

Original Publication

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# Opioid Risk Mitigation Strategies and Overdose Resuscitation

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## Abstract

**Introduction:** In the context of an opioid public health crisis, U.S. medical schools have been called upon to strengthen curricula on the appropriate use of opioids, with an emphasis on maximizing benefits while utilizing risk-mitigation strategies to prevent addiction and overdose. **Methods:** This self-contained module provides an overview of the opioid crisis and presents recent clinical guidelines on opioid risk mitigation, as well as information regarding prevention and treatment of opioid overdose. This module then gives learners the opportunity to practice these skills by solving an evolving case of back pain. **Results:** Verbal and written feedback on the module from students revealed that the majority strongly agreed that, overall, the module was valuable as an educational tool. **Discussion:** This module was created to help medical educators update the training of students in risk mitigation strategies and the steps of opioid overdose resuscitation. The feedback to date from students and faculty has been positive and supports its use in undergraduate medical education.

## Keywords

Opioids, Overdose Resuscitation, Risk Mitigation

## Appendices

- A. Opioid Risk Mitigation Strategies and Overdose Resuscitation folder
- B. Learner Survey.docx

*All appendices are peer reviewed as integral parts of the Original Publication.*

## Educational Objectives

By the end of this session, learners will be able to:

1. Identify recent trends in the use of opioids and deaths from overdose.
2. Describe recently published clinical guidelines on the use of opioids, including risk reduction (i.e., mitigation strategies) and steps of opioid overdose resuscitation, as specified by the Centers for Disease Control and Prevention, the American Heart Association, and the Substance Abuse and Mental Health Services Administration.
3. Apply the knowledge gained to an evolving case involving opioid prescription.

## Introduction

As outlined in an August 2016 letter from U.S. Surgeon General Dr. Vivek Murthy to the nation's health care providers, the current opioid public health crisis follows years of well-meaning attempts to aggressively treat patients' pain by health care providers who lacked adequate medical training in the benefits and risks of opioids and alternatives. Medical education efforts on opioid risks have been limited by a lack of dissemination of information, as well as by lingering views of addiction as a moral failing rather than a chronic illness. Dr. Murthy urged health care providers to commit to better educate themselves and the public about addiction and pain management, and to utilize evidence-based treatments for addiction.

In 2016, the Centers for Disease Control and Prevention (CDC) performed a systematic review showing that from 1999 to 2014, more than 165,000 people in the U.S. died from overdoses related to opioid pain medication, paralleling an increase in the sales of these medications. To address this serious problem, the CDC released guidelines on prescribing opioids in primary care for chronic pain not related to cancer, palliative care, or end-of-life care.<sup>1</sup> Consequently, U.S. medical schools have been called upon to strengthen curricula on the appropriate use of opioids, with an emphasis on maximizing benefits while utilizing risk-mitigation strategies to prevent addiction and overdose.

Several MedEdPORTAL publications released between 2007 and 2016 offer educational resources such as lectures, case-based modules, workshops, standardized patient cases, and team-based learning modules on both palliative care<sup>2-4</sup> and management of chronic pain.<sup>5-8</sup> However, none of these resources can be used for teaching the most recent CDC guidelines released in 2016.<sup>1</sup> In addition, none of these guidelines discuss risk-mitigation strategies to prevent addiction and overdose.

To address this acute need in medical education, we reviewed the coverage of opioids during the 4-year undergraduate medical education curriculum at our institution, as well as any additional didactic and training experiences that were added, such as joint-teachings by psychiatry and family medicine clerkship directors and faculty members. One addition was this module, created to be used by medical educators to provide an interactive learning experience for third-year medical students on opioid risk mitigation strategies and overdose resuscitation, as informed by the newest clinical guidelines from the CDC, in addition to guidelines from the American Heart Association (AHA),<sup>9</sup> and the Substance Abuse and Mental Health Services Administration (SAMHSA).<sup>10</sup> Additionally, the module focuses on how medical providers can educate patient and caregivers about recently-approved US Food and Drug Administration formulations of naloxone, now available without a prescription in most states, to reverse acute opioid overdose and help save lives. Individuals who purchase naloxone are typically instructed in its use by the pharmacist at the time of purchase. However, we support informing and training medical students in the administration of naloxone, as the benefit/risk ratio of naloxone is overwhelmingly positive and the use of the nasal spray is straightforward. Medical students need to know how to incorporate naloxone into resuscitation of patients in life-threatening opioid emergencies, as well as how to be part of the education of their patients and their families/caretakers on naloxone use.

The clinical case used for practicing skills in this session was developed by the authors based upon experience and the new clinical guidelines. The patient video was directed by the primary author, who has expertise in creating videos of simulated clinical encounters and integrating them in self-learning modules for the education of medical students during the third-year psychiatry clerkship, a skill which has resulted in several peer-reviewed MedEdPORTAL publications. All of these modules utilize text, video clips, and brief quizzes to present learning materials and to apply these materials while working through an evolving clinical case. All of these modules, including the current one, can be used as an independent study self-learning module or in an interactive didactic session with an expert facilitator.

## Methods

The necessary prerequisite knowledge for the learner is a basic understanding of the clinical features of substance-use disorders and the basic pharmacology of analgesics, both typically covered in the basic sciences curriculum of medical schools. The self-contained module (Appendix A) utilizes Articulate software; it can be viewed on any computer without requiring a special program. The instructor/student can navigate at will through the interactive text, quizzes, and imbedded video clips. After an overview of the opioid public health crisis in the U.S., the module presents recent clinical guidelines on risk mitigation and prevention, and treatment of opioid overdose.<sup>1,9,10</sup> An evolving clinical case of a patient presenting with acute pain is presented through text, photographs, and video clips, and the learner actively applies principles presented earlier in the module regarding opioid risk-mitigation strategies and the specific steps of opioid overdose resuscitation. The module can be used by students as an independent-study self-learning module, or it could be used in part or whole as a small-group exercise in didactic sessions. The whole module, including the clinical case, can be completed in 30-50 minutes. In working through the clinical case, the free-text answers can be entered in a pop-up box which can be saved for evaluation by the attending.

This module was part of a mandatory didactic session of the psychiatry clerkship during the first year of the clinical medical education (from a 4-year curriculum). The entire activity was formatively assessed. Three instructors with knowledge of the opioid epidemic and experience in treating pain and opioid dependence facilitated this session. Students were assigned to four groups (with three to five members

each) to work through the clinical case.

Learner perception of the module's effectiveness was evaluated using a survey (Appendix B) containing four evaluation questions using a 5-point Likert scale. Suggestions for improvement were evaluated with a free-text question. The survey was completed on paper by one block of students ( $N = 14$ ) after experiencing this module live during their didactic session.

## Results

Part or all of this module has been used in the training of medical students at the authors' institution since May 2016. Its primary use has been as part of a small-group exercise taught jointly by the authors in the psychiatry clerkship didactics.

With each new block of students ( $N = 6$ ) during the academic year, the authors further refined the evolving case using insights gained, including student feedback. The authors also learned a good deal from each other's perspectives and recognized the clear benefit of providing views from different medical disciplines on the same case, thus giving students a view of how physicians work together in consultation. During the module's development, naloxone became available without a prescription in the authors' state (it is now available in most states), and the module further evolved from an application of multidisciplinary pain management utilizing opioid risk mitigation strategies to one also involving patient and caregiver education in the steps of opioid overdose resuscitation outside the hospital setting.

Verbal and written feedback on the module from students revealed that all agreed or strongly agreed with the statement that "Overall this module was valuable as an educational tool." All students also agreed or strongly agreed that "After completion of this module, I am confident of my knowledge of how to decrease risks associated with prescription of opioids," and "After completion of this module, I am confident of my knowledge of how to educate patients and caregivers about out-of-hospital treatment of opioid overdose."

## Discussion

In the context of the recent U.S. opioid public health crisis, guidelines have been recently published on the treatment of pain, aiming to maximize benefits while minimizing risks. Clinical guidelines published by the CDC, the AHA, and the SAMHSA, as well as the recent increase in availability of naloxone without a prescription, mandate that medical educators update the training of students in risk-mitigation strategies and the steps of opioid overdose resuscitation. This interactive module was created to help address this need, and the feedback to date from students and faculty has been positive, supporting the module's use in undergraduate medical education. In less than 1 hour, our learners had the opportunity to understand the current trends in the opioid epidemic and the newest guidelines for treating chronic pain and preventing addiction, followed by an opportunity to manage a patient with chronic pain and subsequent opioid abuse and compare their plan with the expert plan.

All but one student (93%) agreed that "Overall, the quizzes were effective in helping accomplish the learning objectives." The suggestions for improvement included a request for multiple-choice quizzes, though this would add to the length of the module. Though the authors initially designed the module to be co-taught by psychiatry and family medicine faculty in their institution's psychiatry clerkship didactics, it can certainly be utilized in family medicine or emergency medicine rotations. Indeed, future opportunities include use in graduate and continuing medical education as well. This module does not constitute full training in opioid overdose resuscitation, but it can be used as a component of supervised training by faculty of medical students and residents in patient resuscitation.

This educational resource can be further enhanced by discussing cases that learners bring from their clinical practice. Perhaps solving a clinical pain case before and after the module, with an opportunity to compare the difference in their own recommendations, may add to the educational impact of this resource. Future adaptations, in addition to updates as clinical guidelines further evolve, could include

splitting the module into an independent study section (for students to first read the text of guidelines and learning materials before class) followed by an in-class small-group application exercise (including the video clips of the evolving case itself).

Other institutions interested in using active-learning methodology educating students on the opioid epidemic, risk mitigation strategies, and opioid overdose resuscitation can use this module as is, or could choose to use only part one which covers the U.S. opioid public health crisis and clinical guidelines on risk mitigation strategies, or only part two, which covers steps of opioid overdose resuscitation. The module could be also used in large groups of students who then break into small groups for discussion. If this is provided as an in-class small-group exercise, then an instructor knowledgeable in the area is needed. Preferably, the instructors would have experience in treating pain and opioid dependence in clinical practice. If this module is used as an online self-learning module, then the instructor may be needed if narrative feedback/evaluation of case solving is required.

An OSCE is under development at the authors' institution to further assess student attainment of this module's learning objectives, (e.g., patient assessment and initiation of management of an acute opioid overdose).

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#### **Informed Consent**

All identifiable persons in this resource have granted their permission.

#### **Ethical Approval**

Reported as not applicable.

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