Currents in Pharmacy Teaching and Learning xxx (xxxx) xxx–xxx

Contents lists available at ScienceDirect

Currents in Pharmacy Teaching and Learning

journal homepage: www.elsevier.com/locate/cptl

Experiences in Teaching and Learning

# Implementation and assessment of a naloxone-training program for first-year student pharmacists

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ARTICLE INFO

*Keywords:*
Naloxone training
Opioid overdose prevention
Assessment
Pharmacy

ABSTRACT

*Background and purpose:* Develop a naloxone training activity and assess the activity's impact on increasing student pharmacist knowledge and confidence to counsel about management of opioid overdose and naloxone administration.

*Educational activity and setting:* First-year student pharmacists participated in a naloxone training activity in an abilities laboratory course. The students completed pre-lab questions, received a brief lecture about responding to an opioid overdose, and then practiced counseling and administering intranasal and intramuscular naloxone using training kits. An Objective Structured Clinical Examination (OSCE) was conducted to assess students' ability to counsel on intranasal naloxone use in response to opioid overdose. Students completed self-assessments about their confidence in counseling patients about management of opioid overdose and naloxone administration following the OSCE and at course end.

*Findings:* 158 students participated and the average OSCE score was 82%. In the post-encounter self-assessment, 93% of students agreed or completely agreed that the OSCE improved their confidence in counseling about management of an opioid overdose and intranasal naloxone administration. Fifty-nine students completed the end-of-course survey and >90% of respondents reported they were somewhat or very confident in their ability to administer intranasal or intramuscular naloxone, recognize the opioid overdose symptoms, and counsel about intranasal naloxone use. Confidence in counseling about use of intramuscular naloxone was slightly lower.

*Summary:* Further study of training programs to increase future healthcare professionals' ability to respond to opioid overdoses is warranted. Incorporation of a short training activity can increase student pharmacists' knowledge and confidence in counseling patients about opioid overdose and naloxone administration.

## Background and purpose

Over the last decade, the substantial rise in deaths due to opioid and heroin overdoses has reached epidemic levels according to the Department of Health and Human Services.[1] From July 2016 to June 2017, 66,817 individuals died of drug overdoses in the

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https://doi.org/10.1016/j.cptl.2018.03.016
Received 18 October 2017; Received in revised form 26 January 2018; Accepted 3 March 2018

United States; 44,693 of those deaths were associated with opioids. Of the opioid-related deaths, about 65% were associated with prescription opioids and 35% were associated with heroin. During the same period in Maryland, there were 2036 deaths associated with opioids; 70% of which were associated with prescription opioids.[2] In an effort to reduce the number of deaths from opioid overdoses, state legislators have prioritized increasing access to naloxone, an opioid reversal agent, in the community.[3] New Mexico was the first state to pass legislation aimed at increasing naloxone access in 2001, and, as of May 15, 2017, all 50 states and the District of Columbia have passed similar legislation.[4,5] Legislation in 47 states allows naloxone to be dispensed to a third-party, a person who may be the witness to an overdose and 45 states allow dispensing through a standing order.[5] This increase in access has profoundly impacted certain communities, with one study demonstrating a 27–46% reduction in deaths once naloxone became readily available.[6]

In 2015, Maryland approved naloxone access for individuals trained and certified by the Overdose Response Program (ORP). This program provides training to recognize the symptoms of an opioid overdose and administer intranasal and intramuscular naloxone. A statewide standing order allows pharmacists to dispense naloxone to ORP certified individuals without a written prescription. In an effort to further increase access, the state legislature recently passed the Heroin and Opioid Prevention Effort (HOPE) and Treatment Act of 2017 authorizing pharmacists to dispense naloxone to anyone, regardless of ORP certification.[7] With this recent change in legislation, pharmacists now serve as the primary educators on management of opioid overdose and naloxone administration. Given this expanded role for pharmacists, a naloxone dispensing activity and assessment were created to train student pharmacists on naloxone administration and counseling.

## Educational activity and setting

Abilities Laboratory (ABL) is a six-semester sequential course series during the first three years of the four-year doctor of pharmacy (PharmD) program at the University of Maryland that incorporates hands-on, practice-based activities. In Spring 2017, first-year professional students participated in a new 50 min naloxone training activity as part of ABL. Prior to the workshop, students were assigned preparatory activities to be completed at home, including reading an informational guide about naloxone available from the College of Psychiatric and Neurologic Pharmacists (CPNP) and answering four questions based on the reading.[8] The CPNP guide was used because of its comprehensive review of opioid overdose management, naloxone formulations available, and administration instructions for each formulation. The pre-lab questions addressed symptoms of opioid overdose, formulations of naloxone, time between naloxone administrations, and injection sites for intramuscular naloxone.

During the workshop, a facilitator confirmed completion of the preparatory questions, but the questions were not assessed for accuracy on an individual basis. Instead, the facilitator reviewed the preparatory materials with the entire class and presented a 10 min lecture on responding to an opioid overdose. This presentation reviewed opioid pharmacology, the prevalence of opioid overdoses, signs and symptoms of an opioid overdose, and important naloxone counseling points. After the presentation, the facilitator discussed available formulations of naloxone and demonstrated intranasal and intramuscular administration. Next, students worked in pairs to practice naloxone counseling using rubrics provided as a reference. Students then practiced “administering” intranasal and intramuscular naloxone using training kits. At the end of the activity, the facilitator summarized the key points of naloxone administration. Of note, the course managers intended to offer a second training session for students to reinforce material covered in the first session; however, inclement weather led to cancellation of the session.

In addition to the in-class training activity, an assessment of the students’ ability to appropriately counsel an individual regarding naloxone use was developed as a component of the Objective Structured Clinical Examination (OSCE). OSCEs are administered in the spring semester of the first, second, and third professional years to assess students’ clinical abilities in a timed, simulated real-life environment through interactions with standardized patients (SPs). SPs are paid actors who are trained on each case by the university's centralized SP program. The SP program also performs interrater reliability as quality assurance for the SPs. During the OSCE, the first-year students individually complete three 10 min cases followed by a post-encounter self-assessment for each interaction. The cases cumulatively assess knowledge and skills related to medication counseling, patient interviewing, over-the-counter medication consults, adverse events, or drug interactions. The naloxone case scenario involved a customer presenting to a community pharmacy to purchase intranasal naloxone. The students were instructed to counsel the patient.

The SPs evaluated the students using a case-specific knowledge/skills checklist (Table 1) and a global impression scale (Table 2) to assess the effectiveness of the student's communication. The knowledge/skills checklist initially contained 11 items; however, six were removed due to the cancellation of the second training session. Immediately following completion of the naloxone case, students

**Table 1**
OSCE knowledge/skills checklist for naloxone case.

| Knowledge and skills items | Point value of each item |
|---|---|
| Asks patient questions to elicit previous knowledge about medication before counseling on it. | 3 |
| Educates patient on at least two signs of opioid overdose (e.g., decreased breathing, pale skin, blue or grey extremities, constricted pupils, and unresponsiveness). | 3 |
| Educates patient to attempt to stimulate patient before calling 911. | 3 |
| Counsels that proper dose is ½ of syringe (or 1 ml) is to be administered in each nostril. | 3 |
| Mentions that second dose should be given if 2–5 min elapse without any patient response. | 3 |

OSCE: Objective Structured Clinical Examination.