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EDUCATION & TRAINING SECTION

Responding to the Opioid Epidemic: Educational Competencies for Pain and Substance Use Disorder from the Medical Schools of the University of California

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Abstract

Objective. The University of California (UC) leadership sought to develop a robust educational response to the epidemic of opioid-related deaths. Because the contributors to this current crisis are multifactorial, a comprehensive response requires educating future physicians about safe and effective management of pain, safer opioid prescribing, and identification and treatment of substance use disorder (SUD). **Methods.** The six UC medical schools appointed an opioid crisis workgroup to develop educational strategies and a coordinated response to the opioid epidemic. The workgroup had diverse specialty and disciplinary representation. This workgroup focused on developing a foundational set of educational competencies for adoption across all UC medical schools that address pain, SUD, and public health concerns related to the opioid crisis. **Results.** The UC pain and SUD competencies were either newly created or adapted from existing competencies that addressed pain, SUD, and opioid and other prescription drug misuse. The final competencies covered three domains: pain, SUD, and public health issues related to the opioid crisis. **Conclusions.** The authors present a novel set of educational competencies as a response to the opioid crisis. These competencies emphasize the subject areas that are fundamental to the opioid crisis: pain management, the safe use of opioids, and understanding and treating SUD.

Key Words: Pain; SUD; Opioid Epidemic; Education; Competencies; Curriculum

Introduction

In November 2011, the US Centers for Disease Control and Prevention (CDC) declared prescription drug abuse to be a nationwide epidemic, with drug overdose becoming the leading cause of accidental injury death, exceeding deaths due to motor vehicle accidents [1]. According to the National Institute of Drug Abuse, more than 130 deaths due to opioid overdose occur every day in the United States [2]. This rise in unintended opioid-related overdose deaths parallels increased sales of prescription opioids, which nearly quadrupled from 1999 to 2014 [1]. There are many factors that contributed to this crisis, including unchecked and poorly understood prescription paradigms for pain treatment; mandated recognition of pain as the fifth vital sign; limited education on pain management in medical and other health professional schools; and an underestimation of the risks and an overestimation of the benefits of opioids, particularly in the setting of chronic noncancer pain [3, 4].

Policies to address opioid overprescribing, such as state-based prescription drug monitoring programs and prescribing guidelines from the CDC, have led to nationwide reductions in opioid prescribing and deaths related to prescription opioids [5]. However, many states, including California, continue to see increases in opioid-related deaths, with fewer deaths involving prescription opioids and more involving heroin and illicitly manufactured synthetic opioids such as fentanyl [6]. Overdose deaths involving illicit opioids are part of a complex, intertwined, three-wave epidemic with distinct supply and demand drivers [7]. Moreover, there is growing recognition that overzealous interpretation of opioid guidelines may be leading to harmful restrictions on opioid prescribing, particularly for patients who have developed physical dependence on opioids [8–10].

Significant gaps in medical education about pain, particularly regarding the safe and effective use of opioids for chronic noncancer pain and the identification and management of substance use disorder (SUD), have been widely recognized as drivers of the ongoing epidemic of opioid misuse and abuse [11–13]. Consensus-based core competencies for guiding pain education were published in 2013 and have subsequently been endorsed or supported by national and international professional organizations and cited in major federal reports related to national pain strategies [11, 14, 15]. Curricular recommendations and competencies for education specific to SUD—and, more specifically, opioid use disorder—have been reported, but none has been reported to be widely implemented [15–19].

The University of California (UC) includes six medical and numerous health professional schools and represents one of the world's largest academic health systems. The development of a set of core competencies for pain, SUD, and safer opioid prescribing was an urgent priority. This article describes the approach used to develop these

competencies, the resulting set of competencies, and other work related to pain and SUD from clinical and public health perspectives.

Methods

The deans and medical education deans of the six UC medical schools (UC Davis, UC Irvine, UC Los Angeles, UC Riverside, UC San Diego, and UC San Francisco) determined the need for a coordinated response to the opioid epidemic in the state. They subsequently appointed a workgroup to develop a set of competencies for adoption across the schools to address the education gap that, in part, drives the opioid crisis. The UC medical education deans (vice deans and senior associate deans for medical education) selected two to three members from each medical school to comprise the workgroup that collaboratively developed the UC competencies intended to address the opioid crisis and to make recommendations regarding curriculum, assessment, and other educational interventions. The workgroup was appointed to ensure broad representation across specialties and disciplines relevant to the opioid epidemic, pain, and SUD. Final opioid workgroup representation included addiction medicine, addiction psychiatry, anesthesiology, anthropology, bioethics, emergency medicine, family medicine, general internal medicine, geriatrics, intensive care medicine, pain medicine, palliative medicine, pediatrics, psychiatry, psychology, public health, and toxicology.

The opioid workgroup first convened in 2018. Initial meetings were through monthly telephone conference calls. These were followed by two full-day in-person meetings held in Oakland, CA, at the UC Office of the President in 2018 and 2019. Workgroup members decided to develop a set of core competencies rather than focus only on curricular development because variation in the organization and format of the curriculum across the various UC campuses meant that a single set of educational resources would not meet the needs of all the member schools. During these meetings, members proposed, discussed, and reached consensus on a final set of medical education competencies related to pain management, treatment of SUD, and public health issues intended to address the opioid crisis. Other initiatives from the workgroup included the development of a faculty guide with annotated teaching resources to be made available publicly or within the UC system; the development of new curricular materials that are not currently adequately addressed by available resources; and the assessment of inclusion of content that addresses the UC competencies in the Clinical Performance Examination (CPX). The CPX is a standardized clinical skills exam administered by the California Consortium for the Assessment of Clinical Competence (CCACC) that is given to fourth-year medical students at California schools that are members of the CCACC, including all six UC medical schools and medical schools at Stanford

University, the University of Southern California, and Loma Linda University.

The group also reviewed how to best ensure that training on medications for opioid use disorder (MOUD)—also referred to as medication-assisted treatment (MAT)—could be made available to medical students (or incorporated into the undergraduate curriculum) and how this training could count toward the future Drug Addiction Treatment Act (DATA) 2000 waiver process (“X-license”), which will allow the prescription of buprenorphine for opioid use disorder.

Results

The UC workgroup completed and unanimously approved the final list of medical education competencies in March 2019 (see [Table 1](#)) by first reviewing the available resources and competencies offered through other states and institutions as well as those published in the literature [15–19]. Workgroup discussions focused on whether competencies would include pain, SUD, or both and whether pain and SUD competencies, if both were included, would be addressed separately or as integrated competencies. Ultimately, the group concluded that including competencies in SUD (including MOUD) would be a novel approach, with the premise that the state of California would benefit from a new generation of physicians trained to manage opioid use disorder and other comorbid SUD. The workgroup also ensured that the competencies extended beyond medication management strategies to include nonpharmacological strategies for both pain and SUD management. A subgroup was also convened and charged with reviewing existing published competencies related to pain, SUD, opioids, and prescription drug misuse and making recommendations on focus areas to the larger group. This subgroup identified points of overlap between, as well as subtle distinctions in focus and scope across, the existing and published competencies [15–19].

The workgroup members reviewed the list of existing published competencies and adopted some verbatim, adopted some with modifications, and proposed new competencies, particularly in the area of public health related to the opioid crisis. The results were grouped into three separate sections: pain (four domains), SUD (four domains), and public health (one domain). The pain and SUD competencies followed the domain structure of previously published and endorsed consensus core competencies that emphasize the following four domains: 1) understanding of the condition (what is pain or SUD); 2) assessment and measurement (how is pain or SUD assessed and measured); 3) treatment (how is pain or SUD safely and effectively treated); and 4) context (how does context affect pain or SUD) [15]. The first domain for pain and SUD includes knowledge about neurobiology; physiology; individual, cultural, and social influences on pain and SUD; and confluences of genetic and

environmental factors in the patient’s perception of pain or SUD. The second domain of assessment and measurement promotes skill-building in the use of valid and reliable assessment tools, recognition of patient preferences, diagnosis, and referral. The third domain focuses on treatment, including the demonstration of effective communication skills; knowledge of harm reduction and secondary prevention interventions; and differentiation between physical dependence, SUD, misuse, tolerance, and nonadherence in patients. The final domain focuses on context, including issues related to special populations, integration of multidisciplinary and interprofessional care, diverse care and treatment settings and care transitions, and the recognition of the roles of clinician and societal biases and stigmatization in patients’ pain and SUD treatment trajectories.

The additional domain of public health competencies acknowledges the relationship between social determinants of health and both pain and SUD. Factors affected by this relationship include social, economic, environmental, health care system, industry, and regulatory drivers that shape opioid prescribing and treatment responses of pain and SUD, as well as primary, secondary, and tertiary prevention strategies. This section of the competencies includes subjects related to pain and SUD such as the impact of racism, health disparities, equity, diversity, and inclusion. Knowledge demonstration, skills development, and comparative application competencies consistent with Bloom’s taxonomy are included across all competency domains [20].

Consensus was reached on the competencies via subsequent conference calls. Among the final pain competencies, 30% were taken verbatim from existing lists of competencies and 70% were adapted. Among the final SUD competencies, 20% were taken verbatim from existing lists of competencies, 70% were adapted, and 10% were entirely new. Among the final public health competencies, 43% were taken verbatim from existing lists of competencies, 14% were adapted, and 43% were entirely new (see [Table 1](#)).

After completing work on the competencies, the workgroup began reviewing existing online teaching resources that had been created to address the opioid epidemic as well as pain management and SUD to determine which of the UC opioid competencies had been addressed in existing resources and the quality of the available resources using a standardized review template. The workgroup is creating an annotated list of resources that each UC medical school can use for customized implementation across the UC medical schools. Competencies that are unaddressed by existing resources—or where quality is deemed inadequate—will be addressed through the development of new online teaching resources and supplementary curricular materials. Additionally, a common assessment of many of the competencies via the CCACC and CPX given to all fourth-year medical students in the state of California will be implemented.

Table 1. University of California pain and substance use disorder competencies

Section	Domain	Competency
Pain	What is pain? <i>Multidimensional nature of pain</i>	Describes the complex, multidimensional, and individual-specific nature of pain*
		Describes how cultural, institutional, societal, and regulatory influences affect assessment and management of pain*
		Demonstrates knowledge of the theories and science for understanding the physiology of pain and pain transmission*
	How is pain assessed and measured? <i>Pain assessment and measurement</i>	Demonstrates knowledge of the terminology for describing pain, including acute pain, chronic pain, and pain at the end of life*
		Uses a biopsychosocial-spiritual model to evaluate persons with pain [†]
		Describes patient, clinician, and system factors that can facilitate or interfere with effective pain assessment and management*
		Recognizes patient preferences and values to determine pain-related goals and priorities, including quality of life*
		Uses valid and reliable tools for measuring pain, function, and associated symptoms to assess and reassess related outcomes appropriate to the clinical context and population*
		Uses and models language that destigmatizes pain, reflects a whole-person perspective, builds a therapeutic alliance, and promotes behavior change*
		Demonstrates use of proper patient assessment, including physical exam and history, when treating pain [‡]
	How is pain safely and effectively treated? <i>Treatment</i>	Demonstrates empathic, compassionate, and professional communication during pain assessment [§]
		Evaluates a patient’s pain using culturally appropriate, evidence-based methodologies considering age and gender [¶]
		Uses a biopsychosocial-spiritual model to develop a whole-person care plan and prevention strategies for persons with pain [†]
		Demonstrates knowledge of risk stratification, patient selection, and ongoing monitoring for pharmacological pain treatment
		Differentiates among physical dependence, substance use disorder, misuse, tolerance, and nonadherence in patients [§]
Identifies appropriate multimodal pain treatment options as part of a comprehensive pain management plan*		
Identifies and describes potential pharmacological and nonpharmacological treatment options [¶]		
Develops a treatment plan that takes into account the differences among acute pain, acute-on-chronic pain, chronic or persistent pain, and pain at the end of life [§]		
How does context affect pain? <i>Context</i>	Develops a pain treatment plan based on benefits and risks of available treatments*	
	Demonstrates the inclusion of the patient and others, as appropriate, in the shared decision-making process for pain care [§]	
	Monitors the effects of pain management approaches to adjust the plan of care as needed with respect to functional outcomes*	
	Empowers patients to recognize and apply health promotion and self-management strategies [†]	
	Describes the unique pain assessment and management needs of special populations [§]	
	Describes the role, scope of practice, and contribution of the different professions within multidisciplinary pain management care teams*	
	Demonstrates how to assess and manage pain across settings and transitions of care*	
Substance use disorder	What is substance use disorder? <i>Multidimensional nature of substance use disorder</i>	Describes the interrelated nature of pain and opioid use disorder, including their neurobiology [†]
		Demonstrates knowledge of the pathophysiology of substance use disorders
		Recognizes the spectrum of and differences among substance use, misuse, use disorders, physical dependence, tolerance, withdrawal, and pain* ^{¶,}
How is substance use disorder assessed and measured? <i>Pain assessment and measurement</i>		Identifies the impact of substance (alcohol, cannabis, tobacco, opioid, sedative, and stimulant) use on health
		Uses a biopsychosocial-spiritual model to screen for and evaluate persons with substance use disorder [†]
		Recognizes and stratifies patient risk for opioid use disorder and other adverse effects, including overdose ^{¶,}
		Demonstrates sufficient knowledge to perform proper assessment, diagnosis, and referral for treatment of substance use disorder* ^{¶,}
		Demonstrates empathic and compassionate communication during SUD assessment*
	Uses and models language that destigmatizes addiction, reflects a whole-person perspective, builds a therapeutic alliance, and promotes behavior change ^{¶,}	
	Uses a biopsychosocial-spiritual model to develop a whole-person care plan for persons with substance use disorder ^{†,¶}	

(continued)

Table 1.. continued

Section	Domain	Competency
	How is substance use disorder safely and effectively treated? <i>Treatment</i>	Recognizes signs and symptoms of controlled substance overdose and demonstrates fundamental knowledge of management strategies [¶] Displays knowledge of substance use disorder treatment, including pharmacologic (opioids, nicotine, and alcohol use disorder), behavioral, and social options using a chronic disease model ^{¶,} Demonstrates effective communication skills in counseling patients and families on the use of medical therapies Uses an integrated, team-based approach to substance use disorder treatment ^{†,} Engages patients who use drugs in harm reduction and other secondary prevention interventions to reduce morbidity Engages patients' family and social support in the care of substance use disorder [†]
	How is substance use disorder affected by context? <i>Context</i>	Recognizes their own and societal biases and stigmatization against patients with substance use disorders, including barriers faced by special populations ^{¶,} Identifies and incorporates relevant data regarding social determinants of health into treatment planning for substance use disorders [¶] Identifies strategies to mitigate the risk of substance use disorder and promote wellness in clinicians Critically evaluates systems and seeks evidence-based solutions that deliver quality care in the treatment of substance use disorders [†]
Public health	Lessons learned from the opioid epidemic	Describes the impact of pain, opioid use disorder, and other substance use disorders on society [§] Describes the social, environmental, health care system, industry, and regulatory drivers that have shaped opioid prescribing and approach to pain care, including the social determinants of health in the distribution of morbidity and mortality [†] Describes population health and policy efforts intended to address the opioid misuse and overdose epidemics, including co-prescribing of naloxone Recognizes the role of health and health care disparities in pain and substance use treatment Recognizes pain, opioid use disorder, and other substance use disorders as multidimensional public health problems Demonstrates knowledge of the epidemiology of medical and nonmedical opioid use and overdose in the United States Identifies primary, secondary, and tertiary prevention strategies to address opioid misuse and overdose

*Competency adapted from North American Pain Competencies [15].

†Competency adapted from Arizona Pain and Addiction Curriculum [17].

‡Competency adapted from Pennsylvania State Core Competencies for Education on Opioids and Addiction [18].

§Competency taken directly from North American Pain Competencies [15].

¶Competency adapted from Massachusetts Medical Education Core Competencies for the Prevention and Management of Prescription Drug Misuse [16].

||Competency taken directly from Specific Disciplines Addressing Substance Use: AMERSA in the 21st Century—2018 Update [19].

|||Competency adapted from Specific Disciplines Addressing Substance Use: AMERSA in the 21st Century—2018 Update [19].

**Competency taken directly from Pennsylvania State Core Competencies for Education on Opioids and Addiction [18].

Members of the workgroup subsequently joined the CCACC's CPX, a consortium of eight allopathic medical schools in California, to develop a new opioid crisis-related standardized patient case and to add competency assessment to an existing chronic pain case. Finally, the workgroup also advocated for the inclusion of MOUD training for all UC medical students as part of the common UC opioid competency-based curriculum, either through the use of existing, nationally approved MAT curricula or through a California-specific strategy, which would potentially qualify all UC medical school graduates for the buprenorphine waiver once they are licensed in the state via a provision in the 2000 DATA that allows state medical boards to certify curricula as meeting the requirements for MAT training in their state. The workgroup is in discussions with the Medical Board of California to ensure that students who graduate with MOUD training and attend residency in California will have a seamless pathway toward being licensed for office-based prescribing of buprenorphine.

Discussion

A crucial but overlooked component of the opioid crisis is the profound education gap in basic pain and SUD management. Addressing the lack of clinician knowledge and expertise can play a fundamental role in reducing our nation's opioid drug problems [3]. This set of UC educational core competencies emphasizes that a complete response to the opioid crisis requires education on pain, safe use of opioids, and understanding and treating SUD. Although effective curricula can differ greatly in the approach to achieving competence in learners, a specific set of educational competencies can serve as targeted goals or outcomes regardless of the curricular structure at a particular school. These competencies have integrated work by other institutions and health systems, are comprehensive, and use the structure of previously published consensus pain competencies, which organize competencies into four overarching domains that cover basic knowledge, recognition and assessment, safe and effective practice, and the impact of context for both pain and

SUD [15]. Additionally, a unique public health domain was included to place the opioid epidemic in context.

As one of the world's largest academic health systems, with six accredited medical schools, each school will use these competencies to guide curricular change and to develop methods to assess the impact and utility of these competencies. Although individual schools will likely follow different processes and use different curricular content to reach these goals, each will eventually be able to demonstrate a clear path to competency for its students. To effectively train students, each school must also ensure that there is sufficient teaching and training of faculty around pain and SUD, which will likely require consideration of broader continuing medical education training initiatives. Furthermore, expanding the expectations for competency in pain and SUD is an opportunity to engage residents from all specialties in these trainings. In addition to their role in educating residents and students, competencies have the potential to provide a framework for educational content for other health professional schools as well as postlicensure learners to address the education gap among currently practicing clinicians who will not directly benefit from curricular reform [21]. Lastly, these competencies will support addressing timely issues such as the health burden of racism and biased health care as well as the multitude of issues related to pain and the COVID-19 pandemic [22–24].

Ensuring that all medical students are educated along a path to competency in the care of patients in pain and/or SUD, including the safe and appropriate use of opioids, should be part of the content required of all medical schools as a condition for Liaison Committee on Medical Education (LCME) accreditation. Development and inclusion of sufficient questions on the United States Medical Licensing Examination (USMLE) that fully cover the subject areas of the competencies is needed [21]. Additionally, the UC opioid curriculum workgroup is actively working toward integrating MOUD training into the medical school curriculum to sufficiently meet the 2000 DATA requirements for the “X-waiver” that permits office-based prescribing of buprenorphine for opioid use disorder. Other universities, states, and regulatory agencies may have an interest in similar approaches.

Adopting these UC competencies represents an opportunity for helping to address the opioid crisis—as well as inadequate pain and SUD care as one of its main drivers—by educating and empowering the clinicians of tomorrow. Educational outcome research on evaluating the effectiveness of these efforts is needed, but such research is rarely funded by the National Institutes of Health, despite their clear commitment to addressing SUD and pain. Partnerships with federal, state, and county agencies are needed to develop a broad-based workforce development strategy. Incorporating the perspectives of patients and their families in curricular development is an important part of future efforts. The core

competencies discussed herein offer a fundamental step toward creating a united outlook on health education that collectively includes pain, SUD, and public health perspectives to more robustly address the opioid crisis and the needs of society well beyond this epidemic.

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