Recognition, Response and Administration of Naloxone (Narcan)

Opioid Overdose 101
Collaborators

- Oklahoma State Department of Health
  - Emergency Systems
  - Injury Prevention Service
  - Office of Scientific and Research Integrity
- Oklahoma Department of Mental Health & Substance Abuse Services
Learning Objectives

- Obtain baseline understanding of the prescription drug overdose problem
- Understand how opioids work
- Identify an opioid overdose
- Learn how to respond to an opioid overdose
- Learn how to administer Narcan (naloxone), an opioid antidote
- Become familiar with OK statute §63-1-2506
Importance of Overdose Prevention
Scope of the Problem

Unintentional Poisoning Death Rates, Oklahoma and the United States, 1999-2012

Source: WISQARS, Centers for Disease Control and Prevention
Scope of the Problem

Age-adjusted Unintentional Poisoning and Motor Vehicle Crash Death Rates, Oklahoma, 1999-2012

Source: CDC WISQARS
Scope of the Problem

Substances Involved in Unintentional Poisoning Deaths, Oklahoma, 2007-2012

Source: OSDH, Injury Prevention Service, Unintentional Poisonings Database (Abstracted from Medical Examiner reports)
Unintentional Poisoning Deaths Involving Medication, Oklahoma, 2007-2012

**Scope of the Problem**

- Most common medications (number of deaths):
  - Oxycodone (791)
  - Hydrocodone (787)
  - Alprazolam (733)
  - Methadone (628)
  - Morphine (463)

<table>
<thead>
<tr>
<th>Medication Type</th>
<th>Number</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescription medication</td>
<td>3075</td>
<td>13.7</td>
</tr>
<tr>
<td>Narcotic analgesic</td>
<td>2677</td>
<td>12.0</td>
</tr>
<tr>
<td>Anti-anxiety</td>
<td>1007</td>
<td>4.5</td>
</tr>
<tr>
<td>Muscle relaxant</td>
<td>305</td>
<td>1.4</td>
</tr>
<tr>
<td>Antidepressant</td>
<td>252</td>
<td>1.1</td>
</tr>
<tr>
<td>Tri-cyclic antidepressant</td>
<td>186</td>
<td>0.8</td>
</tr>
<tr>
<td>Non-narcotic analgesic</td>
<td>186</td>
<td>0.8</td>
</tr>
<tr>
<td>Antipsychotic</td>
<td>47</td>
<td>0.2</td>
</tr>
<tr>
<td>Respiratory</td>
<td>52</td>
<td>0.2</td>
</tr>
<tr>
<td>Hypnotic/sedative</td>
<td>39</td>
<td>0.2</td>
</tr>
<tr>
<td>Antiemetic</td>
<td>31</td>
<td>0.1</td>
</tr>
<tr>
<td>CNS stimulant</td>
<td>25</td>
<td>0.1</td>
</tr>
<tr>
<td>Other**</td>
<td>60</td>
<td>0.3</td>
</tr>
<tr>
<td>Over the counter</td>
<td>143</td>
<td>0.6</td>
</tr>
</tbody>
</table>

Source: OSDH, Injury Prevention Service, Unintentional Poisonings Database (Abstracted from Medical Examiner reports)
Unintentional Poisoning Death Rates by County of Residence¹, Oklahoma, 2007-2012

Scope of the Problem

Rates per 100,000 population
- Top 5 counties
- 21.1 – 34.2
- 17.9 – 21.0
- 12.6 – 17.8
- 7.6 – 12.5
- <5 deaths

State rate²: 17.5

¹County of residence was unknown for 31 persons.
²Source: OSDH, Injury Prevention Service, Unintentional Poisonings Database (Abstracted from Medical Examiner reports)
The Solution

• A multi-faceted approach to overdose prevention is required.

• A comprehensive array of efforts are underway in Oklahoma, including:
Effective November 2013, Oklahoma Statute §63-1-2506.1

Administration of opiate antagonists allows:

First responders shall have the authority to administer, without prescription, opiate antagonists when encountering an individual exhibiting signs of an opiate overdose.
The Solution

- Most users attempt to achieve abstinence from drugs, but on average this process takes 9 years and 4 episodes of care.
- Naloxone is a drug used to reverse the effects of opioids.
- Naloxone is safe and effective.
- Naloxone has no effect on non-opioid overdoses.
Widespread support for naloxone programs:

- The White House, Office of National Drug Control
- Centers for Disease Control and Prevention
- Federal Drug Administration
- Substance Abuse and Mental Health Services Administration

**Recommendation D:** Equip Health Care Providers and First Responders to Recognize and Manage Overdoses
In the United States:

- Over 180 community-based naloxone programs
- Over 50,000 people trained
- Over 10,000 overdose reversals (lives saved)
Opioid Basics
Number of Individuals Who Received Naloxone During More Than One (1) Event (01/01/2011-06/03/2014*)

<table>
<thead>
<tr>
<th>No. of Events</th>
<th>No. of Individuals with Multiple Events</th>
<th>No. Who Died From Opioid Toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 Times</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>7 Times</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>6 Times</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>5 Times</td>
<td>14</td>
<td>0</td>
</tr>
<tr>
<td>4 Times</td>
<td>33</td>
<td>8</td>
</tr>
<tr>
<td>3 Times</td>
<td>138</td>
<td>9</td>
</tr>
<tr>
<td>2 Times</td>
<td>777</td>
<td>54</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>969</strong></td>
<td><strong>71</strong></td>
</tr>
</tbody>
</table>

Note:

1) Only those events that had valid identifiers (a valid date of birth and a first and last name) were considered.
2) There were 12,067 (92.36%) events that had valid identifiers.

Source: OKEMSIS
Figure 4. Naloxone Administration by EMS by Gender & Age Group (01/01/2011-06/03/2014*)

- 90 years old +
- 70-79 years old
- 60-64 years old
- 50-54 years old
- 40-44 years old
- 30-34 years old
- 20-24 years old
- 10-14 years old
- 1-4 years old

Frequency of Naloxone Administration by EMS

- Females
- Males
The Solution

Narcan Administration by Month
(01/01/2011-12/31/2013)

Source: OKEMSIS
The Solution
Opioids are used primarily in medicine for pain relief, treatment of opioid use disorders, and cough relief.

**Opioids**

- **Natural**: opium, morphine, codeine
- **Semi-synthetic**: heroin, hydrocodone, oxycodone
- **Fully synthetic**: fentanyl, methadone, Demerol

*All categories have overdose risk*
How do opioids affect breathing?

OVERDOSE

Opioid Receptors, brain

Opioid
Narcan®
(naloxone)

- Narcan knocks the opioid off the opioid receptor
- Only blocks opioid receptors; no opioids = no effect
- Not harmful if no opioids in system
- Temporarily takes away the “high,” giving the person the chance to breathe
- Narcan works in 1 to 3 minutes and lasts 30 to 90 minutes
- Narcan can neither be abused nor cause overdose
- Only known contraindication is sensitivity, which is very rare
- Narcan can cause withdrawal symptoms such as:
  - nausea/vomiting
  - diarrhea
  - chills
  - muscle discomfort
  - disorientation
  - combativeness
Restores breathing
Identifying An Opioid Overdose
### Identify an Opioid Overdose

<table>
<thead>
<tr>
<th>REALLY HIGH</th>
<th>OVERDOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pupils pinned</td>
<td>Pupils pinned</td>
</tr>
<tr>
<td>Nodding, but arousable (responds to sternal rub)</td>
<td>Not arousable (no response to sternal rub)</td>
</tr>
<tr>
<td>Speech is slurred</td>
<td>Very infrequent or no breathing</td>
</tr>
<tr>
<td>Sleepy, intoxicated, but breathing</td>
<td>Breathing slow or stopped</td>
</tr>
<tr>
<td>• 8 or more times per minute</td>
<td>• Less than 8 times per minute</td>
</tr>
<tr>
<td></td>
<td>• May hear choking sounds or gurgling/snoring noises</td>
</tr>
<tr>
<td></td>
<td>• Blue lips, blue fingertips</td>
</tr>
</tbody>
</table>

**Stimulate and observe**

**Rescue breathe + give naloxone**
Naloxone Intervention: Respond to an Opioid Overdose
Respond to Opioid Overdose

1. Stimulate
2. Alert EMS
3. Administer naloxone
4. CPR – Rescue breathing/ventilations
5. Repeat 3 & 4, if necessary
6. Recovery position, if breathing
Safety Considerations

- Prior to administration of naloxone, review ABCs
- Assess for other causes of altered mental status and/or respiratory depression
- The half-life of naloxone is relatively brief
- Monitored closely for recurrent symptoms
  - Altered mental status, respiratory depression, etc.
Safety Considerations

The medical director should include parameters within the protocols for EMRs and EMTs on how to address these adverse effects:

- Agitation
- Tachycardia
- Pulmonary edema
- Nausea
- Vomiting
- Seizures
Risk Factors with Opioid Overdose

- Hypercarbia
- Aspiration
- Cardiopulmonary arrest
- Incidence of risk factors increases with use of other substance
  - Alcohol, benzodiazepines, or other medications
Fentanyl
(Duragesic)
Waking The Dragon
Respond:

Stimulate & Alert EMS

1. Stimulate victim with a *sternal rub*

2. If no response, delirious, or altered consciousness, call for *EMS support*
3. If no response from stimulation, give naloxone

Kit contents:

- Two (2) individual pre-filled syringes of naloxone
- One (1) mucosal atomizer (nose pieces/spray device)
Mucosal Atomization Device (MAD)

Prefilled ampule of naloxone

Luer-lock syringe

Prefilled ampule of naloxone

Luer-lock syringe
How to Give Nasal Spray Narcan

1. Remove yellow caps from delivery device

2. Remove purple cap from medication vial
How to Give Nasal Spray Narcan

3. Thread atomizer on to the top of the delivery device

4. Gently screw the medication vial into the delivery device until you feel it catch.
How to Give Nasal Spray Narcan

5. Spray half (1 ml) up one nostril and half up the other nostril.
Respond: Rescue Breathing

4. Give *rescue breaths*, if you have proper safety equipment and training

- Place 1 hand on the chin and tilt head back to open airway
- Make sure the airway is clear and remove anything in their mouth
- Pinch the nose closed
- Give 2 slow rescue breaths into the mouth
- Use a rescue breathing mask if available
- Use a bag valve mask if you are trained
4. Give **rescue breaths**, if you have proper safety equipment and training

- Make sure the chest (not the stomach) is rising with the breaths
- Give 1 breath every 5 seconds until the person can breathe on their own
- If no pulse, start CPR
5. After 3-5 minutes, if the victim is still unresponsive with slow or no breathing, *administer another dose* of naloxone and *continue rescue breathing*. 

**Respond:** Repeat 3 & 4 if Necessary
6. Recovery position, when breathing is restored
Review: Respond to Opioid Overdose

1. Stimulate
2. Alert EMS
3. Administer naloxone
4. CPR – Rescue breathing/ventilations
5. Repeat 3 & 4, if necessary
6. Recovery position, if breathing
Respond to Opioid Overdose: Naloxone Administration

Intranasal delivery route has advantages:

- Uncomplicated and convenient
- Nose is an easy access point for medication delivery
- It is painless
- No shots needed
- It eliminates any risk of a needle stick
Naloxone Deployment & Supply:

- Initial supply = 2 units for each posted ambulance
- Use it/Lose it = request re-supply
- Store naloxone at room temperature (59-86 degrees F) and per additional manufacturer guidelines
Relevant Procedures and Legal Issues
Key Points for Administration of Intranasal Naloxone or a Naloxone Auto-Injector

- Medical director approval is mandatory
- Training is mandatory
- A protocol from the medical director is mandatory
Medical director retains authority to limit or prohibit administration of intranasal or auto-injector naloxone

Administration of naloxone by the endotracheal, intramuscular (exception via an auto-injector), or intravenous routes remains prohibited for EMRs and EMTs
Legal Considerations: Oklahoma Naloxone Law


A. First responders shall have the authority to administer, without prescription, opiate antagonists when encountering an individual exhibiting signs of an opiate overdose. For the purposes of this provision, a first responder shall include:
   1. Law enforcement officials;
   2. Emergency medical technicians;
   3. Firefighters; and
   4. Medical personnel at secondary schools and institutions of higher education.

B. Any first responder administering an opiate antagonist in a manner consistent with addressing opiate overdose shall be covered under the Good Samaritan Act.
Legal Considerations: Oklahoma Naloxone Law

Okla. Stat. tit. 63, § 1-2506.2 Prescription of opiate antagonists to family members
A. Upon request, a provider may prescribe an opiate antagonist to an individual for use by that individual when encountering a family member exhibiting signs of an opiate overdose.
B. When an opiate antagonist is prescribed in accordance with subsection A of this section, the provider shall provide:
   1. Information on how to spot symptoms of an overdose;
   2. Instruction in basic resuscitation techniques;
   3. Instruction on proper naloxone administration; and
   4. The importance of calling 911 for help.
C. Any family member administering an opiate antagonist in a manner consistent with addressing opiate overdose shall be covered under the Good Samaritan Act.
Documentation:

- Memorandum of Agreement
- MOA must be signed by agency
- Required for access to free intranasal naloxone kits from OSDH
Documentation:

Naloxone Training Form

- Used every time you train others
- Sign-in sheet
- Pre/post training evaluation used to report knowledge and perception of project
Documentation:

Naloxone Administration Reporting Form

• Used to report overdose events
• Used to obtain refills of naloxone
• Check boxes used to describe overdose events
• No identifying information on victim is reported
• Needs to be completed right away
Review

Learning Objectives:

• Obtain baseline understanding of the opioid overdose problem
• Understand how opioids work
• Identify an opioid overdose
• Learn how to respond to an opioid overdose
• Learn how to administer Narcan (naloxone), an opioid antidote
• Become familiar with OK statute §63-1-2506
Contact Information

- For medical questions:
  - Dr. Cathey
    - TimC@health.ok.gov
    - 405-271-4027

- To order naloxone kits:
  - Avy Redus
    - AvyD@health.ok.gov
    - 405-271-3430
  - Rachel Jantz
    - RachelJ@health.ok.gov
    - 405-271-3430
Training Videos

• 3-minute video
  – “Naloxone Administration for Opioid Overdose”
  – https://www.youtube.com/watch?v=vV3HR_J3Ws8

• 6-minute video
  – “Oklahoma Naloxone Initiative”
  – https://www.youtube.com/watch?v=dpkkYdnGI5U

• 11-minute video
  – “Opioid Medication Safety: The Role of Naloxone”
  – http://vimeo.com/37778160
References


5. Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death, 2010 on CDC WONDER Online Database, released 2012.


We acknowledge the DuPage County Department of Public Health and the Massachusetts Department of Public Health for permitting use of training content.
You respond to a known drug abuser who is found unconscious with a hypodermic needle inserted into her arm. Her pupils are pinpoint and she does not respond to painful stimuli. Upon assessment of vital signs, her blood pressure is 110/70, pulse is 60, respiratory rate is 2, and she has a pulse oximeter reading of 84%.

What is the first action you should take?
Case Study

- This patient is apneic as evidenced by her respiratory rate of 2. The appropriate initial action to take is to open and maintain the airway and administer oxygen via bag valve mask.
- Therapeutic interventions to support the patient’s airway, breathing, and circulation should be initiated prior to the administration of naloxone.