Opioid Overdose Identification and Naloxone Administration Training

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A. Abstract

Between 1998 and 2018, almost 450,000 individuals died from an opioid-related overdose in the United States (1). Naloxone education and training for medical students has the potential to substantially reduce morbidity and mortality due to opioid overdose (2). Despite recent improvement in naloxone prescriptions, the CDC reports that naloxone distribution continues to lag in parts of the country suffering from disproportionate numbers of opioid-related overdoses (2).

This curriculum has two parts. After completing Part 1 of this session, medical students will be able to:

1. Identify the signs of symptoms of an opioid overdose (Bloom's level 2 - understand)
2. Describe the mechanism of action of naloxone (level 2 - understand)
3. Demonstrate understanding of the various naloxone formulations by comparing and contrasting their characteristics and how they are administered (level 4 - analyze)
4. Demonstrate how to administer naloxone to patients (level 3 - apply)
5. Explain how naloxone can reverse an opioid overdose and evaluate the importance of prescribing this drug to suspected drug users (level 2 - understand)

After completing Part 2 of this session, medical students will be able to:

1. Initiate informed, non-judgmental discussion on the topic of having a family member/friend (referred to as the patient's "Support System") with Substance Use Disorder (Bloom's level 3 – apply)
2. Describe the prevalence of substance use and overdose in the U.S., along with harm reduction strategies available for individuals with Substance Use Disorder (level 2 – understand)
3. Collaboratively reflect on which strategies can be readily integrated into the Support System's routine or plan to provide support to the patient with SUD (level 4 – analyze)
4. Outline the concept of co-dependence and help design a loose framework for the support system's continued assessment and personalized management of co-dependence and self- care (level 6 – create)
5. Equip the support system with tools and resources to continue building their knowledge base and accessing additional support (level 3- apply)

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B. Introduction/ Rationale

Appropriate training with naloxone must begin early because data suggests that residents do not prescribe naloxone appropriately and continue to report discomfort with providing naloxone prescriptions (5, 6). This learning experience was designed as an opioid overdose identification and naloxone administration training session for graduating fourth-year medical students with the objective of improving confidence in the use and prescription of naloxone. To supplement and support this education, the session also includes training on informed and effective counseling for the family members and friends of patients who suffer from SUD. Furthermore, the involvement of the family members of a patient with Substance Use Disorder (SUD) in the context of Behavioral Family Therapy and Behavioral Couples Therapy has been shown to result in improved outcomes for these patients (3, 4).

C. Curriculum Design

This curriculum can be conducted live or incorporated into a virtual learning setting. Additionally, participants receive naloxone training kits containing different formulations to familiarize themselves with the various administration options available. These kits are subsequently to be used as an illustrative tool in a counseling session with a patient's Support System. It is necessary to create learning sessions with the versatility to be undertaken through various platforms, while many educational facilities continue to socially distance. Additionally, the benefits of having multiple modalities for conducting educational sessions will continue even when normal operations resume, as having pre-planned live and virtual sessions will allow for more significant participant attendance.

In Part 1 learning objectives will be listed on a slide shared and presented to students at the beginning of the session just after the initial case presentation. In Part 2 learning objectives will be listed on a slide presented after providing background knowledge on the benefits of involving a patient's Support System in their care.

The session leader will introduce the session by presenting a hypothetical patient suffering an opioid overdose, followed by an open-ended question regarding the initial steps of assessment. In this circumstance, the case setting is in a public location familiar to most of the students participating in the session and intended to be easily visualized as a realistic scenario. The open-ended question provided with the opening case is intended to activate students' prior knowledge of patient assessment, basic life support skills, and management of an opioid overdose.

The content covered is available to students in the slides and speaker notes of the two-part session's PowerPoint presentations. The specific process for delivering content to the students is as follows:

- One week before the first session, students will receive one Naloxone training kit and be asked to review its contents before the training session.
- Immediately before the session, students will complete a 3-question pre-session confidence survey.

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- The session will be in-person or virtual and delivered to groups of 25 students or less and will last an approximate total of 4 hours.
- Part 1 of the session will begin with a hypothetical patient case, in which students answer questions throughout
- Next is the didactic session. The goal of this session is to complete two passes through the steps required for Naloxone administration. The first pass will use diagrams, the Naloxone training kits, and verbal explanation by the instructor. The second pass will be an instructional video to solidify the necessary procedures.
- Each student will then participate in an OSCE-style assessment activity using a sim-man to simulate a patient with acute opioid overdose.
- Following the simulation activity, students will complete a 10-question multiple-choice quiz assessing knowledge acquisition.
- Finally, students will complete a 6-question post-session confidence survey. This
- concludes Part 1 of the session.
- Part 2 may occur later in the day or on a different day from Part 1. Regardless we recommend a break of at least 1 hour for students before initiating Part 2.
- Part 2 of the session will begin with a 3-question pre-session confidence survey.
- Next, new information will be presented in written form on slides and verbally.
- Each student will then participate in an OSCE-style assessment activity in which a Standardized Patient will roleplay as the Support System of a patient suffering from SUD.

Students will be assessed via:

- Pre- and post-session surveys utilizing a Likert scale to determine their level of confidence in achieving session objectives and utilizing knowledge and skills gained from the session appropriately.
- A standardized checklist evaluating the critical components in the process of patient assessment and naloxone administration.
- A standardized checklist evaluating students' ability to properly counsel the Support System of a patient with SUD in a sensitive, patient-centered, and comprehensive manner.
- A brief quiz evaluating knowledge acquisition from the information presented throughout the session.

Citations:

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Resources for the curriculum are available in Appendices. Materials included in the appendices are original work, developed by the creators of this curricular innovation. References for specific figures and data used to create these materials are included in the resource itself as necessary.

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Appendix A
Part 1 PowerPoint Presentation

Funding for this initiative was made possible (in part) by grant nos. 6H79TI080816 and 1H79TI083343 from SAMHSA. The views expressed in written conference materials or publications and by speakers and moderators do not necessarily reflect the official policies of the Department of Health and Human Services; nor does mention of trade names, commercial practices, or organizations imply endorsement by the U.S. Government

Opioid Overdose Reversal Training

Part 1 of the HWCOM Opioid Overdose Reversal Training Module

Tori Ehrhardt, MS-4
Nicolas Litardo, MS-2
Emiri Uchiyama, MD
Greg Schneider, MD

Learning Objectives

After completing Part 1 of this session, medical students should be able to:

- Identify the signs of symptoms of an opioid overdose (Bloom's level 2 - understand)
- Describe the mechanism of action of naloxone (level 2 - understand)
- Demonstrate understanding of the various naloxone formulations by comparing and contrasting their characteristics and how they are administered (level 4 - analyze)
- Demonstrate how to administer naloxone to patients (level 3 - apply)
- Explain how naloxone can reverse an opioid overdose and evaluate the importance prescribing this drug to suspected drug users (level 2 - understand)

Opening Case

After spending an evening walking around downtown with some friends who are v
you from out of town, you find yourself taking a shortcut down a side street, the quickest ro
an after-dinner treat. On the way you pass by several individuals who appear to be experie
homelessness. Most are sitting quietly on the sidewalk, and you smile as your group passe
You then see a young man slumped against the corner of a building who looks no older tha
20's. His hair is slicked back, his clothes appear clean from a distance but as you approac
see a small amount of vomit on the front of his shirt. You take a few quick steps forward an
realize the man is not breathing.

The visiting friends you are with are not medical students, and they have no medi
training. You are the only medical professional present, and have decided that caring for th
is now your responsibility. *What do you do next?*

Case Questions

What would your immediate next steps be? How would this change in a different setting?

Assess for scene safety, attempt to rouse patient, check for breathing and pulse

The patient has a weak pulse and a respiratory rate of 5, next step?

Ensure 911 has been called, perform rescue breathing, administer Naloxone if available, place in recovery position, stay with patient once help arrives (if possible)

What are your immediate top differential diagnoses for this patient?

Opioid intoxication/overdose, other toxicity, hypoglycemia, stroke, trauma, etc.

Why is it important to stay with the patient until EMS arrives?

Naloxone's duration of action compared to substance causing overdose

Case Questions

What are some physical exam findings you are looking for in this patient?

- Best physical exam finding predicting opioid intoxication: respiratory rate <12
- Other findings:
  - Miosis (though the absence of this does not exclude this dx)
  - Depressed mental status
  - Decreased tidal volume
  - Decreased bowel sounds
  - Track marks/skin popping

Image from
UpToDate

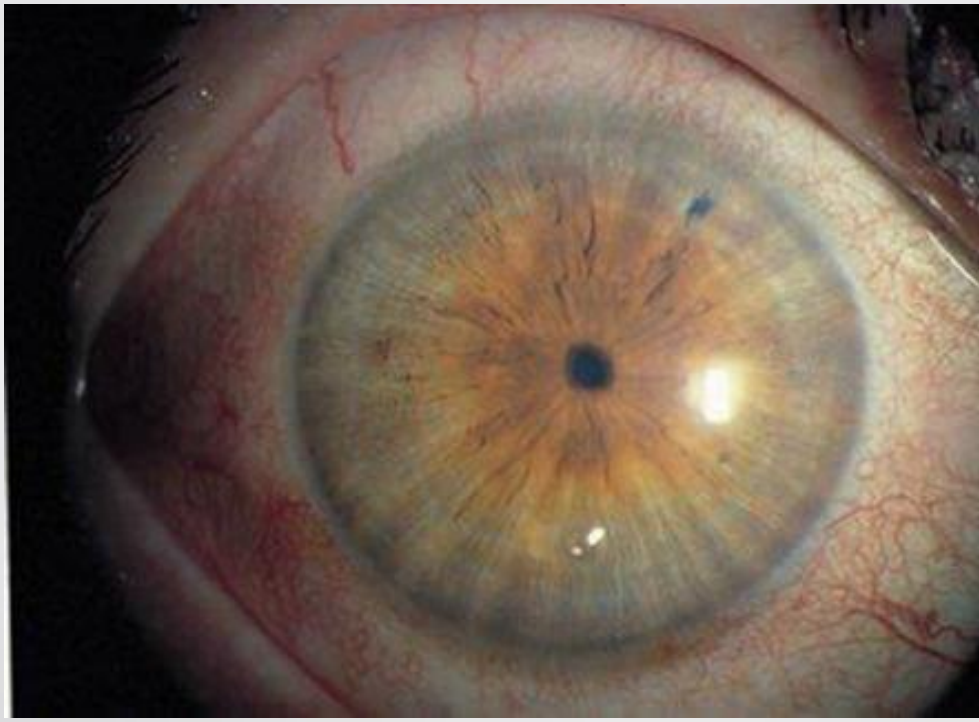


Image from
CA Poison
Control

Case Questions

Once Naloxone is administered, how is the patient likely to respond?

Post-Naloxone Withdrawal Symptoms in First Responder Rescues: 2010-2013	Total
None	47 (40%)
"Dope Sick"	27 (23%)
Irritable or Angry	33 (28%)
Physically Combative	6 (5%)
Vomiting	16 (14%)
Other	14 (12%)

Image from the Massachusetts Department of Public Health

Administering Naloxone

1. Remove both yellow caps from the ends of the syringe
2. Twist the nasal atomizer onto the tip of the syringe
3. Remove the purple cap from the naloxone
4. Twist the naloxone on the other side of the syringe

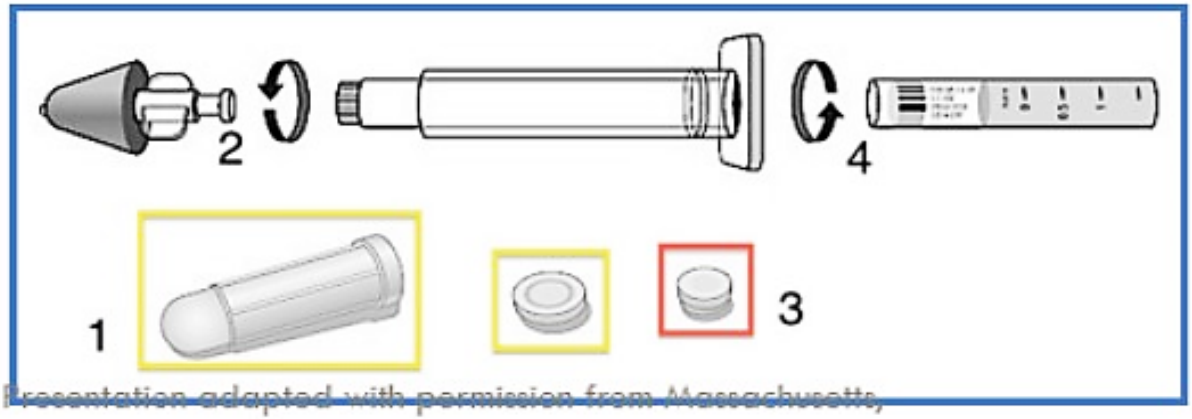
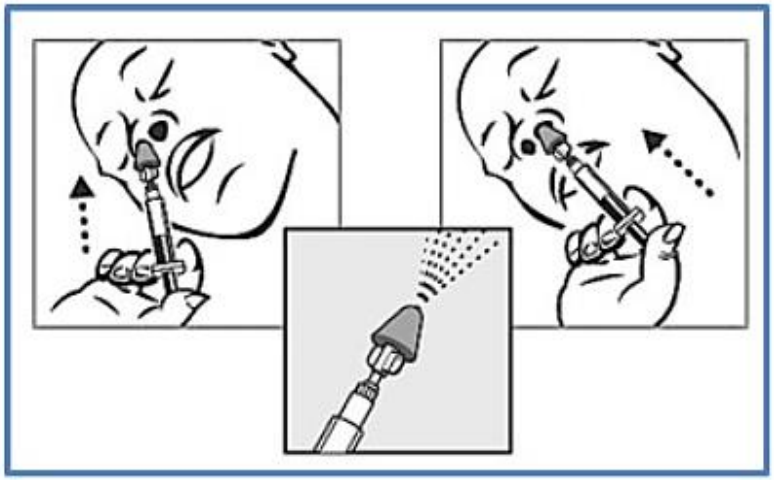


Image from the Massachusetts Department of Public Health

Administering Naloxone

- Push 1ml (1mg) of naloxone into each nostril
- Administer the entire contents of the 2ml syringe with approximately one half (1ml) administered in each nostril
- Administering one half in each nostril maximizes absorption



Presentation adapted with permission from Massachusetts,

Image from the Massachusetts Department of Public Health

Video Instruction

https://prescribetoprevent.org/patient-education/videos-for-download/

How to administer IM: Entire video

How to administer intranasal: 1:10- 2:10

How to administer Naloxone auto-injector: 1:10- 2:02

Remember the Basics of BLS!

Begin with a rapid assessment:

- Perform a visual survey to assess for safety, formulate an initial impression of th patient, and determine the need for additional resources
- Check for responsiveness
- Open the airway and simultaneously check for breathing and a pulse if the patie unresponsive.

After you complete your rapid assessment, provide care based on the conditions Often contacting EMS or having someone else contact EMS is the next step, so th you can then begin care.

Simulation Scenario

Key Takeaway Points

- Check your implicit bias on who “seems” more likely to suffer an overdose
- Always consider other differentials while assessing a patient with potential o overdose
- Respiratory rate is the most sensitive physical exam finding
- There are no contraindications to administration of Naloxone, and can be gi via nasal spray (Narcan and intra-nasal Amphastar device), auto-injector, or
- Naloxone works only on opioids, not on co-ingested alcohol, benzodiazepin etc.
- Always remember the basics of BLS: secure the scene, check for responsiveness, open the airway and check for breathing and pulse, then c EMS as initiating care

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Appendix B
Part 1 Pre-Session Confidence Survey

Question 1:

I am confident in my ability to assess a patient with potential opioid overdose.

Answer Choices:

A. Strongly Agree

B. Agree

C. Neither Agree nor Disagree

D. Disagree

E. Strongly Disagree

Question 2:

I am confident in my ability to administer Naloxone to a patient with suspected opioid overdose.

Answer Choices:

A. Strongly Agree

B. Agree

C. Neither Agree nor Disagree

D. Disagree

E. Strongly Disagree

Question 3:

I am confident in my ability to continue the management of a patient with opioid overdose, after Naloxone has been administered.

Answer Choices:

A. Strongly Agree

B. Agree

C. Neither Agree nor Disagree

D. Disagree

E. Strongly Disagree

Appendix C
Part 1 Post-Session Confidence Survey

Question 1:

I am confident in my ability to assess a patient with potential opioid overdose.

Answer Choices:

A. Strongly Agree

B. Agree

C. Neither Agree nor Disagree

D. Disagree

E. Strongly Disagree

Question 2:

I am confident in my ability to administer Naloxone to a patient with suspected opioid overdose.

Answer Choices:

A. Strongly Agree

B. Agree

C. Neither Agree nor Disagree

D. Disagree

E. Strongly Disagree

Question 3:

I am confident in my ability to continue the management of a patient with opioid overdose, after Naloxone has been administered.

Answer Choices:

A. Strongly Agree

B. Agree

C. Neither Agree nor Disagree

D. Disagree

E. Strongly Disagree

Question 4:

The workshop was well-organized with clearly stated learning objectives.

Answer Choices:

A. Strongly Agree

B. Agree

C. Neither Agree nor Disagree

D. Disagree

E. Strongly Disagree

Question 5:

The workshop was a valuable use of my time.

Answer Choices:

A. Strongly Agree

B. Agree

C. Neither Agree nor Disagree

D. Disagree

E. Strongly Disagree

Question 6:

What additional suggestions do you have to improve this session?

Free Response Answer to be Qualitatively Reviewed:

Appendix D
Part 1 Simulation Activity OSCE-style Rubric

OSCE- style assessment of Simulation Activity

Task:	**Yes**	**No**
1. Verbalizes assessment of scene safety before approaching patient		
2. Checks for patient responsiveness verbally, then via firm shaking of patient's shoulder/arm or via sternal rub		
3. Checks patient's pulse		
4. Opens airway		
5. Assess for breathing		
Student is told that patient's pulse is weak but present, and their respiratory rate is 3. Needles and drug paraphernalia are seen lying beside them.		
6. Instructs bystander to call for help		
7. Accesses Naloxone Training Kit		
Student can complete either #7 or #8, only one of these steps is required		
7a. Selects atomizer		

7b. Removes both yellow caps from end of syringe		
7c. Twists nasal atomizer onto top of syringe		
7d. Removes purple cap from naloxone		
7e. Twists Naloxone on other side of syringe		
7f. Pushes 1 ml of Naloxone into each nostril		
8a. Selects Narcan nasal spray		
8b. Places tip of plunger into one nostril		
8c. Pushes plunger until entire dose is administered to one nostril		
9. Places patient in recovery position (on their side)		
Student is told that patient is stirring and EMS has just arrived to transport patient to hospital		

Appendix E:
Part 1 MCQ Assessment

Formal MCQ evaluating knowledge acquisition

1. Which of the following best approximates Naloxone's duration of action in the body?*[Learning Objective 2]*

A. 15-30 minutes

B. 30-90 minutes

C. 60-120 minutes

D. 1-2 days

2. Which of the following is the most specific physical exam finding for opioid intoxication?

[Learning Objective 1]

A. Pupil size <1.5 mm

B. Track marks on bilateral upper extremities

C. Respiratory rate <12 breaths/min

D. Depressed mental status

3. Which of the following are contraindications to Naloxone administration?

[Learning Objective 2]

A. There are no contraindications to Naloxone use

B. Previous nausea and vomiting after Naloxone use

C. Pupil size > 2 mm

D. Lack of visible track marks

4. For which of the following substances will Naloxone reverse an overdose?

[Learning Objective 2]

A. Alcohol

B. Opioids

C. Benzodiazepines

D. Both B and C

E. All of the above

5. Which of the following statements is correct?

[Learning Objective 3]

A. Naloxone administration via atomizer is most effective when used in the oropharynx

B. Naloxone administration via atomizer is most effective when used in both nostrils

C. Naloxone administration via Narcan nasal spray is more effective when used in both nostrils

D. Naloxone administration via IM injector is less safe than other administration methods

6. Which of the following methods of Naloxone administration is most effective at reversing overdose?

[Learning Objective 3]

A. Auto-injector

B. Nasal spray

C. IM injector

D. No single method has been shown to be more effective than others

7. In which of the following circumstances should Naloxone not be given to a patient who has overdosed on opioids?

[Learning Objective 3]

A. If a patient is likely to be angry when the overdose is reversed

B. Naloxone should always be given to a patient who has overdosed on opioids

C. In a patient with a history of violent behavior

D. If a patient has a signed DNR order

8. Which of the following medications is equally effective as Naloxone in reversing an opioid overdose?

[Learning Objective 3]

A. Buprenorphine

B. Naltrexone

C. Naloxone is the only agent that can quickly and effectively reverse an opioid overdose

D. Methadone

9. Which of the following is/are reasons why Naloxone is not prescribed as often as indicated in the clinical setting?

[Learning Objective 5]

A. Provider discomfort in discussing the subject with patients

B. Lack of training on the subject in medical education

C. Patient refusal to accept Naloxone from providers

D. Both A and B

E. All of the above

10. Which of the following is true regarding the side effects and addictive properties of Naloxone?

[Learning Objective 2]

A. Naloxone has no side effects or addictive properties

B. Naloxone can have minor side effects but has no addictive properties

C. Naloxone has no side effects and is highly addictive

D. Naloxone can have minor side effects and is highly addictive

Appendix F
Part 2 PowerPoint Presentation

ESP-SUD: Equipping the Support System of Patients with Substance Use Disorder

Part 2 of the HWCOM Opioid Overdose Reversal Training Module

Tori Ehrhardt, MS-4
Nicolas Litardo, MS-2
Emiri Uchiyama, MD
Greg Schneider, MD

Learning Objectives

After completing Part 2 of this session, medical students should be able to:

- Initiate informed, non-judgmental discussion with family members/friends of patients with Substance Use Disorder on the topic of a patient support system. (Bloom's level 3 – app
- Describe the prevalence of substance use and overdose in the U.S., along with harm red strategies available for individuals with Substance Use Disorder (level 2 – understand)
- Collaboratively reflect on which strategies can be readily integrated into the family member's/friend's routine or plan to provide support to the patient with SUD (level 4 – an
- Outline the concept of co-dependence and formulate an approach for self-care (level 5 – synthesize)
- Equip members of the support system with tools and resources to continue building their knowledge base and accessing additional support (level 3- apply)

Background

- In 2018 approximately 53 million individuals in the US, or 19.4% people age 12 years and older, reported use of illicit drugs or m of prescription drugs in the past year.

- In the past 20 years over 700,000 individuals in the US have die from a drug overdose. Approximately 70,000 of those deaths occurred in 2017, with 68% of those involving an opioid.

Evidence suggests that including the Support System of a patient with SUD in counseling efforts is beneficial for both the patient and the Support System

- We use “Support System” in this session to describe a patient’s friends and/or family; the individuals who provide support to the patient in various ways on a regular basis.
- Patients with Substance Use Disorder (SUD) undergoing Behavioral Family Therapy in addition to Individual Behavioral Therapy (IBT) are retained in treatment longer than thos with IBT alone.
- Particularly in women with SUD, Behavioral Couples Therapy improves relationship satisfaction, prevents relationship breakup, and reduces substance-use related problems
- A positive cost-benefit analysis has been seen in a study on the addition of Behavioral Marital Therapy to individual alcoholism counseling for married males with alcohol use disorder.

Minorities have worse outcomes in treatment for SUD

- “Black adolescents with SUD report receiving less specialty and informal care, while Latinos w
  SUD report less informal services” as compared to non-Latino White adolescents.
- While racial and ethnic minorities comprise about 40% of admissions to publicly funded SUD
  treatment centers, Black and Hispanic individuals are significantly less likely than White indivi
  to complete treatment for alcohol and drugs, and Native Americans are less likely to complete
  alcohol treatment. These differences can be explained largely via disparities in socioeconomi
  between the groups.
- Engagement of the individual in the treatment program, feelings of discrimination, and financi
  resources have all been observed as predictors of treatment program completion.

Harm Reduction

Principles:

- Drug use exists and will continue to exist; choose to minimize the harm it causes instead of ignoring condemning those involved.
- Drug use is a complex issue, and there are some ways of using drugs that are safer than others.
- Successful intervention and policies are ones that improve individual and community health and we - completed cessation of drug use is not required for success.
- People who use drugs are empowered, see themselves as primary agents of change, and are invol the policies designed to reach them.

Strategies:

- Naloxone
- Syringe exchange programs
- MAT used as gold-standard of management

Co-dependence

Co-dependency is viewed as a learned condition characterized by [Beattie 1986]:

- “Any combination of dependence, obsession, and preoccupation toward anothe person—often a person with a SUD or mental health disorder.”
- High expenditure of time and emotional energy to another’s wellbeing.
- Development of irrational beliefs or insecure attachments.
- Often neglect self-care and maintain a low self-worth.

Studies have shown significantly different brain imaging results of the prefrontal c the place of emotional and behavioral regulation, in family members of patients w when shown a photograph of the individual compared to controls [Zielinski 2019].

Co-dependence

- Individuals with family who have an alcohol or drug-related diagnosis have high
  health care costs and a greater number of medical problems.

- The current literature focuses on defining and characterizing co-dependency, w
  little guidance on how to manage it aside from the involvement of the co-depen
  individuals in the journey of the patient with SUD, when possible.

Resources for Support Systems

- Naloxone locator: https://harmreduction.org/resource-center/harm-reduction-nea

- Sterile syringe program locator: https://www.nasen.org/map/

- Substance Abuse and Mental Health Services Administration provides updated information, public messages, evidence-based practices: https://www.samhsa.gov

- Treatment facility locators:
    - https://findtreatment.gov/
    - https://findtreatment.samhsa.gov/

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ank You

Appendix G

Part 2 Pre-Session Confidence Survey

Question 1:

I am confident in my ability to provide information about Substance Use Disorder to the family members and friends that make up the support system of patients with SUD.

Answer Choices:

A. Strongly Agree

B. Agree

C. Neither Agree nor Disagree

D. Disagree

E. Strongly Disagree

Question 2:

I am confident in my ability to collaboratively discuss with support system members how to utilize harm reduction strategies and effective easy-to-access resources in their plan to provide support to a patient with SUD.

Answer Choices:

A. Strongly Agree

B. Agree

C. Neither Agree nor Disagree

D. Disagree

E. Strongly Disagree

Question 3:

I am confident in my ability to provide counseling to support system members on the concept of co-dependency and the importance of self-care.

Answer Choices:

A. Strongly Agree

B. Agree

C. Neither Agree nor Disagree

D. Disagree

E. Strongly Disagree

Appendix H: Part 2 Post-Session Confidence Survey

Question 1:

I am confident in my ability to provide information about Substance Use Disorder to the family members and friends that make up the support system of patients with SUD.

Answer Choices:

A. Strongly Agree

B. Agree

C. Neither Agree nor Disagree

D. Disagree

E. Strongly Disagree

Question 2:

I am confident in my ability to collaboratively discuss with support system members how to utilize harm reduction strategies and effective easy-to-access resources in their plan to provide support to a patient with SUD.

Answer Choices:

A. Strongly Agree

B. Agree

C. Neither Agree nor Disagree

D. Disagree

E. Strongly Disagree

Question 3:

I am confident in my ability to provide counseling to support system members on the concept of co-dependency and the importance of self-care.

Answer Choices:

A. Strongly Agree

B. Agree

C. Neither Agree nor Disagree

D. Disagree

E. Strongly Disagree

Question 4:

The workshop was well-organized with clearly stated learning objectives.

Answer Choices:

A. Strongly Agree

B. Agree

C. Neither Agree nor Disagree

D. Disagree

E. Strongly Disagree

Question 5:

The workshop was a valuable use of my time.

Answer Choices:

A. Strongly Agree

B. Agree

C. Neither Agree nor Disagree

D. Disagree

E. Strongly Disagree

Question 6:

What additional suggestions do you have to improve this session?

Free Response Answer to be Qualitatively Reviewed:

Appendix I

Part 2 SP Encounter OSCE-style Rubric

OSCE- style assessment of Support System Counseling Session with Standardized Patient

Students should be supplied with their Naloxone training kit in this session, and instructed to use during the discussion whenever they deem this is appropriate.

Task:	Yes	No
1. Begins conversation with open-ended question about situation, using person-first language		
2. Asks for permission to discuss substance use disorder (SUD) in context of the patient for which individual serves as support system		
3. Provides brief background on prevalence of substance use disorder		
4. Emphasizes no "cure" is available but the gold-standard for treatment is MAT		
5. Explains focus on harm reduction strategies as opposed to patient's complete abstinence from substance, utilizing Naloxone training kit as illustration tool		
6. Introduces concept of co-dependence and emphasizes importance of self-care		
7. Provides information on how to continue learning and growing as an effective support system		

Global assessment:

Themes to look for:

- Student maintains non-judgmental attitude.
- Student leaves space for questions or concerns as new information is shared.
- Student remains sensitive to individual's emotional responses, applying the Naming-Understanding-Respect-Support (NURS) approach when appropriate.

_____
_____
_____
_____

Appendix J
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