An interprofessional education workshop to develop health professional student opioid misuse knowledge, attitudes and skills

Celia P MacDonnell
EXPERIENCE

An interprofessional education workshop to develop health professional student opioid misuse knowledge, attitudes, and skills

Kristina Monteiro*, Luba Dumenco, Sally Collins, Jeffrey Bratberg, Celia MacDonnell, Anita Jacobson, Richard Dollase, Paul George

ABSTRACT

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.

© 2017 American Pharmacists Association®. Published by Elsevier Inc. All rights reserved.

Objective

Health care professionals often fail to identify substance use disorder in their patients. There is a variety of addiction screening tools, but they vary in validity and reliability.1 Because of stigma, fear of legal repercussions, and a variety of other societal factors, such as inability to readily access community resources, patients might not be forthcoming regarding a potential substance use disorder, and they may have difficulty trusting health care professionals with whom they interact.2 The success of patient—provider conversations can be facilitated by a provider who approaches the discussion of substance use disorders as routine, and who conveys trust that the space in which they are discussed is open, safe, and free of judgement.2

Screening, Brief Intervention, and Referral to Treatment (SBIRT) is a nationally recognized method by which practitioners can identify whether a patient has a substance use disorder, assess the severity of a condition should it exist, or

Disclosure: The authors declare no conflicts of interest or financial interests in any product or service mentioned in this article.

Funding: This work was supported by Substance Abuse and Mental Health Services Administration grant number H79TI024938.

* Correspondence: Kristina Monteiro, PhD, Assistant Professor of Medical Science, The Warren Alpert Medical School of Brown University, Providence, RI 02912.

E-mail address: Kristina_Monteiro@brown.edu (K. Monteiro).

http://dx.doi.org/10.1016/j.japh.2016.12.069

1544-3191/© 2017 American Pharmacists Association®, Published by Elsevier Inc. All rights reserved.
evaluation the risk of substance use disorder development if one is not yet present. Through this framework, health care providers can quickly identify the appropriate level of treatment and intensity of intervention necessary for optimal patient health. Studies have noted that the SBIRT program can be implemented across a wide variety of health care settings, including emergency departments and ambulatory clinics. Thus, the clinical setting is an appropriate and effective environment for patient–provider conversations regarding a patient’s illicit drug use. SBIRT provides health care professionals with the skills necessary to identify, address, and manage their patient’s issues with substance use. Health professional schools provide the ideal place for SBIRT training.

In addition to having a framework such as SBIRT for fostering conversations with patients around substance use disorder, recent studies demonstrate that the complex and multidimensional care required to address substance use disorders is best administered through a team-based approach. Often, the substance use disorder client population is disproportionately affected by socioeconomic challenges that present barriers to treatment. The frequent comorbidity of mental health disorders (dual diagnoses) contributes to the difficulties facing this population. Providing adequate and comprehensive care is challenging, and it necessitates interprofessional collaboration across multiple health care fields. It is thus essential that health professional students become familiarized with interprofessional frameworks to implement a common substance use disorder curriculum. A uniform standard for substance use disorder screening and treatment techniques improves an interprofessional team’s ability to work in tandem effectively. Furthermore, communal training increases the potential for consistency necessary for those providers working with patients throughout the various stages of intervention and recovery.

The Commonwealth of Massachusetts recently developed a common statewide addiction medicine curriculum. In 2015, the Department of Public Health, the Massachusetts Medical Study, and deans of the state’s 4 medical schools (Harvard University, University of Massachusetts, Tufts University, and Boston University) formed the Medical Education Working Group. The purpose of this coalition was to identify a series of interdisciplinary core competencies for the prevention and management of prescription drug misuse. Currently, the initiative is being applied at the state’s 4 medical schools. The Medical Education Working Group has announced that among its next steps is to equip interprofessional teams with these core competencies to address this public health crisis.

The State of Rhode Island also identified a need for such a curricular initiative, especially given the extent of the opioid overdose epidemic in the state. The rate of drug-related deaths in Rhode Island is significantly higher than the national average, and in 2013 the rate of illicit drug use in Rhode Island was the highest in the nation. In 2014, more Rhode Islanders died because of drug overdose than died from homicides, motor vehicle crashes, and suicides combined.

**Setting**

Given these trends, and a pre-existing robust collaboration that already exists across health professional schools in Rhode Island, including health professional schools at the Warren Alpert Medical School of Brown University (AMS), the University of Rhode Island (College of Nursing and College of Pharmacy), and Rhode Island College (RIC; School of Social Work and School of Nursing), an opportunity was identified to focus on interprofessional SBIRT education and implementation. In 2015, these health professional schools were awarded a Medical Professional Training grant from the Substance Abuse and Mental Health Services Administration (SAMHSA), a branch of the U.S. Department of Health and Human Services (grant number H79 TI025938). This grant was specifically intended to expand SBIRT training not only for each individual program, but specifically in the interprofessional health care setting. The Rhode Island Interprofessional Education (IPE) curriculum allows health care students from various disciplines to learn in tandem. The pressing issue of the opioid epidemic serves as a nexus for their health care training. To our knowledge, there are no other similar programs existing in the field.

In the spring of 2016, the aforementioned partner schools developed and implemented an IPE workshop for groups of second-year medical students (n = 120), fourth-year nursing students (n = 209), second-year physical therapy students (n = 33), first-year social work students (n = 60), and second-
year pharmacy students \((n = 118)\). The goals of the workshop were twofold: to educate future health care providers in SBIRT practices and to foster a sense of interdisciplinary collaboration that allows students to experience a team-based approach to patient care during training, before officially entering the workforce. In developing this program, it was hoped that the lens of teamwork would enhance the efficacy of the training administered.

**Practice description and innovation**

During the workshop, students were organized into small interprofessional teams of 4-5 students composed of representatives from the aforementioned health care disciplines (i.e., medicine, nursing, pharmacy, and social work, with some teams also having a physical therapy student). As a team, students participated in a series of activities intended to provide training and to simulate realistic multidisciplinary treatment environments. The workshop consisted of 4 distinct curricular elements. These elements were intended to highlight specific opioid misuse along with what each profession contributes to the care of patients with this disease. All teams rotated through stations designed to address each of these components.

- **Patient panel.** Interprofessional teams attended a patient panel presentation and discussion. In this session, patients with a history of substance use disorders presented their personal stories and experiences with addiction and recovery. The patients all had a history of substance use disorder in the past and were currently undergoing treatment with either buprenorphine or methadone. The goal of this panel was to attempt to decrease the stigma associated with substance use disorder and to expose students to real-life experience with successful treatment options.
- **Naloxone training.** In this session, students learned to identify an opioid overdose and how to administer intranasal naloxone. Interprofessional teams of students then practiced counseling each other using appropriate cues to administer and demonstrate the use of naloxone in the presence of a trainer.
- **Standardized patient (simulation) case.** In the clinical skills suites, a standardized patient simulated a patient who was misusing oxycodone. In this case, each team of health professional students (including a medical student, nursing student, pharmacy student, social work student, and in some teams, a physical therapy student) was asked to obtain a history, perform a brief focused physical examination, and demonstrate the appropriate use of the SBIRT approach. For each team, a faculty member from one of the participating health professional schools observed the team interaction with the standardized patient and provided feedback at the conclusion of the case.
- **Case study.** Each team was asked to work together through a paper-based complex patient case focused on a homeless individual using heroin. As a team, health professional students were asked to develop a care plan that incorporated the unique perspectives from each of their disciplines. The teams debriefed with faculty in a large group session after individual teamwork was completed.

**Methods**

**Direct assessment**

We required medical students from AMS to complete a pretest and a posttest to measure baseline knowledge and retention of opioid overdose–related information. The Opioid Overdose Knowledge Scale (OOKS) was used to measure students’ baseline opioid-related knowledge. Selected items targeted student knowledge and familiarity with signs and symptoms of overdose, risk factors for overdose, and principles of overdose prevention with naloxone. Students were asked to identify which factors increase the risk of a heroin (opioid) overdose, bodily indicators that signify a patient is experiencing a heroin (opioid) overdose, and how they should react should they suspect someone is experiencing a heroin (opioid) overdose. These categories covered topics such as drug interactions, the seriousness of a drug overdose, and pharmaceutical characteristics of heroin (opioids). The test also assessed student knowledge of the purpose of naloxone, administration, onset time, and duration of action. Student responses were matched using a unique identifier, coded, and evaluated for accuracy. Students received a total score on the baseline pretest and on an identical posttest that was administered 12 weeks after the conclusion of the workshop. Because our goal was to assess retention of knowledge, we did not perform an immediate posttest assessment, but rather chose to assess students 12 weeks after completing the workshop, at a time when these students were entering their third-year clerkships.

**Indirect assessment**

At the conclusion of the workshop, all students were asked to report on their satisfaction with the training through a deidentified survey, with terminology complicit with the Government Performance and Results Act as required by the SAMHSA grant funding. The survey contained 5 items targeting satisfaction measured on a Likert scale ranging from 1 (very dissatisfied or strongly disagree) to 5 (very satisfied or strongly agree), with higher values indicative of more positive ratings. Data were collected for all health professions and then analyzed by profession to identify any significant differences across professions. Materials for the workshop are available upon request of the authors.

**Results**

**Direct assessment**

On the pretest, students \((n = 120)\) scored a mean of 40.84 (SD = 5.36) of a total possible 54.00 points. Converting this to a percent, students scored a 75.63%. Sites to administer naloxone and the duration of naloxone effect were the lowest scoring areas \((M = 2.46, SD = 0.16; M = 0.30, SD = 0.46, respectively)\), whereas actions for managing an overdose and the purpose of naloxone \((M = 10.04, SD = 0.97; M = 3.78, SD = 0.67, respectively)\) were the highest areas. On the posttest, students \((n = 51)\) scored a mean of 47.94 (SD = 3.20) of a total possible 54 points, or 88.78%. Time to naloxone effect and the duration of naloxone effect were the lowest scoring areas \((M = 0.41, SD = 0.50; M = 0.66, SD = 0.48, respectively)\).
Analysis of variance results revealed no significant differences in satisfaction across disciplines.

Abbreviations used: AMS, Warren Alpert Medical School of Brown University; RICSON, Rhode Island College School of Nursing; RICSSW, Rhode Island College School of Social Work; URICOPD, University of Rhode Island College of Pharmacy.

### Table 1
Opioid overdose knowledge

<table>
<thead>
<tr>
<th>Construct</th>
<th>Average % correct, pretest (n = 120)</th>
<th>Average % correct, posttest (n = 51)</th>
<th>Change in % correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which of the following factors increase the risk of a heroin (opioid) overdose?</td>
<td>85.89</td>
<td>95.11</td>
<td>9.22</td>
</tr>
<tr>
<td>Which of the following are indicators of an opioid overdose?</td>
<td>76.10</td>
<td>83.30</td>
<td>7.20</td>
</tr>
<tr>
<td>Which of the following should be done when managing a heroin (opioid) overdose?</td>
<td>91.27</td>
<td>93.18</td>
<td>1.91</td>
</tr>
<tr>
<td>What is naloxone used for?</td>
<td>94.50</td>
<td>95.25</td>
<td>0.75</td>
</tr>
<tr>
<td>How can naloxone be administered?</td>
<td>41.83</td>
<td>76.67</td>
<td>34.84</td>
</tr>
<tr>
<td>What site(s) are recommended for nonexperts to administer naloxone?</td>
<td>41.00</td>
<td>85.80</td>
<td>44.80</td>
</tr>
<tr>
<td>Opioid overdose general knowledge (naloxone administration).</td>
<td>84.29</td>
<td>90.86</td>
<td>6.57</td>
</tr>
<tr>
<td>How long does naloxone take to start having an effect?</td>
<td>52.00</td>
<td>41.00</td>
<td>11.00</td>
</tr>
<tr>
<td>How long do the effects of naloxone last for?</td>
<td>30.00</td>
<td>66.00</td>
<td>36.00</td>
</tr>
<tr>
<td><strong>Total score</strong></td>
<td>75.63</td>
<td>88.78</td>
<td>13.15</td>
</tr>
</tbody>
</table>

A paired-samples t test revealed a statistically significant increase in growth from pretest to posttest ($t_{42} = -8.86; P<0.001$).

respectively), whereas the factors contributing to overdose and the purpose of naloxone were the highest areas ($M = 8.56, \text{SD} = 0.85$; $M = 3.81, \text{SD} = 0.73$, respectively). Knowledge regarding the duration of naloxone effect was low in both pretest and posttest responses.

From pretest to posttest, students showed increased knowledge across all items except for naloxone onset time, for which there was a slight decrease in accuracy. To decrease type I error, paired sample t tests were conducted only on overall score versus each individual item and overall score. A statistically significant difference was observed between baseline OOKS and posttest (12 weeks) OOKS overall ($P<0.001$). Specifically, there was significant growth of over 7 points on the OOKS from the pretest to the posttest. Our results are summarized in Table 1.

### Indirect assessment

Results indicated that the overall measures of satisfaction for all professions ranged from 4.46 ($\text{SD} = 0.77$) to 4.53 ($\text{SD} = 0.73$), suggesting that students were generally satisfied with the program (Table 2). Results by profession were similar, with means ranging from 4.39 ($\text{SD} = 0.61$) to 4.68 ($\text{SD} = 0.47$). One-way analysis of variance on each item revealed that there were no statistically significant differences between health professions. Note that the total number of student responses ($n = 272$) is not equal to the total number of participants, as these data were collected only for AMS medical students, RIC nursing students, RIC social work students, and University of Rhode Island pharmacy students. Physical therapy students and students in professions at other universities did not participate in this evaluation, as they were not part of the overall grand proposal (although they were invited to participate in the workshop). Furthermore, although every attempt was made to capture a response from each student, students may have chosen not to participate for a variety of reasons (e.g., lack of time); however, these results suggest a high degree of satisfaction with the overall workshop, its implementation, its organization, and the quality of the training materials. There was no significant difference between the groups for any of the items, which indicates that the workshop was well suited for students across all the health care disciplines present.

### Conclusion

Our results demonstrate that a newly designed IPE workshop focused exclusively on substance use disorders was well received with high levels of satisfaction among health professions students. Workshops such as these can be used in health professions curricula to simulate the complex medical and social issues surrounding substance use disorders and to highlight the importance of interprofessional teams working together to care for individuals with substance use disorder. Although the students entered the workshop with varied levels of prior exposure to and knowledge of substance use disorders (e.g., the medical and pharmacy students had not yet begun clerkships or clinical work respectively), students across all disciplines reported being highly satisfied with the quality

### Table 2
Means of responses (by program)

<table>
<thead>
<tr>
<th>Curriculum evaluation item</th>
<th>AMS (n = 77)</th>
<th>RICSON (n = 60)</th>
<th>RICSSW (n = 38)</th>
<th>URICOP (n = 97)</th>
<th>All programs (N = 272)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How satisfied are you with the overall quality of the training?</td>
<td>4.42</td>
<td>4.53</td>
<td>4.61</td>
<td>4.43</td>
<td>4.47</td>
</tr>
<tr>
<td>How satisfied are you with the quality of the instruction?</td>
<td>4.52</td>
<td>4.55</td>
<td>4.68</td>
<td>4.45</td>
<td>4.53</td>
</tr>
<tr>
<td>How satisfied are you with the quality of the training materials?</td>
<td>4.39</td>
<td>4.53</td>
<td>4.63</td>
<td>4.41</td>
<td>4.46</td>
</tr>
<tr>
<td>Overall, how satisfied are you with your training experience?</td>
<td>4.51</td>
<td>4.55</td>
<td>4.63</td>
<td>4.47</td>
<td>4.52</td>
</tr>
<tr>
<td>The training class was well organized</td>
<td>4.47</td>
<td>4.47</td>
<td>4.61</td>
<td>4.52</td>
<td>4.50</td>
</tr>
</tbody>
</table>

Analysis of variance results revealed no significant differences in satisfaction across disciplines.
Developing health professional student knowledge, attitudes, and skills on opioid misuse

of instruction received. Such results suggest that the context of an interprofessional workshop is an appropriate and applicable method for providing training for students across all fields, regardless of prior educational and clinical experience. We postulate that an interprofessional environment contributed to overall participant satisfaction.

Of equal importance considering the current opioid epidemic, this newly designed IPE workshop resulted in a significant retention of knowledge, attitudes, and skills related to the prevention of opioid overdose. Although our pretest and posttest were administered only to medical students for logistical reasons, we were pleased to see a significant and sustained increase in knowledge, attitudes, and skills in this group after the IPE workshop. To assess retention, we intentionally administered the posttest to occur after a 12-week gap. Student knowledge was maintained at 12 weeks after the workshop for all items, with the exception of a single question about the timing of onset of naloxone (which may have been a result of the narrow differences between the possible responses). We suggest that the hands-on training in this workshop required active participation on the part of the students, and that this contributed positively to their ability to retain the knowledge learned. Furthermore, we propose that the intensity of the workshop, fostered by the inclusion of real individuals recovering from substance use disorders as well as a realistic team-based working environment, may also have contributed to the efficacy of the instruction.

There are limitations to our work. This was a single IPE workshop in a simulation setting. To sustain the gains made in this workshop, students will need repeat training, best delivered in actual clinical care settings. In addition, we tested only medical students for baseline and retention of knowledge around naloxone. Logistical barriers, such as lack of a survey administration coordinator, inconsistent follow-up time points in each discipline, and the multi-institutional nature of our project, prevented us from extending this assessment method to students in the other health care disciplines. We believe that these results are transferrable to other health professional students, but this remains to be investigated. We also did not administer the satisfaction survey to the subset of participants who were from institutions that were not part of the overall SBIRT grant, although they were invited to partake in the workshops. Based on the results presented here, we do not believe their satisfaction with the program would have been any less than that of the other health professions students. Finally, in our follow-up naloxone data for AMS students, we did lose responses to attrition, as students entered busy clinical clerkships. However, our data set was large enough to be representative of the class.

Nonetheless, in a nation and a state where substance use disorder causes much morbidity and mortality, a multi-pronged educational approach is necessary to train students on this important issue. Our workshop provides a framework for approaching substance use disorder education with health professional students, and it is easily transferrable to other institutions. This workshop provides students with the tools to beginning caring for individuals with substance use disorder, while at the same time modeling the importance of working in interprofessional teams.

References


Kristina Monteiro, PhD, Office of Medical Education, The Warren Alpert Medical School of Brown University, Providence, RI
Luba Dumenco, MD, Office of Medical Education, The Warren Alpert Medical School of Brown University, Providence, RI
Sally Collins, BS, Office of Medical Education, The Warren Alpert Medical School of Brown University, Providence, RI
Jeffrey Bratberg, PharmD, College of Pharmacy, The University of Rhode Island, Kingston, RI
Celia MacDonnell, PharmD, College of Pharmacy, The University of Rhode Island, Kingston, RI
Anita Jacobson, PharmD, College of Pharmacy, The University of Rhode Island, Kingston, RI
Richard Dollase, EdD, Office of Medical Education, The Warren Alpert Medical School of Brown University, Providence, RI
Paul George, MD, MPH, Office of Medical Education, The Warren Alpert Medical School of Brown University, Providence, RI