve as a vehicle to instruct medical students on nonverbal communication. Chamber musicians and physicians share myriad similarities such as working in teams comprised of individuals with specific tasks, performing multiple practice iterations, i.e. rehearsals, and retaining a hierarchical structure that promotes mentorship. Most importantly, these two professions utilize nonverbal cues in diverse settings to achieve various goals. Within medical literature, the gravity of nonverbal cues has been well published. The teaching of nonverbal cues, however, has been underrepresented. We hope our study serves as a benchmark for the development of novel curricula related to the cultivation of nonverbal cues among medical students.

VIRTUAL PATIENT SIMULATION TO TEACH CLINICAL REASONING AND REDUCE DIAGNOSTIC ERROR

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NEEDS AND OBJECTIVES: The IOM estimated that diagnostic error affects approximately 12 million people in the U.S. each year. Competency in diagnostic reasoning is one of the AAMC's Core Entrustable Professional Activites for Entering Residency and a critical attribute for learners to reduce medical errors. The goal of this was to examine whether technology-enhanced simulation consisting of digital lectures outlining a symptom to diagnosis approach, paired with virtual patient simulations, improved medical students' competency in clinical reasoning and reduced diagnostic errors.

SETTING AND PARTICIPANTS: 2nd and 3rd year medical student volunteers at eight medical schools.

DESCRIPTION: Students were randomized to the specific symptom group of abdominal pain (AP) or loss of consciousness (LOC) between February to December 2018. For the intervention, students were trained in their assigned symptom which included an assigned symptom-based lecture and three simulated cases for that symptom. The primary outcome was the change in the rate of incorrect final diagnoses on computer-based simulation cases between baseline and post intervention. The secondary outcome was the completeness and efficiency of their differential diagnosis on computer-based simulation cases.

EVALUATION: The 285 participants were 48% female with mean age of 25.4 years (SD = 3.00). A total of 141 and 144 students were randomized to the AP and LOC intervention case groups, respectively; there were no significant differences in baseline performance between the two groups.

The AP intervention group had a 27% absolute reduction in incorrect final diagnoses compared to baseline (35% pre-intervention vs. 8% post-intervention, $P < 0.001$). The LOC group had a 32% absolute reduction in incorrect final diagnosis compared to baseline (83% pre-intervention vs. 51% post-intervention, $P < 0.001$. Compared to baseline, learner performance increased for differential diagnoses completeness (33% to 56%; $P < 0.001$ AP group and 15% to 32%; $P = 0.001$ LOC group) and efficiency (36% to 46%; $P = 0.093$ AP group and 10% to 42%; $P < 0.001$ LOC group). The number of students needed to train to prevent an incorrect final diagnosis was 3.1 for LOC and 3.7 for AP.

DISCUSSION / REFLECTION / LESSONS LEARNED: A virtual patient education platform incorporating a diagnostic reasoning framework improved medical students' diagnostic competency and reduced diagnostic errors on computer-based simulation cases.

WHAT DO EARLY PATIENT NAVIGATOR STUDENTS THINK THEY SHOULD KNOW WHEN WORKING WITH VULNERABLE POPULATIONS?

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NEEDS AND OBJECTIVES: Creating opportunities where students can have meaningful longitudinal clinical experiences among medically underserved populations and learning from these experiences is critical. One such learning is what medical students think they should know when taking care of such populations and how does this knowledge map to traditional education competencies?

SETTING AND PARTICIPANTS: Three high-performing patient-centered medical homes (VA Center of Excellence in Primary Care Education, MetroHealthMedical Center Primary Care, and Neighborhood Family Practice (federally qualified community health center) have integrated first year medical student navigators on their patient centered medical home teams during an elective patient naviagator program serving identified veterans, patients from vulnerable populations and newly arrived refugee families respectively.

DESCRIPTION: Twenty five students worked with interprofessional clinical teams to help veterans (VA) and refugee families (federally qualified health center) navigate the health system. Activities included but were not limited to, accompanying patients to medical and testing appointments, medicine reconciliation, phone follow-ups and home visits. Group work and didactics were embedded in the elective.

EVALUATION: Semi Structured interviews of the first CWRU navigator cohort were conducted after completion of the patient navigator program. Total of 22/25 students participated in the focus groups.

DISCUSSION / REFLECTION / LESSONS LEARNED: Five Critical Domains were Identified by Patient Navigator students: Good communication skills, Relationship-building skills, Many types of expertise needed to have impact on patient health, Self-driven nature of patient navigation, Context of health has major impact.

WITH HER: WOMEN'S HEALTH EDUCATION FOR INTERNAL MEDICINE RESIDENTS. USING THE JIGSAW TEACHING METHOD TO INCREASE IM RESIDENTS' KNOWLEDGE AND CONFIDENCE IN PRECONCEPTION COUNSELING AND MANAGING COMORBIDITIES IN PREGNANCY

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NEEDS AND OBJECTIVES: Internal Medicine (IM) residents often care for reproductive aged females, but only 17% provide contraceptive counseling (Lohr 2009). Our residency's needs assessment revealed that residents were unsatisfied with existing women's health (WH) curricula and were not confident in managing core topics.

We aim to develop a 3-year longitudinal WH curriculum, that includes workshops using the Jigsaw Teaching Method (a cooperative learning strategy where peers deliver specific content in teams) to improve IM residents' knowledge and confidence in addressing core WH topics. This abstract will review our 2nd year curricula that focuses on preconception counseling and managing comorbidities in pregnancy.

SETTING AND PARTICIPANTS: Our curriculum was given to 84 IM residents at a university program in Stony Brook, NY during the 2018-2019 academic year.

DESCRIPTION: We delivered a weekly jigsaw workshop over 5 ambulatory blocks, focusing on 5 topics: preconception counseling, contraception, pregnancy with diabetes, thyroid disease and acute illness. Residents divided into teams of 5, their "home group," and each are assigned to be an "expert" in 1 topic. To become "experts," teams split to join peers who have the same assignment and they review readings together.

Later residents return to their home group to peer teach and apply their collective expertise to solve patient cases. To reinforce teaching points, home groups compete in a facilitated gameshow.

EVALUATION: Participants completed a workshop pretest, post-test, and year end survey, which asked questions about demographics, knowledge and confidence on the focused topics, and session feedback.

Response rates were: pretest 78.6%, post-test 83.3% and year end 64.1%. Mean knowledge scores increased from 60.4% to 83.3% at post-test ($p<0.0001$), but year end scores was only 60.9%. At year end, improved knowledge sustained for questions about pregnancy complicated by diabetes (33.3% vs 66.7%, $p<0.0001$) and acute illness (75% vs 100%, $p<0.0001$). More reported "somewhat confident/confident" for contraception counseling (21.5% vs 38.6%, $p<0.05$), and WH counseling (12.3% vs 42.4%, $p<0.05$). Majority (95.72%) were satisfied with the workshop, including the interactive group work and gameshow.

DISCUSSION / REFLECTION / LESSONS LEARNED: Our findings suggest that the Jigsaw Teaching Method may be effective in increasing IM residents' knowledge and confidence in preconception counseling and managing comorbidities in pregnancy but repetition is needed to enhance retention.

We plan to continue to develop and assess our WH curriculum and hope that this can serve as a model for other training programs.

WOMEN IN LEADERSHIP DEVELOPMENT (WILD): YEAR 2 OF A LONGITUDINAL GRADUATE MEDICAL EDUCATION PROGRAM TO SUPPORT REPRESENTATION OF WOMEN IN MEDICAL LEADERSHIP

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NEEDS AND OBJECTIVES: Although women have achieved equal representation in medical school and some residency training programs, significant gender disparities persist at all levels of medical leadership. Evidence suggests that early career women are at particular risk for leaving the leadership pipeline. Thus we aimed to create a formalized curriculum to foster leadership development of women trainees with specific objectives including to help trainees develop 1) concrete leadership skills, 2) confidence in their ability to seek leadership positions, 3) a network of peer mentors to build leadership, and 4) a sense of agency and empowerment in their ongoing practice of leadership.

SETTING AND PARTICIPANTS: An ongoing longitudinal seminar series starting in 2018 including 136 women residents and fellows from 14 clinical departments within the University of California San Francisco (UCSF) division of graduate medical education

DESCRIPTION: For 2 years, the WILD program and has offered monthly evening seminars and workshops focusing on leadership development topics particularly relevant to female trainees as determined by an internal needs assessment, literature review, and expert opinion. 10 seminars are offered yearly including lecture-based formats (parental and family leave, salary negotiations, networking and mentorship) and exercise-based workshops (public speaking, building a personal brand, peer-share CV workshop). Speakers include UCSF faculty and outside experts.

EVALUATION: We have evaluated one full year of WILD programming using a mixed methods approach including both quantitative surveys and a qualitative focus group. Surveys included baseline and post-session evaluations of all participants' confidence in a range of leadership competencies measured on a 5-point Likert scale. These identified "negotiating a contract", "understanding family leave rights", "garnering political influence", "dealing with microaggressions", and "public speaking skills" as areas of low baseline confidence for trainees. Reported

confidence in each of these domains improved significantly after attending the corresponding WILD session ($p<0.05$). Overall, 97% of surveyed participants found sessions useful, and 99% would recommend them to a friend. For our qualitative evaluation, we conducted semi-structured interviews with a subset of WILD participants who had attended multiple sessions. These women identified a strengthened sense of community with other women at UCSF, and increased confidence in personal branding and promotion as highlights of their participation.

DISCUSSION / REFLECTION / LESSONS LEARNED: WILD sessions were well-attended across specialties despite demanding trainee schedules, highlighting women trainees' desire to engage in leadership development programming. This longitudinal seminar series improved participant confidence in multiple leadership domains while contributing to a sense of community amongst women trainees. This intervention would be easily transferrable to other graduate medical education settings.

ONLINE RESOURCE URL (OPTIONAL): www.ucsfwild.org

WORKING FROM THE TOP DOWN: A FACULTY DEVELOPMENT PROJECT IN WOMEN'S HEALTH EDUCATION

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NEEDS AND OBJECTIVES: Improve faculty's knowledge of and comfort with common women's health (WH) topics encountered in primary care.

Empower faculty to teach residents evidence-based information about WH topics.

Identify specialty providers that provide care to women and build interdisciplinary relationships between specialty providers and primary care.

SETTING AND PARTICIPANTS: To improve the care of female patients and the education of our residents, academic primary care faculty (IM and Med/Peds) from the University of Chicago were invited to participate in a faculty development program. 11 faculty members who frequently care for female patients and supervise residents were identified to form the Core Women's Health Faculty (CWHF). A CWHF member precepts the resident clinic daily.

DESCRIPTION: PCPs care for medically complex women, yet studies have shown inadequate knowledge in many core WH topics. After discovering a lack of confidence in a number of these topics by our faculty, we started a faculty development project in WH including the creation of the CWHF. Based on the results of a needs assessment, we have developed a CME curriculum of hour-long quarterly talks. The core faculty are required to attend the WH update series and an annual WH grand rounds. Utilizing the principals of adult learning theory, these update sessions involved a brief didactic by an institutional expert with the majority of the session directed by faculty questions. Faculty completed a post-test at each session based on the topic of the session.

EVALUATION: A cross-sectional survey was administered to IM and Med/Peds faculty at UCMC in 2018 to assess their knowledge of and attitudes towards core WH topics outlined by the ABIM. 50% (n=20) faculty members completed the needs assessment. 82% of the CWHF completed the survey. The overall knowledge score was 54% correct with questions addressing menopause, BRCA screening and PCOS (65%, 30%, 10% respectably) with the lowest scores. Faculty ranked level of comfort on a 4-point Likert-scale (1= little confidence in my performance, 4=I can teach others). They felt lest confident with managing pelvic pain, PCOS and women's cardiovascular disease (1.6, 2.15, 2.3 respectably). Overall faculty did not rank their confidence on the majority of these topics as "I can teach others."

Thus far we have hosted 5 updates and 2 grand rounds. This has been well attended with at least 65% of the core faculty at each session. Knowledge scores on posttest are 81% correct. Faculty rated their comfort as "I can teach" or "Confidently perform in most situations" on the majority of topics.

DISCUSSION / REFLECTION / LESSONS LEARNED: Based on our needs assessment there are gaps in faculty knowledge and comfort with core WH topics. To address this, we have developed a CWHF and a CME level curriculum including quarterly update sessions and grand rounds. Preliminary knowledge and confidence scores have improved. The next step is to collect resident-level data utilizing the annual residency survey to evaluate if the CWHF has improved resident comfort with core WH topics.

"A PATIENT WITH…": A SUBSTANCE USE DISORDER TRAINING CURRICULUM FOR INTERNAL MEDICINE RESIDENTS

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NEEDS AND OBJECTIVES: Internal Medicine (IM) residents frequently encounter patients with substance use disorders (SUDs). However, many feel unprepared to diagnose and treat SUDs, which is likely compounded by negative regard for patients with SUDs. The objective of this curriculum is to equip IM residents with skills to care for patients with SUDs by applying this information to their own empaneled patients, with the goal of empowered, compassionate and evidence-based care.

SETTING AND PARTICIPANTS: The curriculum was developed for second and third year IM residents at the University of Chicago. It was piloted during 2019 and was delivered as part of a resident ambulatory curriculum.

DESCRIPTION: Two 1-hour sessions were developed: "A Patient with Opioid Use Disorder (OUD)" and "A Patient with Alcohol Use Disorder (AUD)." During each session, facilitator-presented material covering key concepts about screening, diagnosis & treatment was interwoven with working through a structured worksheet related to a patient from the resident's outpatient panel. A case was provided if the resident did not identify a patient. The worksheet served to reinforce and apply presented concepts culminating in development of an action plan for the patient. A post-session evaluation included questions on knowledge, preparedness & attitude, and residents were asked to identify one "take-away" based on each session.

EVALUATION: Our resident needs assessment (n=44, 42% response rate) showed 86% characterized the amount of instruction received during residency in addiction as "none" or "too little". While residents frequently encountered patients with SUDs, only 56% felt prepared to diagnose and 20% felt prepared to treat SUDs generally. Following the AUD session, all residents (n=22) felt prepared to diagnose and treat AUD. After the OUD session, all residents (n=20) felt prepared to diagnose, and 79% felt prepared to treat OUD. Sixty-eight percent felt "there is little I can do to help" patients with SUDs in the needs assessment. This number decreased to 5% for AUD and 21% for OUD after the sessions. Take-away answers included plans to screen more for SUDs, initiate harm reduction strategies, and consider pharmacotherapy more frequently.

DISCUSSION / REFLECTION / LESSONS LEARNED: A SUD curriculum must empower residents to integrate SUD recognition and management into their practices. Using interactive worksheets and resident empaneled patients are promising strategies to accomplish this and can be adapted across settings and disciplines. Developing effective delivery of SUD content to trainees is paramount to improve care for patients with SUDS.