Managing Acute Pain and Opioid Risks Following Wisdom Teeth Extraction: An Illustrative Case

Jennifer Pruskowski, PharmD, BCPS, BCGP, CPE, Julie Childers, MD, MS, Paul A. Moore, DMD, PhD, MPH, Michael A. Zemaitis, PhD, Richard E. Bauer, DMD, MD, Denise J. Deverts, PhD, D. Michael Elnicki, MD, Steven C. Levine, DMD, Robert Kaufman, PharmD, Michael P. Dziabiak, MLS, Heiko Spallek, PhD, DMD, MSBA, Debra K. Weiner, MD, Zsuzsa Horvath, PhD*

*Corresponding author: zshst2@pitt.edu

Abstract

Introduction: The opioid epidemic has awakened educators to the insufficiency of training in the areas of pain management and substance use disorders within the curricula of health sciences schools. The University of Pittsburgh Center of Excellence in Pain Education created an online educational module focusing on factors contributing to the opioid epidemic and the role of robust interprofessional communication in avoiding common practitioner errors. Methods: The 1-hour module created by an interprofessional team comprised a pretest, video presentation featuring case vignettes, posttest, and learner satisfaction survey. The content of the module focused on four core concepts: (1) managing acute perioperative pain, (2) maximizing opioid safety, and (3) identifying and (4) managing suspected opioid abuse and diversion. Results: Data were obtained from 250 dental, pharmacy, and nursing students from the University of Pittsburgh who completed the module as part of their respective profession-specific curricula. Results collapsed across the three school-specific implementations indicated an average increase in knowledge test scores from pre- to posttest ($Z = −8.82$, $p < .001$). In addition, the learner satisfaction data revealed an overall positive response to the module, with students commenting that they enjoyed the module and felt it provided them with a valuable learning experience. Discussion: Learner outcomes and feedback suggest that our interprofessional team was successful in creating an effective learning module applicable to several health care professions, namely, pharmacy, dentistry, and nursing. Future studies might address the application of the knowledge gained to actual patient care.

Keywords
Pain Management, Opioid Misuse, Interprofessional, Primary Care, Oral & Maxillofacial Surgery, Substance Abuse/Addiction, Opioid Education, Opioids

Educational Objectives

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

1. Recognize the use of multimodal therapeutic plans for the management of acute perioperative pain, including setting treatment expectations.
2. Recite counseling points for patients and families and/or caregivers about opioid safety, including appropriate storage.
3. Identify risk factors for and signs of opioid misuse, abuse, and diversion.
4. Identify current communication strategies for addressing opioid misuse, abuse, and diversion.

Introduction

In 2011, the Centers for Disease Control and Prevention (CDC) published on its Vital Signs website a provocative report that highlighted deaths due to opioid overdoses, which had exceeded deaths from motor vehicle crashes, making them the leading cause of accidental death in the US. The authors of an accompanying Morbidity and Mortality Weekly Report article concluded that “public health interventions to reduce prescription drug overdose must strike a balance between reducing misuse and abuse and safeguarding legitimate access to treatment.” In an effort to facilitate responsible prescribing of opioids, the CDC released guidelines for using these drugs for management of chronic pain. Unfortunately, these guidelines often have been
misinterpreted and misapplied, thus increasing the risk of harm to patients.\(^4\)

Since the release of the Vital Signs report, serious deficits in practitioner knowledge of pain management, as well as of substance abuse, have been exposed.\(^5\) This gap in practitioner knowledge may be due to inadequate exposure to these issues during predoctoral/preprofessional training. Several factors contribute to this educational shortcoming. First, the curricula in health science schools often lack a formal emphasis on pain management and substance use disorder (SUD). A 2011 descriptive study\(^7\) found that a large number of US medical schools devoted fewer than 5 hours of course time to teaching pain management concepts, with a large percentage of those schools dedicating no time to these concepts. In addition, curricular time often was fragmented, with the few hours of education on pain management distributed across several different courses.\(^8\)

Associations of health profession education have responded to the opioid crisis by assessing what is being done in their respective curricula and providing association-level and nationwide guidelines and policies to educational initiatives for curricular review and changes, which can result in revisions to accreditation standards. More recent data from the Association of American Medical Colleges (AAMC) suggest that medical schools are making a renewed effort to address some of the aforementioned curricular gaps in pain and substance abuse education.\(^9\) For example, in response to a telephone survey of accredited medical schools, all surveyed curriculum deans (or their designees) reported that their school's curriculum addressed at least two of four identified pain and SUD domains. These results must be interpreted with caution, however, because only 102 of 147 accredited medical schools (69%) agreed to participate in the survey. It is possible that deans from schools with less comprehensive curricula may have been less willing to take part in this sort of assessment. Thus, the survey results may not accurately reflect the current status of medical school pain and SUD curricula. Moreover, even schools that include pain and SUD education in their curricula also reported continuing challenges to effectively teaching students about these two concepts. Some of the more frequently cited challenges were inadequate faculty development, time constraints, and imprecise assessment methods.\(^9\)

The American Dental Education Association (ADEA) published a policy on academic dentistry's role in addressing the opioid epidemic by identifying prevention domains, compiling resources for educational institutions to use, providing specific suggestions for implementation, and setting efforts at three dental schools in Massachusetts as examples.\(^10-12\) Moreover, in 2017, the Commission on Dental Accreditation's accreditation standard on local anesthesia and pain and anxiety control (Standard 2-24.e) was revised to include requirements regarding prescribing practices and SUD\(^13\) prior to the policy's publication, and ADEA held a regional summit to address addiction education in dental curricula.\(^14\) Currently, ADEA is conducting a nationwide mandatory survey related to the opioid crisis and substance abuse in dental education; the results have not been published yet.

The American Association of Colleges of Nursing (AACN) and American Association of Colleges of Pharmacy (AACP) responded similarly to AAMC and ADEA. In 2018, AACN published several documents in response to the epidemic, providing details about what the association, and nursing education as a profession, had done so far in education related to opioid addiction and substance abuse and its commitment to help reverse the epidemic.\(^15,16\) Similar to ADEA, AACN provided a compilation of resources to the professions.\(^17\) In 2019, AACP provided an executive summary on the role of pharmacy education in responding to the opioid epidemic after surveying pharmacy schools on their curricular activities related to opioids. Similar to the response rate in medicine, 104 of 144 schools (72%) responded to the survey, reporting curricular and other activities in the areas of advocacy, education, service, practice, and research at pharmacy schools.\(^18\) In all professions, guest editorials, curricular studies, and systematic reviews have been published on specific curricular implementations at individual institutions.\(^19-26\)

In addition to profession-specific efforts, the opioid epidemic has called for action and collaboration across health professions. The Interprofessional Education Collaborative (IPEC) has worked together with profession-specific associations on programming to promote interprofessional collaboration to combat opioid addiction. These efforts include the 2018 SAMHSA (Substance Abuse and Mental Health Services Administration) IPEC Addiction Education Interprofessional Summit, titled Enhancing Addiction Education Across the Health Professions,\(^27\) and the USPHS (US Public Health Service) IPEC Award: ETSU (East Tennessee State University) Responds to the Opioid Epidemic webinar.\(^28\) Interprofessional and profession-specific journals have disseminated studies on interprofessional curricular offerings and continuing education efforts related to opioids.\(^29-36\) Although some specialized organizations provide guidance for interprofessional opioid curricula\(^37\) or engage students in creating interprofessional team presentations,\(^38\) interprofessional
opioid initiatives within and beyond individual institutions are not well documented. The relative scarcity of interprofessional approaches to opioid education is reflective of the current state of interprofessional education more generally, where health professional students for the most part continue to learn in silos. However, new efforts are being made within each profession to assess and document interprofessional curricular status, effectiveness, efforts, initiatives, gaps, and challenges and to identify next steps. Similar assessments are available from an overall health professional perspective and from an interdisciplinary specialty perspective.

A limitation of current approaches to pain and SUD education is that the context in which students learn about these concepts does not map onto how they ultimately will put their learning into practice. Complexities of patient care, particularly those associated with the care of patients with SUD, require a team approach involving collaboration among numerous health professionals. Nevertheless, health professional students learn in silos and largely remain uninformed about the roles of other professions and the skills and knowledge they can contribute to patient care. To prepare health professional students for interprofessional practice, it is necessary to equip them to identify the role of each profession within the team, how to utilize each effectively, and how to communicate within an interprofessional team.

In summary, although health professional school curricular coverage of pain and SUD has improved in recent years, there remains a need for further enhancement and development of curricula in this domain. The National Institutes of Health Pain Consortium has responded to this gap in practitioner education by funding 11 health professional schools to be designated as Centers of Excellence in Pain Education (CoEPES). Each center was charged with developing, evaluating, integrating, and promoting pain management curriculum resources for predoctoral/preprofessional students that could be disseminated for use by other health sciences educators nationwide. Collaborations among schools of medicine, dentistry, nursing, health and rehabilitation sciences, and/or pharmacy were encouraged.

At the University of Pittsburgh CoEPE, eight case-based modules have been or are being developed, evaluated, and integrated during 2015-2020. Each module focuses on either a common pain syndrome or concept. The current educational module, completed by an interprofessional team in 2016, focuses on factors contributing to the opioid epidemic and how robust interprofessional communication plays a crucial role in avoiding common practitioner errors. In this case, a patient is prescribed an opiate analgesic after an outpatient procedure. The excess amount prescribed results in several adverse outcomes. The module emphasizes appropriate prescribing and monitoring of opioids and consequence of opioid misuse. The potential impact of this module is presented in three areas: (1) improve knowledge: increase awareness of opioid risks including abuse, diversion, overdose, and drug interactions; (2) change attitudes: engender attitudes in physicians, dentists, nurses, pharmacists, and patients that opioids are not the only treatment for acute pain and present drug and nondrug alternatives; and (3) gain skills: improve opioid prescribing for acute pain and improve opioid monitoring by pharmacists. This case highlights four core concepts: (1) managing acute perioperative pain, (2) maximizing opioid safety, and (3) identifying and (4) managing suspected opioid abuse and diversion. Additional emphasis is placed on the need for reliable and effective interprofessional communication, especially when faced with the operational barriers posed by a segmented health care system.

This report describes the implementation and evaluation of this module across three University of Pittsburgh health science schools. This project has been funded in whole or in part with federal funds from the National Institute on Drug Abuse, National Institutes of Health, Department of Health and Human Services, under Contract No. HHSN271201500082C.

**Methods**

The learning resource presented here is an online learning module featuring the case of Charlie, a teenager who recently had his wisdom teeth extracted and was provided an opiate analgesic by the oral surgeon. The module comprises a virtual case video with clinical vignettes featuring actual health professionals and trained standardized patient actors, narrated slides presenting didactic content on appropriate prescribing and management of opioid pain relievers, a collection of additional relevant learning resources, and opportunities for self-assessment (Appendices B-D). The module also includes brief pre- and posttests to assess students’ knowledge of the topics covered in the module before and after viewing the video content, respectively (Appendices E and F). Comparable modules have been used successfully as continuing education resources for physicians, dentists, and clinical nurse specialists. During our prior CoEPE funding period, we produced a module on chronic low back pain in an older adult that demonstrated a significant impact on medical student skills measured with...
of adaptive release functions allowed for sequencing and controlling students’ access to each component of the module.

The pre- and posttest questions were used to assess the effectiveness of the video module in achieving the stated educational objectives across the three schools. Figure 1 presents a flow diagram describing the sequence of the module components.

Curricular Placement
We recommend that the module be integrated into the curricula for more advanced students who have completed didactic courses in physiology, pathology, and pharmacology. Specific recommendations include second- or third-year medical and dental students, as well as medical, surgical, and dental residents; advanced undergraduate nursing students and first- and second-year nursing master’s degree candidates;

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**Figure 1.** Flow diagram illustrating module adaptive release features. (1) The module opens to the case home page, which contains a brief summary of the case, instructions, and a link to the pretest. (2) The pretest is displayed on a separate screen. When finished, students submit their responses. (3) Students’ submission of their pretest responses triggers the appearance of a response feedback screen that identifies items the students answered correctly or incorrectly and provides the correct response for each item. (4) After students have viewed the response feedback, they return to the case home page, which now includes a link to the video (5). (6) After viewing the video, students return to the case home page, where they click a button to indicate that they have watched the video. (7) Clicking this button triggers the appearance of the link to the posttest. (8) The posttest is displayed on a second screen, and students submit their responses when finished (submission step not shown). (9) Response feedback is provided as described previously (not shown). (10) After viewing the posttest response feedback, students return to the case home page, which now includes a link to the learner satisfaction survey.
second-year physical therapy students; and third-year pharmacy students. Prior knowledge of basic pain physiology, in particular, is a suggested prerequisite for students to derive optimal benefit from the module. Recommended curricular settings would be the emergency dental medicine course for dental students, neurology or psychiatry course for pharmacy students, advanced pharmacology for nursing students, and ambulatory medicine/pediatric or family medicine clerkships for medical students.

Facilitator Prerequisite Knowledge
We also recommend that module facilitators be familiar with current thinking about the signs of drug-seeking patients, attitudes around suspected opioid abuse, and management of suspected opioid abuse within their profession-specific clinical setting (e.g., dental office, dental emergency room, general emergency department, outpatient settings, community setting). The instructor resources (Appendix A) provide general background information about these topics and include several references for those who wish to further advance their knowledge of opioid-related issues. Instructors may also use the stand-alone content slides (Appendix C) and the video transcript (Appendix D) to increase their familiarity with the module prior to implementation.

University of Pittsburgh Implementations
We based our present report on pretest, posttest, and learner satisfaction survey data collected from three course implementations of the module at three different University of Pittsburgh health sciences schools. The use of these data was approved by the University of Pittsburgh Institutional Review Board (PRO15120090).

We set up the module in our LMS so that the availability of each component was contingent upon completion of the preceding component. Upon opening the module, students were permitted to view only a brief abstract of the case, an orientation to the module, and a link to the pretest. Thus, access to the case video (Appendix B) via a link to the Panopto video platform was contingent upon completion of the pretest, access to the posttest was contingent upon reviewing the video, and access to the learner satisfaction survey (Appendix G) was contingent upon completion of the posttest. Additional course-specific details of each of the three implementations are described below.

School of Pharmacy: Third-year pharmacy students completed the module as a part of their pulmonology/rheumatology course (n = 112). This course was selected for ease of scheduling. Learners viewed the module and completed the pre- and posttest assessments synchronously during classroom time.

Students completed the profession-specific assessment immediately after they finished the module posttest. The profession-specific assessment comprised 10 multiple-choice items that were created to assess the learner’s knowledge of pharmaceutical care, as well as attitudes around suspected opioid abuse. These questions emphasized the four knowledge-based objectives of the module, with focus on the management of suspected opioid abuse in the community setting, as depicted in the module. The in-class setting facilitated completion of the selected assessment.

School of Dental Medicine: Third-year dental students completed the module as part of their emergency dental medicine course (n = 86). The module was completed asynchronously and assigned as a mandatory homework assignment, and students were given 2 weeks to review the module and complete the pre- and posttests. One week after the homework-completion period, students discussed the content of the module during classroom time in an open unstructured discussion with opportunity for open-ended questions.

School of Nursing: Graduate-level advanced practice nurses completed the module as part of their advanced pharmacology course (n = 74). The module was assigned as homework, and students were given 6 weeks to view the video and complete the pre- and posttest assessments.

Results
Module Effectiveness
Statistical analyses were conducted using IBM SPSS Statistics for Windows, version 24 (IBM Corp., Armonk, New York). Due to the negatively skewed distributions of all module assessments, analyses were conducted using nonparametric techniques. A Wilcoxon signed rank test was used to assess the group performance gain from pre- to posttest, and Spearman rank order correlation coefficients (ρ) were computed to examine associations among pretest, posttest, and profession-specific quiz scores.

Pre- and posttest scores (n = 250): Pre- and posttest data were combined across the three implementations. Analyses were performed using data from 250 participants who completed both assessments (response rate: 91.9%). The distributions of both pre- and posttest scores were negatively skewed, with pretest scores showing more variability than posttest scores (median:
Eighty-seven (38.2%) of the 228 learners who completed the learner satisfaction survey provided responses to the open-ended item “Please provide any comments about your learning experience.” Based on learners’ responses to this item, two independent raters derived content categories and coded individual comments accordingly. For the most part, the comments constituting each category were positive in nature. The few critical comments referenced only time-related aspects of the module, the setting in which the module was implemented, and technical issues. Recommendations were constructive, with learners suggesting, for example, that the module be made more interactive, include subtitles or transcripts, or give the viewer more control over the pace at which information is presented. The categories, as well as subcategories and example responses in each, follow.

General impression:

- Overall appeal of module:
  - “I like this way of learning.”
  - “Great activity—definitely learned a lot; liked the activity.”
  - “Good stuff.”
- Value of learning experience:
  - “It was helpful to receive some guidance on the most appropriate strategies.”
  - “This module really helped me understand this nationwide epidemic of opioid use, misuse and recognizing misuse and managing suspected abuse.”
  - “I enjoyed this learning activity because I feel like it is a very important topic for us to learn about.”

Content:

- Relevance:
  - “This is useful to learn about since some of our patient population may need opioid[s].”
  - “The cases and questions were very relevant to pharmacy.”
  - “There was good information about what to remember while writing prescriptions for opioids.”
- Interprofessionalism:
  - “It was helpful to see how [a] pharmacist, dentist, and physician interact on [a] misuse case.”
  - “I really enjoyed hearing from differing perspectives, DDS, MD, PharmD, patient, etc.”
- Novelty:
  - “I did know a lot of the information but liked learning about the risk factors.”
Figure 2. Learners’ responses to closed-ended satisfaction survey items. Because some learners declined to respond to one or more items on the survey, sample sizes for the items range from 223 to 226.

- "The video was very informing and discussed information that I did not already know."
- "The opioid risk assessment was very helpful as, while we’re often warned about drug-seeking patients, we have never been told how to identify patients or care for them/their addiction."

Curricular placement:
- "This was a decent review of things we had already covered, with good examples in the videos to drive the point home."
- "I just felt that most of it was things that we should already know. Maybe it would be better earlier in the curriculum."
- "It was worthwhile but maybe should be applied earlier in the curriculum."

*Instructional design:*

- **Format:**
  - "If we could have access to more of these cases/videos, I think it would really help people like me who learn from these kinds of examples and give us a chance to apply our knowledge during the questions and assessments."
  - "I also enjoyed the mixture of short text to read and video vignettes."
  - "I appreciate the opportunity to review this material, but I feel it would be of better use as a text with areas highlighted to impress upon us as students."

- **Organization:**
  - "Well organized into sections."
  - "I thought it was very engaging and easy to follow."
  - "It was a well-organized learning tool."

- **Pace:**
  - "I enjoyed this learning experience because I could learn at my own pace."
  - "This was valuable but was a little lengthy."
  - "The pace could have been faster."

- **Recommendations:**
  - "It would be nice if the program allowed for the learner to read a transcript and/or control the speed of the videos."
“I think it may be more interactive if the person taking the module could select an answer during the practice portions of the module.”

“I’m more of a reader, so it would be nice to have captions along with the videos! Or maybe optional access to a script in the module.”

Other:

- Setting:
  - “I liked this way of learning. Especially having us come to class to complete. I do not think I would have paid as much attention if I did this on my own time at home.”
  - “I found that taking class time for it, though, sort of took away from the experience of an actual lecture.”

- Technical issues:
  - “Comments addressing technical difficulties learners may have experienced while completing the module.”
  - “For some reason, when switching between successive videos, the audio defaults to a higher level despite the absolute audio on my computer remaining the same.”

Discussion

The University of Pittsburgh CoEPE brought together an interprofessional team comprising eight health care professionals from pharmacy, dentistry, and medicine, as well as experts in the areas of education and instructional technology, to create an online learning module based on the case of a teenager who misuses prescription opioids following extraction of his wisdom teeth. The core concepts addressed by the module include management of acute perioperative pain, appropriate prescribing of controlled substances, and identification and triage of patients suspected of opioid abuse, diversion, or opioid use disorder. This holistic approach to the challenges associated with the use of opioid analgesics to manage perioperative pain addresses some of the gaps in health practitioner education on pain management and SUDs.

This module is unique in that it models interprofessional collaboration in the delivery of patient care. Much of the current literature on the appropriate use of opioids for pain management focuses primarily on the role of the prescriber. Our module places equal emphasis on the role of the community pharmacist in educating patients about the proper use of opioids and about safety measures that can be taken to reduce the risk of opioid misuse. Furthermore, the module demonstrates how open communication between the prescriber and the pharmacist can aid in the early detection of opioid use disorders. This aspect of the module also complements existing resources that educate health professional students about how to manage patients with established SUD. Finally, the module gives further breadth to the extant literature in that it focuses on pain management strategies in the acute care setting. Although chronic use of opioids is a recognized risk factor for eventual opioid misuse, so too is the initiation of short-term opioid treatment for acute pain, especially among adolescents.

The overall improvement in student scores suggests that the module provides a meaningful learning experience for acquiring foundational knowledge and is applicable to several health care professions, namely, pharmacy, dentistry, and nursing. Post hoc analyses by profession revealed that the average improvement in scores was comparable across schools (data not shown), thus suggesting global applicability of the module. The positive results of the learner satisfaction survey suggest that students enjoyed the module and felt that it provided them with a valuable learning experience.

An advantage of the module is that it is flexible enough to be implemented as either an in-class activity or a homework assignment. Moreover, the interprofessional approach to the featured case permits incorporation of the module into the curricula of multiple health science schools. In the present report, we have discussed the results of implementations in the schools of pharmacy, dentistry, and nursing. In each setting, the module was supplemented with profession-specific evaluations that addressed relevant material presented in the module. While dental and pharmacy students completed a short quiz on the content specific to their profession, advanced nursing students were assigned a written assignment and were asked to compose a short essay addressing the opioid crisis as it pertains to the module, identifying a problem (diversion, interprofessional communication, patient education, etc.), and suggesting interventions, solutions, and the integration of new models and guidelines.

Challenges Encountered

One frequently cited barrier to incorporating education on pain management and SUD into existing health sciences curricula is the challenge of making room for additional educational opportunities within an already demanding curriculum. We faced this challenge as well when selecting courses in which to implement the module. Specifically, we needed to identify courses wherein (1) the content of the module was relevant, (2) the syllabus was sufficiently flexible to accommodate an additional assignment, and (3) the course was placed in the curriculum at a point when students already would have
acquired prerequisite knowledge. We attempted to follow these guidelines when placing the module into each profession’s curricula. For example, logistical issues necessitated our placing the School of Pharmacy implementation in the school’s pulmonology/rheumatology course, which did not completely satisfy the relevance criterion but allowed the students to be exposed to the module at an appropriate point in their program of study. Because of this less than ideal curricular placement, it is possible that the value of the module to pharmacy students may have been underestimated. We see this and similar learning modules as contributions to a transformative curriculum to which we aspire when preparing health professionals for the 21st century—moving from informative to formative to transformative learning.60 Learning modules like this one have the potential for the creation of personalized learning opportunities and just-in-time learning experiences to meet strategic initiatives and provide a means for educational institutions to work around and address barriers such as professional silos and moving away from traditional lectures.

Limitations and Future Directions

The following limitations need to be acknowledged regarding the data collection and results. Although overall response rates were high, students were able to opt out of having their pre- and posttest results, as well as learner satisfaction survey data, used for research purposes and by extension included in the present report. In addition, because responses to survey items were not forced, not every student provided responses to every survey item.

Even though students from all three schools appeared to benefit from the interprofessionally developed content of the module, their learning experience was not truly interprofessional. Successful management of both pain and SUD requires collaboration among health care practitioners from multiple professions, with each contributing his or her specialized knowledge and skills to patient care. Because students completed the module within the context of their own profession, they did not have the opportunity to gain experience interacting with students from other professions and thus gain a greater appreciation for the advantages of interprofessional collaboration. Ideally, we would like to develop a learning experience wherein students from two or more professions can review and discuss the case together or a follow-up debriefing activity with students in an interprofessional setting.

Another limitation of our implementation and assessment of the learning module is that we did not evaluate clinical skills or changes in students’ attitudes toward or confidence in treating a patient with SUD. Implicit negative bias influences treatment plans for patients suffering from SUDs with or without a legitimate pain complaint,61 and health science education currently places little emphasis on increasing students’ awareness of these biases and how to combat them. Some of the higher-level objectives set for this module are best suited to be assessed in a profession-specific content assessment using different assessment methods. In addition, in the future, we would like to either adapt this module or create a new one that addresses these implicit biases, assesses students’ awareness of them, and measures the extent to which these biases can be corrected to improve students’ attitudes toward treating patients with SUDs, as well as enhance their confidence in working with an interprofessional team to provide the best patient care.

Conclusion

The module successfully addressed a curricular gap at the University of Pittsburgh health sciences schools, exposed students to issues related to opioid misuse from the perspective of various professions, and laid the foundation for additional curricular content on pain management and SUDs. The next step is to address the application of the knowledge gained from this module to actual patient care.

Appendices

- A. Instructor Resources.docx
- B. Video.mp4
- C. Slides.pptx
- D. Video Transcript.docx
- E. Pretest.docx
- F. Posttest.docx
- G. Learner Satisfaction Survey.docx

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

Jennifer Pruskowski, PharmD, BCPS, BCGP, CPE: Assistant Professor, Department of Pharmacy and Therapeutics, University of Pittsburgh School of Pharmacy

Julie Childers, MD, MS: Translational Research Facilitator, University of Pittsburgh School of Dental Medicine

Paul A. Moore, DMD, PhD, MPH: Associate Professor, Division of General Internal Medicine, University of Pittsburgh School of Medicine

Michael A. Zemaitis, PhD: Professor, Department of Dental Public Health, University of Pittsburgh School of Dental Medicine
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All identifiable persons in this resource have granted their permission.

Prior Presentations

Horvath Z, Wrigley MJ, Levine SC, Bilodeau EA. Pain education for health profession students: a collaborative approach for interprofessional curricula. Webinar presented at: American Dental Education Association website, December 13, 2018. https://www.pathlms.com/adea/courses/9119

Ethical Approval

The University of Pittsburgh Institutional Review Board approved this study.

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