

Utilizing the Learning Health System Adaptation to guide Family Medicine Practice to COVID-19 response

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Abstract

COVID-19 supportive quarantine care in the community is managed by primary care practices. There is no current guidance on how a primary care practice with high volumes of patients screened for COVID-19 can re-configure itself to become responsive to the pandemic. We examined Learning Health System guidance from the National Academies of Science, Engineering and Medicine and adapted it to our primary care practice to create an efficient, effective, adaptive response to the COVID-19 pandemic. We suggest evaluating this response in the future for effectiveness and efficiency.

Keywords

COVID-19, dashboard, health learning system, primary care, underserved communities

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Background

The COVID-19 pandemic has brought the efficiencies and the deficiencies of the US health system to the forefront. The pandemic has resulted in unemployment and loss of health insurance and reduced the ability of patients to access care.¹ Among the hardest hit are primary care practices that form the front line for most clinical care in the United States.² As the COVID-19 pandemic unfolds, a drastic reduction in patient visits starts to manifest with reduction of primary care incomes. Practices gear up to deliver care through telehealth, with reimbursement from payers.³

As of September 23, 2020, there are 6,874,982 cases of COVID-19 and 200,275 total deaths in the United States.⁴ There is a critical need for practices to gear up to respond to patient needs during the pandemic.

Rationale

Located in one of the hardest hit regions of the state of Maryland, West Baltimore, The Department of Family and Community Medicine at the University of Maryland (DFCM) is the primary care provider with 35,000 patient visits per year. There was a pressing need for innovation in order to meet the needs of the population that needed outreach, COVID-19 care and preventive services. The DFCM reviewed the principles of the National Academies of

Sciences, Engineering and Medicine (NAM) learning health system guidance, which recommend that each patient received care that was personal, safe, effective, equitable, efficient, accessible, transparent, adaptive and secure. The principles set forth by NAM formed the basis of the adaptive response by DFCM to the COVID-19 pandemic.⁵ The goals of the adaptation were to provide accessible care to all patients, informed by the emerging characteristics of the COVID-19 pandemic.

Methods

A leadership team was established by the Chairman to allow ideas to incubate, percolate, and translate into action items. A population health dashboard was created to collate COVID-19 patient tests results and outcomes; physician and staff quarantine, and personal protective equipment availability (Supplemental Figure 1).

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The following nine tenets of the learning health system framework were adapted to create the DFCM COVID-19 pandemic response.

Personal

Utilizing the principles of LHS, clinic visits were converted to televisits for all patients with technological capacity to engage, and a small number of visits to the office were permitted for patients unable to use technology. Physician and staff training with elbow supports was provided, and patient outreach by front desk staff ensured that each patient could connect with their clinician using technology. Each physician was asked to initiate outreach to their patient panels to meet individual patient needs regarding COVID-19 education and testing, medication refills, access to clinic visits, and referrals to specialty care.

Safe

In the urban practice catchment areas, COVID-19+ patients needed advice and supportive care during quarantine including symptomatic therapy, medication refills, contact testing, and ensuring food and transport if needed. Each COVID-19 positive patient was supported during quarantine with a televisit check-in at 2 days after the test, and at 5 to 7 days for red flags to elevate the level of care to hospital. Return to work decisions were made according to guidance provided by the CDC and by the University of Maryland campus to ensure the safety of the patient, families and co-workers. All departmental meetings were moved to electronic platforms, and physician and patient numbers at each clinical station was reduced per CDC guidance, temperature and symptoms checks instituted, and cleaning in between patients occurred.

Effective

Utilizing a COVID-19 analytics population health dashboard (Supplemental Figure 1) allowed the leadership team to identify emerging trends in patient infections, personnel quarantine, and adequacy of personal protective equipment, and pivot to respond to the needs. This information was useful in allocating personnel to clinical sites to care for COVID-19+ patients. The dashboard was expanded to include the volume of patients' phone calls, COVID-19-related use of emergency department, hospitals, intensive care units (ICU), and death.

Equitable

Accrual of data led to several new observations, including the emerging fact that our practice provides COVID-19 screening to individuals residing in neighborhoods with

low socioeconomic indices. African Americans formed the largest number of COVID-19 positive individuals in our practice, and we learned that patients with Hispanic ethnicity had higher COVID-19 detection rates. (Supplemental Figure 1) This triggered a plan to start to GIS (Geographic Information Systems) map all patients to their addresses, and to overlay this map with neighborhood socioeconomic indicators, such as the Area Deprivation Index (ADI).^{6,7} This enhanced map included race, the ADI (Supplemental Figure 1) and provided an understanding of cluster transmission of COVID-19 in patients living in multi-family homes in high density environments, and suggested realistic goal setting to reduce transmission within families and neighborhoods. Scheduled televisits with COVID-19 positive patients helped allay anxiety, encouraged chronic disease care, tobacco cessation, and medication adherence.

Efficient

Using panel management, care management, and elderly patient outreach, we have ensured that access to care is maintained across all demographics receiving care at our offices. In order to accurately document COVID-19 interactions, Epic system managers developed a customized solution to COVID-19 related tracking of patients using shared patients lists, documentation during patient visits, new billing codes, and access to data from the state's health information exchange, CRISP. These efficiencies allowed for real time sharing of data within the department's partners, to strategically plan resources for continuation and expansion of screening, diagnosing and ambulatory management of COVID-19 quarantine.

Accessible

The DFCM clinics remained open throughout the entire COVID-19 pandemic, including weekend hours. However, patient access to care has transitioned from clinic visits for all, to a hybrid strategy with telehealth visits for technology competent patients who needed minimal examination, and clinic visits for all patients unable to use technology, those needing extensive examination, in-office procedures and preventive care. Patient outreach by physicians and staff has ensured access for the most vulnerable patients.

Transparent

Leadership team during the COVID-19 pandemic included the Chairperson, clinical physician lead, physician directors of the Baltimore and Columbia sites, the population health physician leader, nursing staff lead, administrative and clinical staff leaders. Strategic conversations occurred in real time, and decisions were disseminated through each domain the same day. Daily emails with attached

dashboards containing current and complete data allowed physicians and staff to feel empowered, and messaging in the emails reflected areas of focus for their consideration and review. Saturday morning faculty meetings discussed the challenges that faced the department and provided a forum for faculty to contribute to solutions.

Adaptive

A series of decisions lead to ultimate success: the first decision was for the clinical sites to stay open throughout the pandemic; the creation of a nimble leadership team of individuals who did not hesitate to lead their domains into the unknown; the creation of methods of data sharing and dissemination; leveraging infrastructure supports through the health system and information technology infrastructure; access to elite COVID-19 testing platforms; billing process updates, the decision to enforce active patient panel management by faculty and staff. This led to a strong sense of control, a belief that we would prevail together and the understanding that patients would receive care using multiple platforms of communication. Federal guidance supported primary care practices with approximately 'on par' billing for televisits allowing primary care offices to stay open. The department was successful in retaining all the faculty and staff with minor cuts to faculty salaries. To date, patient satisfaction is sustained and is a matter of pride for faculty and staff.

Secure

Securing personal health information is ensured through Epic electronic health record security teams for the University system, to provide safeguards for accidental or intentional exposure at all clinical sites. All clinical personnel are trained in data security and maintaining confidentiality, integrity and availability of personal health information per federal guidelines. Televisits utilize secure platforms for communication and billing.

In conclusion, the COVID-19 crisis provided an opportunity for our departmental practices to innovate and to iteratively change using the framework of a learning health system. Physician and staff energy and enthusiasm lead to multiple changes in a very short period of time, including implementing telehealth. We are actively tracking outcomes

of all patients tested for COVID-19, offering preventive care and chronic disease management and comparing with prior years to better understand the impact of COVID-19 and of this dynamic intervention.

Declaration of Conflicting Interests

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Supplemental Material

Supplemental material for this article is available online.

References

1. Blumenthal D, Fowler EJ, Abrams M, Collins SR. Covid-19 - implications for the Health Care System [published online July 22, 2020]. *N Engl J Med*. doi:10.1056/NEJMs2021088
2. Phillips RL, Bazemore A, Baum A. The COVID-19 tsunami: the tide goes out before it comes in. *California Health Care Found*. <https://www.chcf.org/blog/covid-19-tsunami-tide-goes-out-before-it-comes-in/> Published April 22, 2020. Accessed August 12, 2020.
3. Hollander JE, Carr BG. Virtually perfect? Telemedicine for Covid-19. *N Engl J Med*. 2020;382:1679-1681.
4. CDC. Coronavirus Disease 2019 (COVID-19). Centers for Disease Control and Prevention. https://covid.cdc.gov/covid-data-tracker/#cases_casesinlast7days Published February 11, 2020. Accessed September 24, 2020.
5. Institute of Medicine (US) Roundtable on Evidence-Based Medicine, Olsen L, Aisner D, McGinnis JM (eds) *The Learning Healthcare System: Workshop Summary*. National Academies Press (US); 2007. <http://www.ncbi.nlm.nih.gov/books/NBK53494/> Accessed August 12, 2020.
6. Kind AJ, Jencks S, Brock J, et al. Neighborhood socioeconomic disadvantage and 30 day rehospitalizations: an analysis of medicare data. *Ann Intern Med*. 2014;161:765-774.
7. Singh GK. Area deprivation and widening inequalities in US mortality, 1969-1998. *Am J Public Health*. 2003;93:1137-1143.