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The interface between substance abuse and chronic pain management in primary care: A curriculum for medical residents

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opioid; substance abuse; chronic pain; primary care; curriculum

INTRODUCTION

Rising non-medical prescription opioid use is a major public health problem that correlates with increased physician prescribing (1). In primary care, a third of patients on opioids for chronic noncancer pain (CNCP) demonstrate opioid or other substance misuse (2–3). Balancing effective CNCP treatment with recognition, management, and hopefully prevention of problems with opioid medication is a tremendous challenge. Primary care physicians and residents treating CNCP are often concerned about opioid abuse (4–5). They feel unprepared to diagnose prescription drug abuse and manage CNCP (5–6). Improving primary care physician competency to prescribe abusable drugs is a national educational priority (7). With Center for Substance Abuse Treatment support, we developed and evaluated a brief curriculum to instruct medical residents to recognize prescription opioid abuse and structure the treatment of primary care CNCP patients, including those with an opioid or other substance disorder. Hopefully, dissemination of the training will guide further curriculum development and improve CNCP treatment.

METHODS

The required curriculum consisted of two hours of case-based discussions delivered to groups of 4–8 second year medical residents on an ambulatory block rotation. All housestaff completed two hours of general CNCP instruction earlier in residency that lacked a substance use emphasis. The curriculum was developed with feedback from CSAT, housestaff test groups, and Medicine, Anesthesia, and Psychiatry faculty. Full cases with discussion questions, handouts, and links to screening instruments and other course materials are available in an online Appendix. The primary objectives were to improve housestaff ability to: 1) Recognize DSM-IV opioid use disorders among opioid-treated CNCP patients, and 2) Develop a structured treatment plan for opioid-treated CNCP patients, including those with an opioid or other substance use disorder.

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All cases suffer from chronic low back pain, the most common reason for primary care opioid prescription (2–3) despite physician concern (4) and high rates of opioid misuse and substance abuse (2–3). A unified pain complaint facilitates focus on teaching objectives rather than nuances of pain management across varying CNCP diagnoses. Case 1 poses a common scenario in which the discrepancy between inadequately treated pain versus problematic opioid use is unclear. Participants consider these dilemmas and review aberrant medication-taking behaviors that may predict an opioid use disorder (8). DSM-IV opioid abuse and dependence criteria (9) are reviewed along with "pseudoaddiction," a pattern of drug-seeking behavior resulting from inadequate pain control. The ambiguous presentation emphasizes that longitudinal monitoring and corroboration are often needed for a diagnosis. Housestaff review management strategies such as how to discuss pain medication agreement (PMA) use and urine toxicology screening (UTS), a challenge for many physicians. Opioid dosing, non-opioid pharmacologic, and non-pharmacologic treatment of low back pain are discussed in all cases. However, Case 1 emphasizes structuring treatment and patient assessment.

Case 2 poses another common dilemma when increasing pain medication requirement could indicate disease progression, tolerance, or problematic opioid use. The history of non-opioid substance dependence is a particular challenge for primary care physicians during CNCP management (4). The patient's major depressive disorder provides an opportunity to discuss the prevalence and impact of psychiatric co-morbidity with CNCP (2,10). Participants review screening tools such as the Screener and Opioid Assessment for Patients with Pain (SOAPP), an instrument to predict aberrant medication behavior among patients initiating long-term opioid therapy for CNCP (10). Prescription opioid escalation is illustrated with an equianalgesic dose table. Although an opioid use disorder is suggested, the possibility is raised for hyperalgesia, in which chronic opioid therapy itself contributes to sensitization to painful stimuli. Physical signs and symptoms of illicit drug use and opioid withdrawal are reviewed, as well as the implications and limitations of nonorganic physical signs often promoted to detect malingering. While Case 1 focuses on UTS implementation, Case 2 addresses UTS interpretation. The opiate positive test with oxycodone use requires discussion about differentiating synthetic opioids from poppy-derived opiates. Case 2 emphasizes treatment structure and monitoring needed with non-opioid substance abuse. The appropriateness of continued opioid prescription and buprenorphine treatment for opioid dependence are considered.

Case 3 adhered to the treatment plan with improved pain and function. However, prior heroin dependence, coupled with an inability to cut down on prescription opioids, pose a diagnostic dilemma requiring more nuanced discussion of DSM-IV dependence criteria (9). Whether she would be classified as opioid dependent no longer in remission is unclear. DSM-IV likely overestimates “addiction” in patients on chronic opioids as two criteria pertaining to physical dependence will be met by many patients. The patient was unsuccessful cutting down, a third criterion supporting a DSM diagnosis. Opioid-specific UTS with quantification requires review of minor metabolic pathways. Overall, Case 3 reinforces prior material and requires a more sophisticated patient assessment approach.

To evaluate the curriculum, a two-page, pre-post survey was administered between April and December 2007. Participants rated their agreement with statements about the curriculum and self-assessment on a 1 (strongly disagree) to 5 (strongly agree) scale. The voluntary survey lacked personal identifiers. The New York State Psychiatric Institute Institutional Review Board approved the study with a waiver of signed consent. Pre-post comparisons were made with paired *t* tests (SPSS 14.0, Chicago, IL).

RESULTS

Of 52 consecutive residents, 50 participated in the curriculum and 47/50 (94%) completed the survey. Respondents agreed that the curriculum would help improve their management of opioid-treated patients (mean ± SD, 4.1 ± 0.5) and that they had a favorable overall impression of the curriculum (4.2 ± 0.5). Self-assessment measures were low at baseline and significantly improved after curriculum participation ($P < .001$ for all comparisons). They felt more prepared to diagnose DSM-IV opioid dependence (2.8 ± 0.9 vs. 3.9 ± 0.5), to manage patients on chronic opioids (2.8 ± 0.8 vs. 3.8 ± 0.5), including those with co-morbid substance abuse (2.3 ± 0.7 vs. 3.4 ± 0.8). Familiarity using physical examination to recognize illicit substance use improved (3.0 ± 1.0 vs. 3.9 ± 0.6) along with comfort using urine toxicology in practice (3.1 ± 0.9 vs. 3.9 ± 0.4). They reported improved understanding of pain contracts (2.9 ± 1.0 vs. 4.1 ± 0.5), differentiation of opiates and opioids (2.7 ± 1.0 vs. 4.2 ± 0.5), pseudoaddiction (2.2 ± 0.7 vs. 4.1 ± 0.5), and hyperalgesia (2.8 ± 0.9 vs. 4.1 ± 0.5).

DISCUSSION

The two-hour case-based curriculum on the interface between substance abuse and pain management in primary care is a novel approach to physician training that meets a nationally recognized educational priority (7). The curriculum builds upon strategies to train medical residents about general pain management. For example, a one-day workshop combining small groups, didactics, and standardized patients led to improvement in housestaff self-assessment and skills assessed by pre-post survey and standardized patients (5). This general CNCP educational initiative had some content overlap with the current course but lacked a specific emphasis on recognizing and managing opioid and other substance use disorders. Also, the length and utilization of standardized patients may not be feasible for program directors with limited resources. Despite participation in a general CNCP curriculum earlier in residency, housestaff in our study reported low baseline self-efficacy managing CNCP that was particularly pronounced with substance abusing patients. These findings are consistent with other primary care physician data (4–5), and further support the need for CNCP curriculum development that specifically emphasizes assessment and management of opioid and other substance use disorders.

Housestaff preparedness to recognize opioid dependence among opioid-treated CNCP patients improved. Preparedness to manage patients on opioids also improved, including the challenging subset with co-occurring substance use disorders (4). Illicit drug use is prevalent among primary care CNCP patients and associated with opioid use disorders (11). Curricular content in support of these improvements includes instruction on aberrant medication taking (8), DSM-IV diagnostic criteria (9) and formalized screening (10). Realistic cases emphasize longitudinal assessment and management that incorporates historical and physical exam data and corroboration. Structuring treatment with pain medication agreements (PMA) and UTS are important aspects of adherence monitoring that may reduce illicit drug use and problematic opioid use (12). Housestaff familiarity with PMAs improved, which may help set expectations and structure primary care treatment (11). Links to English and Spanish translated PMAs used in the training are in the Appendix. Familiarity with the difference between opiates and opioids improved, addressing a knowledge deficit essential for UTS interpretation. Housestaff anticipated greater comfort incorporating UTS in practice, which may address under-utilization by primary care physicians prescribing opioids (4). Similar to a full-day general pain course (5), housestaff had improved understanding of hyperalgesia and pseudoaddiction, concepts that are difficult to assess in patients presenting with incomplete pain relief and escalating opioid use.

Although the curriculum appears to have met the training goals, the design limits ability to assess change in skills or practices. The curriculum was implemented at a single institution and assessed with a non-validated instrument. While this limits generalization, there is overlap with other survey data and general CNCP curricula assessments (5). The high participation rate in a required curriculum minimizes participation bias.

Overall, the curriculum was well received and appears to effectively address an important educational need on the challenging interface between substance abuse and pain management. The brief small group session was feasibly integrated into the ambulatory block, which is particularly relevant for residency program directors limited by time and resources. In addition, the curriculum has been adapted for medical students (Baxter J, University of Massachusetts, personal communication, December 2008) and administered to practicing physicians. Future study should assess impact in different physician populations and examine change in practices. Hopefully, with continued efforts to enhance and expand physician training, the public health burden of prescription opioid abuse can be minimized while improving the care of patients with chronic pain.

Case 1

"Not an addict"

Mrs. R is 48 year old woman who presents to your office for an initial visit complaining of chronic low back pain and requesting an opioid pain medication refill. She has a history of lubosacral (LS) spine degenerative joint disease (DJD) and severe scoliosis/kyphosis for which she has been treated with long-acting oxycodone 40mg twice daily (BID) and oxycodone/acetaminophen 5/325mg (approx 4–6 tablets throughout the day as needed). She states that a pain management physician set the regimen, which improved her ability to take care of herself, although she still hasn't been able to reach her goal of returning to work. As per the patient, the pain management physician told her she should follow-up for continued medication with her primary care provider. She has had frequent visits with other providers at your clinic during the past several months, including walk-in visits for opioid medication refills. She states that she's "not an addict," and is quite upset that she's been sent from physician to physician who are reluctant to prescribe enough medication, giving her only 30 tablets of oxycodone/acetaminophen at the last visit which is running out. She is requesting 180 tablets to make it through the month. Without medication, her pain is 9/10 constant, sharp, and non-radiating. Currently her pain is 5/10, which she describes as tolerable. On physical exam, she is ambulating normally, but has some apparent discomfort when getting onto the exam table. She has point spinal tenderness and mild paraspinal tenderness without spasm around the LS region. She has moderate scoliosis/kyphosis, and a normal straight leg raise and neurological exam. A previous MRI 6 months ago demonstrates DJD in the LS region with foraminal narrowing at L1-2.

1. What are your areas of concern? What factors suggest a diagnosis of inadequately treated chronic, non-malignant pain versus an opioid use disorder?
2. What additional information would you like for your assessment?
3. What are your thoughts on her current pain regimen?
4. What is pseudoaddiction, and how would we make this diagnosis?
5. What is your management plan?

Case 2

"Going to administration"

Mr. D is 40 year old man with chronic low back pain, cocaine and alcohol dependence (sustained full remission for over 5 years), and major depressive disorder (followed by psychiatry, stable on paroxitine), who presents for a follow-up visit with complaints of worsened back pain. The pain originated after a work-related injury several years ago. Six months ago, you started him on oxycodone/acetaminophen (apap) to augment standing NSAIDs. Initially the pain was well controlled with 2–3 tablets as needed throughout the day. Usually he would take one in the morning and then 1–2 tablets in the evening before bed, which improved his function. His medication requirement has gradually escalated. At the last visit a month ago, he had inadequate pain relief on 6–8 oxycodone/apap (10/325mg) tablets per day. You sent a urine toxicology test (later came back positive only for opiates), and prescribed a transdermal fentanyl patch along with 90 oxycodone/apap tablets. He called your office the next day stating that the patch made him itch, so you left a script for him to pick up for long-acting morphine 15mg BID (#60). He presents today 2 weeks later for a walk-in appointment, stating that the medication is not helping and is demanding 240 tablets of oxycodone/apap, which is "all he needs" for complete pain control. You discuss increasing long-acting morphine to 30mg BID, along with 90 tablets of oxycodone/apap prn breakthrough pain, after which the patient states he's "going to administration" to get the full 240 tablets.

6. What are your areas of concern? What factors suggest a diagnosis of inadequately treated chronic, non-malignant pain versus an opioid use disorder?
7. How could you assess risk of problematic opioid use either at the onset of prescribing 6 months ago or now?
8. What additional information would you like for your assessment? How would physical exam be of help?
9. How would additional urine toxicology testing be of use?
10. What is hyperalgesia, how would you make this assessment?
11. What is your management plan? What are your obligations regarding opioid medication prescribing at this visit?
12. How would a DSM diagnosis of opioid dependence affect your management plan?

Case 3

"The urine test is wrong"

Mrs. B is a 42 year old woman with cocaine and heroin dependence in sustained, full remission since becoming abstinent in her 30's after 2 years of methadone maintenance and a gradual taper. She regularly attends an abstinence-based program and is training to become a substance abuse counselor. Approximately 6 months ago she was in a car accident that led to low back pain. When she first presented for an initial visit with you soon after the accident, her pain was well controlled with hydrocodone/ibuprofen 7.5mg/200mg 2 tablets BID as prescribed by the ED. Physical exam was only notable for mild LBP with palpation over the LS spine, and MRI after the accident showed mild LS spine degenerative changes. Urine toxicology dip test done at the initial visit was positive only for opiates. After weighing different factors, you elected to continue prescription opioid treatment. During the past 6 months, she has been stable on the same regimen, making all scheduled appointments with appropriate pill counts. She states that the initial morning dose helps her get started with the day, and the evening dose helps relieve the pain so she can sleep. She feels guilty about her current pain medication requirement as "she doesn't feel right" about using opioid medication while in an abstinence-based program.

However, the "pain is too much", and she has been unable to cut down. One month ago, on routine testing, you sent an opioid-specific test that has come back positive for hydromorphone and hydrocodone. At the visit today, you ask the patient about use of hydromorphone from an outside source. She states that "the urine test is wrong," and that she has only taken the medication as prescribed by you.

13. What are the factors are involved when deciding to continue opioid treatment at the initial visit six months ago?
14. Does she meet DSM-IV criteria for prescription opioid dependence, no longer in remission?
15. What are your thoughts on her current pain regimen?
16. How do you interpret the urine toxicology findings?
17. What is your management plan?

Resources*

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2. A full day CME course at ASAM's annual Med-Sci meeting, "Pain and Addiction Common Threads." http://www.asam.org
3. General information and updates on buprenorphine http://buprenorphine.samhsa.gov/
4. The National Alliance of Advocates for Buprenorphine Treatment. http://www.naabt.org/
5. Education for pain treatment and management http://www.painedu.org/
6. Instruments: Screener and Opioid Assessment for Patients with Pain (SOAPP) Version 1.0 Short Form and Current Opioid Misuse Measure (COMM) http://www.painedu.org/
7. Urine Drug Testing in Clinical Practice (UDT) http://www.familydocs.org/files/UDTmonograph.pdf
8. Pain Medication Agreement example links
    a. English: http://www.medicineclinic.org/narcoticcontract.htm
    b. Spanish: http://www.medicineclinic.org/narcoticcontract(spanish).htm

*NOTE: all links accessed March 2, 2009

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TABLE 1

Behaviors that suggest opioid use disorder in patients receiving opioids for pain

Less Risk	Higher Risk
Stable pattern of medication use	Loss of control with medications
Medications improve overall function	Medications decrease overall function
Is concerned about side effects	Wants medication despite persistence of adverse effects
Will follow treatment plan	Does not follow treatment plan
Has leftover medication	No leftover medication; often loses medication or prescriptions
Is no longer preoccupied with obtaining opioids after pain has been adequately controlled	Is preoccupied with obtaining opioids despite adequate analgesia

Source. Adapted from Heit 2001; Savage 1996; Schnoll and Finch 1994; Fleming MF 2007

TABLE 2

DSM- IV Criteria for Substance Abuse & Dependence

Dependence ***(3 or more in a 12-month period)***	**Abuse** ***(1 or more in 12-month period) Symptoms must never have met criteria for substance dependence for this class of substance)***
Tolerance (marked increase in amount; marked decrease in effect)	Recurrent use resulting in failure to fulfill major role obligation at work, home, or school
Characteristic withdrawal symptoms; substance taken to relieve withdrawal	Recurrent use in physically hazardous situations
Substance taken in larger amount and for longer period than intended	Recurrent substance related legal problems
Persistent desire or repeated unsuccessful attempt to quit	Continued use despite persistent or recurrent social or interpersonal problems caused or exacerbated by substance
Much time/activity to obtain, use, recover	
Important social, occupational, or recreational activities given up or reduced	
Use continues despite knowledge of adverse consequences (e.g. failure to fulfill role obligation, use when physically hazardous)	

Source. APA, 1994.

TABLE 3

Equianalgesic doses of selected oral and parenteral opioid analgesics

	Oral (mg)	Parenteral (mg)	Interval
Opioid Agonists			
Codeine	130	75	q 3–4 hr
Hydrocodone (Lorcet, Lortab, Vicodin, others)	30	N/A	q 3–4 hr
Hydromorphone (Dialaudid)	7.5	1.5	q 3–4 hr
Meperidine (Demerol)	300	100	q 3 hr
Methadone ((Dolophine, others)	20	10	q 6–8 hr
Morphine	30–60	10	q 3–4 hr
Oxycodone (Roxicodone, Perocet, Percodan, Tylox)	30	N/A	q 3–4 hr

Note. Published tables vary in the suggested doses that are equianalgesic to morphine. Clinical response is the criterion that must be applied for each patient; titration to clinical response is necessary. Because there is incomplete cross-tolerance among these drugs, it is usually necessary to use a lower than equianalgesic dose when changing drugs and to re-titrate to response. N/A=not applicable.

Caution. Recommended doses do not apply to patients with renal or hepatic insufficiency or other conditions affecting drug metabolism and kinetics.

Source. Adapted from Carr et al. 1992

TABLE 4

ONE STEP DRUG SCREEN TEST CARD

INTENDED USE		
The **One Step Drug Screen Test Card** is a lateral flow chromatographic immunoassay utilizing monoclonal antibodies for rapid qualitative detection of multiple drugs and drug metabolites in urine at the following cut-off concentrations:		
Test	**Calibrator**	**Cut-off**
Amphetamine (AMP 300)	d-Amphetamine	300 ng/mL
Benzodiazepines (BZO)	Oxazepam	300 ng/mL
Buprenorphine (BUP)	Buprenorphine	10 ng/mL
Cocaine (COC 150)	Benzoylecgonine	150 ng/mL
Marijuana (THC)	11-nor-Δ^9-THC-9 COOH	50 ng/mL
Methadone (MTD)	Methadone	300 ng/mL
Methamphetamine (mAMP 500)	d-Methamphetamine	500 ng/mL
Opiate (MOP 300)	Morphine	300 ng/mL
Opiate (OPI 2,000)	Morphine	2,000 ng/mL
Oxycodone (OXY)	Oxycodone	100 ng/mL

Note. Configurations of the One Step Drug Screen Test Card can consist of any combination of the above listed drug analytes. This assay provides only a preliminary analytical test result. A more specific alternate chemical method must be used in order to obtain a confirmed analytical result, preferably with gas chromatography/mass spectrometry (GC/MS).

Source. Adapted from the iScreen™Drugs of Abuse One Step Drug Screen Test Card package insert