Opioid Misuse Annotated Bibliography

Ashburn MA, Levine RL. (2017). Pennsylvania State Core Competencies for Education on Opioids and Addiction. Pain Med. 18(10):1890-1894.

OBJECTIVE:
The objective of this project was to develop core competencies for education on opioids and addiction to be used in all Pennsylvania medical schools.

METHODS:
The Pennsylvania Physician General created a task force that was responsible for the creation of the core competencies. A literature review was completed, and a survey of graduating medical students was conducted. The task force then developed, reviewed, and approved the core competencies.

RESULTS:
The competencies were grouped into nine domains: understanding core aspects of addiction; patient screening for substance use disorder; proper referral for specialty evaluation and treatment of substance use disorder; proper patient assessment when treating pain; proper use of multimodal treatment options when treating acute pain; proper use of opioids for the treatment of acute pain (after consideration of alternatives); the role of opioids in the treatment of chronic noncancer pain; patient risk assessment related to the use of opioids to treat chronic noncancer pain, including the assessment for substance use disorder or increased risk for aberrant drug-related behavior; and the process for patient education, initiation of treatment, careful patient monitoring, and discontinuation of therapy when using opioids to treat chronic noncancer pain. Specific competencies were developed for each domain.

CONCLUSIONS:
These competencies will be incorporated into the educational process at all Pennsylvania medical schools. It is hoped that these curriculum changes will improve student knowledge and attitudes in these areas, thus improving patient outcomes.
https://www.ncbi.nlm.nih.gov/pubmed/28339890

Brown, A. T., Kolade, V. O., Staton, L. J., & Patel, N. K. (2013). Knowledge of addiction medicine among internal medicine residents and medical students. Tenn Med, 106(3), 31-33.

OBJECTIVES: More than 22 million Americans are living with addiction, including nearly seven million who misuse prescription medications. However, most medical schools and residency programs provide little to no education addressing alcohol and drug addiction. Implementation of a new addiction medicine curriculum at a single internal medicine program provided an opportunity for knowledge assessment in a select population of health professionals. We hypothesized that knowledge of addiction medicine would not differ by training level or geographical location of medical school, but that knowledge would improve following a structured curriculum. METHODS: Study participants included internal medicine and transitional year residents, as well as a group of medical students who were enrolled in a single internal medicine program at the time of the didactic series. A pre-test was administered prior to a four-week structured curriculum. The topics addressed included but were not limited to: 1) an overview of addiction, 2) opioids and chronic pain, 3) benzodiazepines and illicit stimulants, and 4) alcohol. A panel discussion was convened at the end of the fourth session. Following participation in the symposium, participants completed an online post-test. ANOVA was used to compare means.

Paired t-tests were used to compare pre-test and post-test scores. RESULTS: 36 of 44 eligible medical students and residents completed the pre-test. Mean pre-test percentage scores were 64 percent for fourth year medical students and 62.5 percent for all residents. For residents, U.S. medical school trainees answered 65 percent of the pre-test questions correctly, versus 58.6 percent correct responses among their international medical graduate peers. No inter-group differences were statistically significant. Of the 36 participants, 20 completed both pre-tests and post-tests. The mean post-test score of 68.75 percent was higher than the mean pre-test score of 61.75 percent, p = 0.009. CONCLUSIONS: Knowledge of addiction medicine can be improved for medical students and residents in an academic medicine department. Significant improvements were observed following completion of eight hours of interactive didactics.
https://www.ncbi.nlm.nih.gov/pubmed/23544288

Cantone RE. (2018). Why medical students need addictions training. Med Teach. 40(4):421-422.

Current medical students will be tasked at attempting to resolve the opioid epidemic in the United States that has been created by generations before them. This article will address one educator's view on the current state of training addiction treatment skills to medical students.
https://www.ncbi.nlm.nih.gov/pubmed/29094624

Chouinard, S., Prasad, A., & Brown, R. (2018). Survey Assessing Medical Student and Physician Knowledge and Attitudes Regarding the Opioid Crisis. Wmj, 117(1), 34-37.

BACKGROUND: There is a national opioid misuse and overdose crisis. Consensus guidelines seek to inform practice and reduce risk; however, effect on clinician attitudes and knowledge remains unclear. METHODS: We surveyed 228 medical students and physicians in Wisconsin to assess their knowledge regarding at-risk patients, alternatives to opioids, and best treatment practices for opioid addiction. We also assessed attitudes about prescribing naloxone, relapse likelihood, and responsibility for the crisis. DISCUSSION: Enhancement of opioid-related education is both necessary to address knowledge gaps and desired by students and physicians.
https://www.ncbi.nlm.nih.gov/pubmed/29677413

Gunderson, E. W., Coffin, P. O., Chang, N., Polydorou, S., & Levin, F. R. (2009). The interface between substance abuse and chronic pain management in primary care: a curriculum for medical residents. Subst Abus, 30(3), 253-260. doi:10.1080/08897070903041277

OBJECTIVES: To develop and assess a housestaff curriculum on opioid and other substance abuse among patients with chronic noncancer pain (CNCP). METHODS: The two-hour, case-based curriculum delivered to small groups of medical housestaff sought to improve assessment and management of opioid-treated CNCP patients, including those with a substance use disorder. A two-page pre-post survey was administered to assess self-efficacy change on a scale from 1 (strongly disagree) to 5 (strongly agree). RESULTS: Of 47/50 (94%) respondents, self-efficacy significantly improved across all items (mean pre vs. post ratings, P <.001). Housestaff were more prepared to manage patients on chronic opioid medication (2.8 vs. 3.8), including those with substance use disorders (2.3 vs. 3.4). They felt more prepared to identify opioid dependence (2.8 vs. 3.9) and overall rated the curriculum favorably (4.2). CONCLUSIONS: The brief curriculum was well received and appears effective. Further study is needed to determine practice impact.
https://www.ncbi.nlm.nih.gov/pubmed/19591063

Khidir H, Weiner SG. (2016). A Call for Better Opioid Prescribing Training and Education. West J Emerg Med. 17(6): 686-689.

Pain is the most common complaint in the emergency department (ED), and emergency physicians face unique challenges in making opioid-related treatment decisions. Medical students and residents experience significant variation in the quality of education they receive both about opioid prescribing as well as substance-use detection and intervention in the ED. To achieve a better standard of education, clinical educators will need to (a) develop a clearer understanding of the risk for aberrant opioid prescribing in the ED, (b) recognize prescribing bias and promote uptake of evidence-based opioid prescribing guidelines in their EDs, and (c) advocate for integrated opioid management and addiction medicine training formally into medical school curricula.
https://www.ncbi.nlm.nih.gov/pubmed/27833673

Kim, H., Heverling, H., Cordeiro, M., Vasquez, V., & Stolbach, A. (2016). Internet Training Resulted in Improved Trainee Performance in a Simulated Opioid-Poisoned Patient as Measured by Checklist. J Med Toxicol, 12(3), 289-294. doi:10.1007/s13181-016-0544-x

INTRODUCTION: Opioid overdose is a leading cause of death in the USA. Internet-based teaching can improve medical knowledge among trainees, but there are limited data to show the effect of Internet-based teaching on clinical competence in medical training, including management of opioid poisoning. METHODS: We used an ecological design to assess the effect of an Internet-based teaching module on the management of a simulated opioid-poisoned patient. We enrolled two consecutive classes of post-graduate year-1 residents from a single emergency medicine program. The first group (RA) was instructed to read a toxicology textbook chapter and the second group (IT) took a brief Internet training module. All participants subsequently managed a simulated opioid-poisoned patient. The participants' performance was evaluated with two types of checklist (simple and time-weighted), along with global assessment scores. RESULTS: Internet-trained participants performed better on both checklist scales. The difference between mean simple checklist scores by the IT and RA groups was 0.23 (95 % CI, 0.016-0.44). The difference between mean time-weighted checklist scores was 0.27 (95 % CI, 0.048-0.49). When measured by global assessment, there was no statistically significant difference between RA and IT participants. CONCLUSION: These data suggest that the Internet module taught basic principles of management of the opioid-poisoned patient. In this scenario, global assessment and checklist assessment may not measure the same proficiencies. These encouraging results are not sufficient to show that this Internet tool improves clinical performance. We should assess the impact of the Internet module on performance in a true clinical environment.
https://www.ncbi.nlm.nih.gov/pubmed/27037564

Kunins HV, Sohler NL, Giovanniello A, Thompson D, Cunningham CO. (2013). A buprenorphine education and training program for primary care residents: implementation and evaluation. Subst Abus. 34(3):242-7.

BACKGROUND:
Although substance use disorders are highly prevalent, resident preparation to care for patients with these disorders is frequently insufficient. With increasing rates of opioid abuse and dependence, and the availability of medication-assisted treatment, one strategy to improve resident skills is to incorporate buprenorphine treatment into training settings.

METHODS:

In this study, esidency faculty delivered the BupEd education and training program to 71 primary care residents. BupEd included (1) a didactic session on buprenorphine, (2) an interactive motivational interviewing session, (3) monthly case conferences, and (4) supervised clinical experience providing buprenorphine treatment. To evaluate BupEd, the authors assessed (1) residents' provision of buprenorphine treatment during residency, (2) residents' provision of buprenorphine treatment after residency, and (3) treatment retention among patients treated by resident versus attending physicians.

RESULTS:
Of 71 residents, most served as a covering or primary provider to at least 1 buprenorphine-treated patient (84.5 and 66.2%, respectively). Of 40 graduates, 27.5% obtained a buprenorphine waiver and 17.5% prescribed buprenorphine. Treatment retention was similar between patients cared for by resident PCPs versus attending PCPs (90-day retention: 63.6% [n = 35] vs. 67.9% [n = 152]; P = .55).

CONCLUSION:
These results show that BupEd is feasible, provides residents with supervised clinical experience in treating opioid-dependent patients, and can serve as a model to prepare primary care physicians to care for patients with opioid dependence.
https://www.ncbi.nlm.nih.gov/pubmed/23844954

Mazer-Amirshahi, M., Mullins, P. M., Sun, C., Pines, J. M., Nelson, L. S., & Perrone, J. (2016). Trends in Opioid Analgesic Use in Encounters Involving Physician Trainees in U.S. Emergency Departments. Pain Med, 17(12), 2389-2396. doi:10.1093/pm/pnw048

BACKGROUND: Opioid analgesic use has increased dramatically in emergency departments (EDs), but the relative contribution of physician trainees has not been explored. We assessed trends in opioid utilization focusing on ED encounters where a physician trainee was involved. METHODS: We studied ED visits from the National Hospital Ambulatory Medical Care Survey, 2001-2011. Adult ED visits in which an opioid was administered in the ED or prescribed at discharge were stratified by whether or not there was trainee involvement. Trends in use over time for five common opioids (codeine, hydrocodone, hydromorphone, morphine, oxycodone) were tested using survey-weighted logistic regression. RESULTS: From 2001-02 to 2009-11, the proportion of ED visits where an opioid analgesic was used increased 31.5% from 21.9% (95% CI: 20.3-23.6) of visits to 28.8% (95% CI: 27.5-30.1). Trainee involvement in ED visits was stable, with 9.3% (95% CI: 7.7-11.3) seen by a trainee in 2001-02 vs. 10.2% (95% CI: 8.1-12.7) in 2010-11. Opioid use in visits with trainee involvement did not change significantly over time relative to visits without a trainee (increase of 36.8% compared to 31.2% without trainees, P = 0.652). Trends in opioid utilization for trainee visits paralleled non-trainee visits. Hydromorphone had the greatest relative increase in use for all providers. Adjusted for patient- and hospital-level factors, the probability of receiving opioids when a trainee was involved increased to a greater extent than among non-trainee visits (30.9% vs. 24.0%). CONCLUSION: Opioid utilization patterns for visits involving trainees reflect similar trends in attending practice, and highlights the more liberal opioid prescribing climate over time.
https://www.ncbi.nlm.nih.gov/pubmed/28025373

McCance-Katz, E. F., George, P., Scott, N. A., Dollase, R., Tunkel, A. R., & McDonald, J. (2017). Access to treatment for opioid use disorders: Medical student preparation. Am J Addict, 26(4), 316-318. doi:10.1111/ajad.12550

The current opioid epidemic requires new approaches to increasing access to treatment for patients with opioid use disorders and to improve availability of medication assisted treatment. We propose a model where medical students complete the necessary training to be eligible for the waiver to prescribe opioid medications to treat these disorders by the time of medical school graduation. This plan would increase the number of Drug Abuse Treatment Act of 2000 (DATA 2000) waivered physicians who could gain additional experience in treating substance use disorders during residency and provide the access to clinical care needed for individuals suffering with opioid use disorder. (Am J Addict 2017;26:316-318).
https://www.ncbi.nlm.nih.gov/pubmed/28394437

Monteiro, K., Dumenco, L., Collins, S., Bratberg, J., MacDonnell, C., Jacobson, A., George, P. (2017). An interprofessional education workshop to develop health professional student opioid misuse knowledge, attitudes, and skills. J Am Pharm Assoc (2003), 57(2s), S113-s117. doi:10.1016/j.japh.2016.12.069

OBJECTIVE: To implement and evaluate an interprofessional workshop focused on increasing student knowledge, skills, and attitudes toward opioid misuse. SETTING: The Warren Alpert Medical School of Brown University in Providence, Rhode Island, April 2016. PRACTICE DESCRIPTION: Health professional students from medicine, nursing, pharmacy, social work, and physical therapy participated in an interprofessional education workshop focused on opioid use disorder. PRACTICE INNOVATION: This workshop included 4 main components: a patient panel, a simulated standardized patient encounter, a paper-based case session focused on a homeless individual misusing opioids, and naloxone training. EVALUATION: Direct assessment included a pretest and a posttest adapted from the Opioid Overdose Knowledge Scale administered to medical students measuring knowledge of opioid overdose at baseline and at 12 weeks after the workshop. Indirect assessment included a satisfaction survey administered to medical, nursing, pharmacy, and social work students. RESULTS: Medical students scored a mean of 40.84 out of 54 (SD = 5.36) points at baseline (n = 120) and a mean of 47.94 out of 54 (SD = 3.20) points at 12-week follow-up (n = 72), demonstrating a significant increase in knowledge from pretest to posttest (P <0.001). Student satisfaction data from medicine, nursing, pharmacy, social work, and physical therapy (n = 272) revealed a high degree of satisfaction regarding the overall quality of the training (4.47/5; SD = 0.75), quality of instruction (4.53/5; SD = 0.73), quality of training materials (4.46/5; SD = 0.77), the training experience (4.52/5; SD = 0.75), and the organization of the training (4.50/5; SD = 0.73). CONCLUSION: Our results demonstrate that an interprofessional education workshop focused exclusively on opioid misuse was well received with high levels of satisfaction among health professional students. Workshops such as these can be used in health professions curricula to simulate the complex issues surrounding substance use disorder and to highlight the importance of interprofessional teams.
https://www.ncbi.nlm.nih.gov/pubmed/28159503

Morley-Forster, P. K., Pergolizzi, J. V., Taylor, R., Jr., Axford-Gatley, R. A., & Sellers, E. M. (2013). Mitigating the risk of opioid abuse through a balanced undergraduate pain medicine curriculum. J Pain Res, 6, 791-801. doi:10.2147/JPR.S47192

Chronic pain is highly prevalent in the United States and Canada, occurring in an estimated 30% of the adult population. Despite its high prevalence, US and Canadian medical schools provide

very little training in pain management, including training in the safe and effective use of potent analgesics, most notably opioids. In 2005, the International Association for the Study of Pain published recommendations for a core undergraduate pain management curriculum, and several universities have implemented pilot programs based on this curriculum. However, when outcomes have been formally assessed, these initiatives have resulted in only modest improvements in physician knowledge about chronic pain and its treatment. This article discusses strategies to improve undergraduate pain management curricula and proposes areas in which those efforts can be augmented. Emphasis is placed on opioids, which have great potency as analgesics but also substantial risks in terms of adverse events and the risk of abuse and addiction. The authors conclude that the most important element of an undergraduate pain curriculum is clinical experience under mentors who are capable of reinforcing didactic learning by modeling best practices.
https://www.ncbi.nlm.nih.gov/pubmed/24353438

Ratycz, M. C., Papadimos, T. J., & Vanderbilt, A. A. (2018). Addressing the growing opioid and heroin abuse epidemic: a call for medical school curricula. Med Educ Online, 23(1), 1466574. doi:10.1080/10872981.2018.1466574

Substance abuse is a growing public health concern in the USA (US), especially now that the US faces a national drug overdose epidemic. Over the past decade, the number of drug overdose deaths has rapidly grown, largely driven by increases in prescription opioid-related overdoses. In recent years, increased heroin and illicitly manufactured fentanyl overdoses have substantially contributed to the rise of overdose deaths. Given the role of physicians in interacting with patients who are at risk for or currently abusing opioids and heroin, it is essential that physicians are aware of this issue and know how to respond. Unfortunately, medical school curricula do not devote substantial time to addiction education and many physicians lack knowledge regarding assessment and management of opioid addiction. While some schools have modified curricula to include content related to opioid prescription techniques and pain management, an added emphasis about the growing role of heroin and fentanyl is needed to adequately address the epidemic. By adapting curricula to address the rising opioid and heroin epidemic, medical schools have the potential to ensure that our future physicians can effectively recognize the signs, symptoms, and risks of opioid/heroin abuse and improve patient outcomes. This article proposes ways to include heroin and fentanyl education into medical school curricula and highlights the potential of simulation-based medical education to enable students to develop the skillset and emotional intelligence necessary to work with patients struggling with opioid and heroin addiction. This will result in future doctors who are better prepared to both prevent and recognize opioid and heroin addiction in patients, an important step in helping reduce the number of addicted patients and address the drug overdose epidemic.
https://www.ncbi.nlm.nih.gov/pubmed/29708863

Reid, L. (2018). Scientism in Medical Education and the Improvement of Medical Care: Opioids, Competencies, and Social Accountability. Health Care Anal, 26(2), 155-170. doi:10.1007/s10728-017-0351-9

Scientism in medical education distracts educators from focusing on the content of learning; it focuses attention instead on individual achievement and validity in its measurement. I analyze the specific form that scientism takes in medicine and in medical education. The competencies movement attempts to challenge old "scientistic" views of the role of physicians, but in the end it has invited medical educators to focus on validity in the measurement of individual performance for attitudes and skills that medicine resists conceptualizing as objective. Academic medicine

should focus its efforts instead on quality and relevance of care. The social accountability movement proposes to shift the focus of academic medicine to the goal of high quality and relevant care in the context of community service and partnership with the institutions that together with medicine create and cope with health and with health deficits. I make the case for this agenda through a discussion of the linked histories of the opioid prescribing crisis and the professionalism movement.
https://www.ncbi.nlm.nih.gov/pubmed/28986710

Roth, C. S., Burgess, D. J., & Mahowald, M. L. (2007). Medical residents' beliefs and concerns about using opioids to treat chronic cancer and noncancer pain: a pilot study. J Rehabil Res Dev, 44(2), 263-270.

This study assessed and compared residents' beliefs and concerns about using opioids for treating pain in patients with cancer and noncancer low back pain (NLBP). Participants included 72 Internal Medicine and Medicine-Pediatrics residents who completed a survey questionnaire. Based on a scale of 0 = "No concern" to 10 = "Very concerned," residents expressed greater concern that treating NLBP with opioids, compared with cancer-related pain, causes addiction (6.01 vs 1.15), abuse (5.57 vs 1.39), and side effects (4.76 vs 2.87); limits other treatments (5.36 vs 1.30); draws criticism from faculty (4.33 vs 0.88); or risks sanctioning (state board 4.12 vs 1.12, legal 4.06 vs 1.17); $p < 0.001$ for each (paired t-tests). They had more comfort (8.94 vs 4.31) and more empathy (9.09 vs 6.79) using opioids to treat for cancer pain than NLBP and would give whatever doses necessary for pain control (8.41 vs 3.66); $p < 0.001$ for each. Our findings show that residents are far more concerned about using opioids to treat NLBP than cancer-related pain.
https://www.ncbi.nlm.nih.gov/pubmed/17551877

Ruff, A. L., Alford, D. P., Butler, R., & Isaacson, J. H. (2017). Training internal medicine residents to manage chronic pain and prescription opioid misuse. Subst Abus, 38(2), 200-204. doi:10.1080/08897077.2017.1296526

BACKGROUND: Residents feel unprepared to care for patients with chronic pain on long-term opioids who exhibit signs of prescription opioid misuse. OBJECTIVE: Describe an educational intervention for internal medicine residents to improve confidence, practices, attitudes, and self-reported knowledge of resources for chronic pain and opioid misuse. METHODS: The intervention included 2 sessions. Session 1 (3 hours): a lecture on chronic pain, prescription opioid misuse, and opioid use disorders and communication skills practice. The residents were asked to use one of these skills during the following week. Session 2 (1.5 hours): debriefing of patient encounters and overview of: prescription opioid monitoring strategies, discontinuation of prescription opioids when appropriate, and treatment for opioid use disorders. Pre- and post-assessments evaluated change in residents' safe opioid prescribing confidence, self-reported practices, attitudes, and self-reported knowledge of available patient resources. RESULTS: Ninety-one residents completed the intervention, with 44 and 43 completing the pre- and post-assessments, respectively. Utilizing a 4-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = agree 4 = strongly agree), residents reported improved confidence in skills managing patients with chronic pain (3.0 vs. 2.4, $P < .0001$), skills identifying which patients with chronic pain have developed an opioid use disorder (3.0 vs. 2.4, $P < .0001$), and understanding how to monitor for benefit versus harm (3.0 vs. 2.5, $P < .0005$). They also noted improved ability identifying resources for patients with chronic pain and opioid use disorders. There was a nonsignificant improvement in resident reported comfort talking to patients about the need to discontinue opioids. Residents did not report an increase in use of safe opioid prescribing monitoring strategies or feelings of support in their prescribing decisions by preceptors. CONCLUSIONS: A brief training can improve residents' self-

reported knowledge and confidence in managing patients with chronic pain and safe opioid prescribing practices. How this change in confidence affects patient care requires further study.
https://www.ncbi.nlm.nih.gov/pubmed/28394733

Shine, D., & Demas, P. (1984). Knowledge of medical students, residents, and attending physicians about opiate abuse. J Med Educ, 59(6), 501-507.

A questionnaire concerning knowledge of opiate abuse and attitudes about abusers was administered to 94 randomly selected physicians and medical students at a large urban teaching hospital. Physicians from four clinical departments and at each level of residency training and medical students in the final year were represented. The mean knowledge score was 3.3 out of a possible 12. Neither the level of training nor specialty was related to test score for the group as a whole. However, family practitioners gained knowledge with increasing experience, while medical and surgical specialists scored lower as they advanced in training. On the attitude section, physicians had strong but individualistic views about drug abuse. Level of training, specialty, and knowledge test score were on the whole unrelated to attitude. The results indicated that physicians at every level of training might benefit from improved teaching in the area of opiate abuse.
https://www.ncbi.nlm.nih.gov/pubmed/6726770

Taylor, J. L., Rapoport, A. B., Rowley, C. F., Mukamal, K. J., & Stead, W. (2018). An opioid overdose curriculum for medical residents: Impact on naloxone prescribing, knowledge, and attitudes. Subst Abus, 39(3), 371-376. doi:10.1080/08897077.2018.1439800

BACKGROUND: Despite escalating opioid overdose death rates, addiction medicine is underrepresented in residency curricula. Providing naloxone to at-risk patients, relatives, and first responders reduces overdose deaths, but rates of naloxone prescribing remain low. The goal of this study is to examine the impact of a brief curricular intervention for internal medicine residents on naloxone prescribing rates, knowledge, and attitudes. METHODS: Internal medicine residents (N = 160) at an urban, tertiary care medical center received two 1-hour didactic sessions addressing overdose prevention, including intranasal naloxone. The number of naloxone prescriptions generated by residents was compared to faculty, who received no similar intervention, in the 3-month periods before and after the curriculum. Resident knowledge and attitudes, as assessed by pre- and post-intervention surveys, were compared. RESULTS: The resident naloxone prescribing rate increased from 420 to 1270 per 100,000 inpatient discharges ($P = .01$) and from 0 to 370 per 100,000 ambulatory visits ($P < .001$) post-intervention. Similar increases were not observed among inpatient faculty, whose prescribing rate decreased from 1150 to 880 per 100,000 discharges ($P = .08$), or among outpatient faculty, whose rate increased from 30 to 180 per 100,000 ambulatory visits ($P < .001$) but was lower than the post-intervention resident rate ($P = .01$). Residents demonstrated high baseline knowledge about naloxone, but just 13% agreed that they were adequately trained to prescribe pre-intervention. Post-intervention, residents were more likely to agree that they were adequately trained to prescribe (Likert mean 2.5 vs. 3.9, $P < .001$), to agree that treating addiction is rewarding (Likert mean 2.9 vs. 3.3, $P = .03$), and to attain a perfect score on the knowledge composite (57% vs. 33%, $P = .05$). CONCLUSIONS: A brief curricular intervention improved resident knowledge and attitudes regarding intranasal naloxone for opioid overdose reversal and significantly increased prescribing rates.
https://www.ncbi.nlm.nih.gov/pubmed/29432074

Ury, W. A., Rahn, M., Tolentino, V., Pignotti, M. G., Yoon, J., McKegney, P., & Sulmasy, D. P. (2002). Can a pain management and palliative care curriculum improve the opioid prescribing practices of medical residents? J Gen Intern Med, 17(8), 625-631. doi:10.1046/j.1525-1497.2002.10837.x

BACKGROUND: Although opioids are central to acute pain management, numerous studies have shown that many physicians prescribe them incorrectly, resulting in inadequate pain management and side effects. We assessed whether a case-based palliative medicine curriculum could improve medical house staff opioid prescribing practices. DESIGN: Prospective chart review of consecutive pharmacy and billing records of patients who received an opioid during hospitalization before and after the implementation of a curricular intervention, consisting of 10 one-hour case-based modules, including 2 pain management seminars. MEASUREMENTS: Consecutive pharmacy and billing records of patients who were cared for by medical residents (n = 733) and a comparison group of neurology and rehabilitative medicine patients (n = 273) that received an opioid during hospitalization in 8-month periods before (1/1/97 to 4/30/97) and after (1/1/99 to 4/30/99) the implementation of the curriculum on the medical service were reviewed. Three outcomes were measured: 1) percent of opioid orders for meperidine; 2) percent of opioid orders with concomminant bowel regimen; and 3) percent of opioid orders using adjuvant nonsteroidal anti-inflammatory drugs (NSAIDs). MAIN RESULTS: The percentage of patients receiving meperidine decreased in the study group, but not in the comparison group. The percentages receiving NSAIDs and bowel medications increased in both groups. In multivariate logistic models controlling for age and race, the odds of an experimental group patient receiving meperidine in the post-period decreased to 0.55 (95% confidence interval [95% CI], 0.32 to 0.96), while the odds of receiving a bowel medication or NSAID increased to 1.48 (95% CI, 1.07 to 2.03) and 1.53 (95% CI, 1.01 to 2.32), respectively. In the comparison group models, the odds of receiving a NSAID in the post-period increased significantly to 2.27 (95% CI, 1.10 to 4.67), but the odds of receiving a bowel medication (0.45; 95% CI, 0.74 to 2.00) or meperidine (0.85; 95% CI, 0.51 to 2.30) were not significantly different from baseline. CONCLUSIONS: This palliative care curriculum was associated with a sustained (>6 months) improvement in medical residents' opioid prescribing practices. Further research is needed to understand the changes that occurred and how they can be translated into improved patient outcomes.
https://www.ncbi.nlm.nih.gov/pubmed/12213144

Wakeland W, Nielsen A, Schmidt TD, McCarty D, Webster LR, Fitzgerald J, Haddox JD. (2013). Modeling the impact of simulated educational interventions on the use and abuse of pharmaceutical opioids in the United States: a report on initial efforts. Health Educ Behav. 40(1 Suppl):74S-86S.

Three educational interventions were simulated in a system dynamics model of the medical use, trafficking, and nonmedical use of pharmaceutical opioids. The study relied on secondary data obtained in the literature for the period of 1995 to 2008 as well as expert panel recommendations regarding model parameters and structure. The behavior of the resulting systems-level model was tested for fit against reference behavior data. After the base model was tested, logic to represent three educational interventions was added and the impact of each intervention on simulated overdose deaths was evaluated over a 7-year evaluation period, 2008 to 2015. Principal findings were that a prescriber education intervention not only reduced total overdose deaths in the model but also reduced the total number of persons who receive opioid analgesic therapy, medical user education not only reduced overdose deaths among medical users but also resulted in increased deaths from nonmedical use, and a "popularity" intervention sharply reduced overdose deaths among nonmedical users while having no effect on medical use. System dynamics modeling shows promise for evaluating potential interventions to ameliorate the

adverse outcomes associated with the complex system surrounding the use of opioid analgesics to treat pain.
https://www.ncbi.nlm.nih.gov/pubmed/24084403

Wakeman, S. E., Baggett, M. V., Pham-Kanter, G., & Campbell, E. G. (2013). Internal medicine residents' training in substance use disorders: a survey of the quality of instruction and residents' self-perceived preparedness to diagnose and treat addiction. Subst Abus, 34(4), 363-370. doi:10.1080/08897077.2013.797540

BACKGROUND: Resident physicians are the direct care providers for many patients with addiction. This study assesses residents' self-perceived preparedness to diagnose and treat addiction, measures residents' perceptions of the quality of addictions instruction, and evaluates basic knowledge of addictions. METHODS: A survey was e-mailed to 184 internal medicine residents at Massachusetts General Hospital in May 2012. RESULTS: Responses were obtained from 55% of residents. Residents estimated that 26% of inpatients they cared for met criteria for a substance use disorder (SUD). Twenty-five percent of residents felt unprepared to diagnose and 62% felt unprepared to treat addiction. Only 13% felt very prepared to diagnose addiction. No residents felt very prepared to treat addiction. Preparedness to diagnose or treat addiction did not differ significantly across postgraduate year (PGY) level. Fifty-five percent rated the overall instruction in addictions as poor or fair. Seventy-two percent of residents rated the quality of addictions training as poor or fair in the outpatient clinical setting, and 56% in the inpatient setting. No resident answered all 6 knowledge questions correctly. Slightly more than half correctly identified the mechanism of buprenorphine and 19% correctly answered a question about naltrexone. Nine percent of residents responded that someone had expressed concern about the respondent's substance use. CONCLUSIONS: Despite providing care for a substantial population with addiction, the majority of internal medicine residents in this study feel unprepared to treat SUDs. More than half rate the quality of addictions instruction as fair or poor. Structured and comprehensive addictions curriculum and faculty development are needed to address the deficiencies of the current training system.
https://www.ncbi.nlm.nih.gov/pubmed/24159907

Wakeman, S. E., Pham-Kanter, G., Baggett, M. V., & Campbell, E. G. (2015). Medicine Resident Preparedness to Diagnose and Treat Substance Use Disorders: Impact of an Enhanced Curriculum. Substance Abuse, 36(4), 427-433. doi:10.1080/08897077.2014.962722

The authors previous study found that despite caring for many patients with addiction, most Massachusetts General Hospital (MGH) internal medicine residents feel unprepared to treat substance use disorders (SUDs) and rate SUD instruction during training as fair or poor. This follow-up study evaluates the impact of an enhanced curriculum on resident perceptions of the quality of instruction, knowledge base, and self-perceived preparedness to diagnose and treat SUDs. Methods: Based on the findings of the earlier study, an enhanced SUD curriculum was designed and delivered to MGH medicine residents. Impact of the curriculum was evaluated using the same Web-based survey that was administered in the earlier study to compare pre-and posttest results. Results: The authors earlier study found that 75% of residents felt prepared to diagnose and 37% to treat SUDs and 45% of residents rated the overall quality of SUD instruction as good or excellent. Following the curriculum intervention, 87% of residents reported feeling prepared to diagnose (P =.028) and 60% to treat (P =.002) SUDs. Three quarters of residents rated the overall quality of instruction as good or excellent (P <.001), and 98% reported residency curriculum had a positive impact on their preparedness to care for patients with a SUDs.

Residents who reported receiving an adequate amount of SUD instruction were more likely to feel prepared to diagnose and treat addiction (P <.001). Thirty-one percent of residents still rated the overall amount of SUD instruction as too little. The intervention did not significantly improve answers to knowledge questions. Conclusions: An enhanced SUDs curriculum for medicine residents increased self-perceived preparedness to diagnose and treat SUDs and educational quality ratings. However, there was no significant change in knowledge. Implementation of a more comprehensive curriculum and evaluation at other sites are necessary to determine the ideal SUD training model.
https://www.ncbi.nlm.nih.gov/pubmed/25257796

Webster, F., Bremner, S., Oosenbrug, E., Durant, S., McCartney, C. J., & Katz, J. (2017). From Opiophobia to Overprescribing: A Critical Scoping Review of Medical Education Training for Chronic Pain. Pain Med, 18(8), 1467-1475. doi:10.1093/pm/pnw352

Background: Chronic pain is a significant health problem strongly associated with a wide range of physical and mental health problems, including addiction. The widespread prevalence of pain and the increasing rate of opioid prescriptions have led to a focus on how physicians are educated about chronic pain. This critical scoping review describes the current literature in this important area, identifying gaps and suggesting avenues for further research starting from patients' standpoint. Methods: A search of the ERIC, MEDLINE, and Social Sciences Abstracts databases, as well as 10 journals related to medical education, was conducted to identify studies of the training of medical students, residents, and fellows in chronic noncancer pain. Results: The database and hand-searches identified 545 articles; of these, 39 articles met inclusion criteria and underwent full review. Findings were classified into four inter-related themes. We found that managing chronic pain has been described as stressful by trainees, but few studies have investigated implications for their well-being or ability to provide empathetic care. Even fewer studies have investigated how educational strategies impact patient care. We also note that the literature generally focuses on opioids and gives less attention to education in nonpharmacological approaches as well as nonopioid medications. Discussion: The findings highlight significant discrepancies between the prevalence of chronic pain in society and the low priority assigned to educating future physicians about the complexities of pain and the social context of those afflicted. This suggests the need for better pain education as well as attention to the "hidden curriculum."
https://www.ncbi.nlm.nih.gov/pubmed/28371881

Webster, S., Robinson, S., Ali, R., & Marsden, J. (2018). Improving outcomes in the treatment of opioid dependence (IOTOD): reflections on the impact of a medical education initiative on healthcare professionals' attitudes and clinical practice. J Eur CME, 7(1), 1506197. doi:10.1080/21614083.2018.1506197

Since 2011, the annual improving outcomes in the treatment of opioid dependence (IOTOD) meeting has brought together a broad range of primarily European healthcare professionals as part of an ongoing effort to promote best practice for this particularly vulnerable patient population. IOTOD, a comprehensive educational initiative, includes the annual Continuing Medical Education (CME)-accredited IOTOD conference, which is dedicated to measuring practice change and outcomes resulting from attendance at its educational sessions. Following each session, delegates are asked to vote for or against incorporating specified changes into their clinical practice. These "commitments to change" have formed one measure of the effectiveness and impact of the IOTOD conference. Here, we look at why educational initiatives like the IOTOD conference are valuable, examine our methods for conducting a CME-accredited event, and

highlight individualised treatment plans and delivery. We examine this approach - increasingly seen as best practice - as an example of how it may be changing attitudes and eventually affecting clinical applications in the field of opioid dependence. The measured commitments to change offer insight into HCPs' attitudes towards opioid dependence management and show that attitudes towards individualised treatment plans seem to be progressively positive, with a general consensus to incorporate psychosocial interventions.
https://www.ncbi.nlm.nih.gov/pubmed/30202635

Weinstein, S. M., Laux, L. F., Thornby, J. I., Lorimor, R. J., Hill Jr, C. S., Thorpe, D. M., & Merrill, J. M. (2000). Medical students' attitudes toward pain and the use of opioid analgesics: Implications for changing medical school curriculum. Southern Medical Journal, 93(5), 472-478.

Background. Barriers to pain management include physicians' lack of knowledge and attitudes. Our aim was to investigate future physicians' knowledge and attitudes toward pain and the use of opioid analgesics. Methods. We tested a medical school class during their freshman and senior years. Stepwise regression analysis was used to identify the personal traits that predicted opiophobia. Results. The professionalization process of medical training may reinforce negative attitudes. Psychologic characteristics were associated with reluctance to prescribe opioids, and fears of patient addiction and drug regulatory agency sanctions. Conclusions. Consistent attitudes were found in senior medical students with preferences for certain specialty areas and the practitioners of their future specialties, suggesting a 'preselection' effect. Higher scores on reliance on high technology, external locus of control, and intolerance of clinical uncertainty were associated with higher scores on one or more of the three dimensions of opiophobia. Implications for medical education are discussed.
https://www.ncbi.nlm.nih.gov/pubmed/10832944 (abstract only)

Wilson, J. D., Spicyn, N., Matson, P., Alvanzo, A., & Feldman, L. (2016). Internal medicine resident knowledge, attitudes, and barriers to naloxone prescription in hospital and clinic settings. Subst Abus, 37(3), 480-487. doi:10.1080/08897077.2016.1142921

BACKGROUND: The United States is facing an epidemic of opioid use and misuse leading to historically high rates of overdose. Community-based overdose education and naloxone distribution has effectively trained lay bystanders to recognize signs of overdose and administer naloxone for reversal. There has been a movement to encourage physicians to prescribe naloxone to all patients at risk of overdose; however, the rate of physician prescribing remains low. This study aims to describe resident knowledge of overdose risk assessment, naloxone prescribing practices, attitudes related to naloxone, and barriers to overdose prevention and naloxone prescription. METHODS: The HOPE (Hospital-based Overdose Prevention and Education) Initiative is an educational campaign to teach internal medicine residents to assess overdose risk, provide risk reduction counseling, and prescribe naloxone. As part of a needs assessment, internal medicine residents at an academic medical center in Baltimore, Maryland, were surveyed in 2015. Data were collected anonymously using Qualtrics. RESULTS: Ninety-seven residents participated. Residents were overwhelmingly aware of naloxone (80%) and endorsed a willingness to prescribe (90%). Yet despite a high proportion of residents reporting patients in their panels at increased overdose risk (79%), few had prescribed naloxone (15%). Residents were willing to discuss overdose prevention strategies, although only a minority reported doing so (47%). The most common barriers to naloxone prescribing were related to knowledge gaps in how to prescribe and how to assess risk of overdose and identify candidates for naloxone (52% reporting low confidence in ability to identify patients who are at risk).

CONCLUSIONS: Medicine residents are aware of naloxone and willing to prescribe it to at-risk patients. Due to decreased applied knowledge and limited self-efficacy, few residents have prescribed naloxone in the past. In order to improve rates of physician prescribing, initiatives must help physicians better assess risk of overdose and improve prescribing self-efficacy.
https://www.ncbi.nlm.nih.gov/pubmed/26820604

Wyatt, S. A., & Dekker, M. A. (2007). Improving physician and medical student education in substance use disorders. Journal of the American Osteopathic Association, 107(9 SUPPL. 5), ES27-ES38.

Medical and psychosocial problems related to substance use disorders (SUDs) remain a major source of national morbidity and mortality. This situation exists despite greater understanding of genetic, neurobiologic, and social underpinnings of the development of these illnesses that has resulted in many advances in addiction medicine. The value of assessment and brief intervention of this disease is well documented. Patients need to be identified and engaged in order for them to be treated. A variety of evidence-based pharmacologic and psychotherapeutic treatments are now available. Strong evidence exists that treatment of patients for SUDs produces results similar to or better than those obtained from treatment for other chronic illnesses. It is also clear that physicians can play a pivotal role in helping to reduce the burden of disease related to SUDs However, to do this, physicians need to be better educated. Through such education comes greater confidence in identification and providing treatment. Also, the discomfort and stigma often associated with this disease are reduced. The federal government-through the Office of National Drug Control Policy, the Surgeon General, the Center for Substance Abuse Treatment, the National Institute on Drug Abuse, the National Institute on Alcohol Abuse and Alcoholism, and the National Highway Traffic Safety Administration of the Department of Transportation (DOT)-is expending concerted efforts to improve physician education in addiction medicine. These efforts culminated in the Second Leadership Conference on Medical Education in Substance Abuse in December 2006. The osteopathic medical profession was represented at this conference. This article reviews not only the recommendations from this meeting, but also the nature of the problem, how members of the osteopathic medical profession are currently addressing it, and a strategy for improvement endorsed by the American Osteopathic Academy of Addiction Medicine.
https://www.ncbi.nlm.nih.gov/pubmed/17908828

Yorkgitis BK, Bryant E, Raygor D, Brat G, Smink DS, Crandall M. (2018). Opioid Prescribing Education in Surgical Residencies: A Program Director Survey. J Surg Educ.. 75(3):552-556.

BACKGROUND:
Opioid abuse and misuse is a public health crisis. A national effort to reduce this phenomenon is ongoing. Residents represent a large pool of opioid prescribers but, are often not the target for opioid prescribing education (OPE). We developed a survey to assess current opioid prescribing practices and education among surgical residents.

STUDY DESIGN:
An Institutional Review Board and Association of Program Directors in Surgery approved survey was electronically mailed to surgical program directors (PDs). The survey included questions regarding residency type, location, number of graduates per year, perceived value of OPE, residency policy on prescribing outpatients-controlled substances, presence of OPE, and preferred method of OPE.

MATERIALS AND METHODS:

A total of 248 PDs were e-mailed the survey with 110 complete responses (44.4%). Of all 104 (94.5%) allow residents to prescribe outpatient opioids with 24 (23.1%) limiting the opioid class prescribed. A total of 29 (27.9%) programs require residents to obtain their own Drug Enforcement Administration registration. Only 22 (20.0%) programs had in place mandatory OPE, 7 (6.4%) PDs were unsure if OPE was a mandatory educational requirement. Furthermore, 70 (79.5%) of programs currently without OPE are considering adding it. Didactic lecture (18, 81.8%) is the most common modality for OPE. The mode time dedicated to OPE was 1 hour. When PDs were asked about which method would be best to deliver OPE, the most common response was case-based scenarios (39, 35.5%). Bivariate statistics were performed and no association was found between OPE and program characteristics.

CONCLUSIONS:
Most surgical residency programs allow residents to prescribe outpatient opioids, very few require OPE. The most common method of OPE was didactic lectures. To enhance a resident's knowledge in prescribing opioids, programs should incorporate OPE into their curriculum.
https://www.ncbi.nlm.nih.gov/pubmed/28882458