Prevention of Opioid Overdose Deaths

Building Healthy Communities
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Disclosure

- None
105 People die everyday of a drug overdose
The only evidenced-based intervention that has demonstrated to prevent heroin overdose, is medication assisted treatment with methadone or buprenorphine.

Naloxone to Reverse an Opioid Overdose

- Naloxone Hydrochloride (brand name Narcan), is an FDA-approved medication, is a short-acting competitive mu opioid-receptor antagonist
- First synthesized in 1960
- Well-established efficacy and safety
- Used by EMS & hospitals for over 40 years
- Onset within 2 minutes, duration 20-90 minutes; administered IM/IV/IO/IN
- Medical device, such as an auto-injector or a nasal applicator, does not have FDA approval

SOURCES: Boyer et al. 2012; Buajordet et al. 2004; Clarke et al. 2005; Dahan et al. 2010
Naloxone Dosing

- Recommended start 0.04mg, increase every 2-3 minutes at rate 0.5mg, 2mg, 4mg, 10mg, 15 mg – until adequate respiration
- Oxygenate with bag-valve mask
- Observe 4-6 hours standard, at least 8 hours if long-acting opioid used (methadone, fentanyl patch)
- Very specific mechanism of action
Naloxone Side Effects

- Confusion
- Headache
- Gastrointestinal problems
- Aggressiveness
- Tachycardia
- Shivering

- Sweating
- Tremor
- Seizures
- Naloxone sensitivity
- Cardiac arrest
- Pulmonary edema
- Renarcotization
Naloxone

- Does not reverse overdose caused by other drugs (for example, cocaine or benzodiazepines)
- Costs $20 (nasal formulation, $3 if on Medicaid formulary), kits costs approximately $50
- No abuse liability
Opioid Overdose Prevention Programs (OOPPs)

Began in 1999 & the key components are:

1) training on how to identify the symptoms of an opioid overdose

2) how to respond, including administration of naloxone (bystander administration)

Why important:

• Many people don’t call 911
• EMT-Basics & first responders can not administer naloxone

SOURCES: Sporer & Kral 2007; Enteen et al. 2010; Baca & Grant 2007
Nasal Naloxone

Advantages:
- Avoid needle stick injuries
- Ease of administration
- Does not require intravenous line placement

Disadvantages:
- Bioavailability
- Response time
- Limited research

<table>
<thead>
<tr>
<th>Study</th>
<th>Time to Adequate Respiration</th>
<th>% Patients with adequate Respiration</th>
<th>% Patients Requiring Second Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kelly et al. 2005</td>
<td>IM=6 min., IN=8 min. (p=0.01)</td>
<td>IM=82%, IN=63% (p=0.02)</td>
<td>IM=13%, IN=26% (p=0.06)</td>
</tr>
<tr>
<td>Kerr et al. 2009</td>
<td>IM=7.9 min., IN=8.0 min. (p=NS)</td>
<td>IM=77.5%, IN=72.3% (p=NS)</td>
<td>IM=4.5%, IN=18.1% (p=0.01)</td>
</tr>
</tbody>
</table>

Prevention Education

• Mixing drugs
• Tolerance
• Quality
• Using alone
• Make an overdose plan with a friend
• Age & physical health
• Mode of administration
• Overdose recognition
• How to respond

Above: Sternal Rub: If a person is unconscious, try rubbing your knuckles on their sternum to stimulate them.
Opioid Overdose

Symptoms of an overdose:

- Breathing is slow & shallow (<10 breaths per min.) or has stopped
- Vomiting
- Face is pale & clammy
- Blue or grayish lips & fingernails
- Slow, erratic or no pulse
- **Choking or loud snoring noises (“death rattle“)**
- Will not respond to shaking or sternum rub
- Skin may turn gray, blue or ashen
## Overdose Prevention Education

<table>
<thead>
<tr>
<th>REALLY HIGH</th>
<th>versus</th>
<th>OVERDOSE</th>
</tr>
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<tbody>
<tr>
<td>Muscles become relaxed</td>
<td>Pale, clammy skin</td>
<td></td>
</tr>
<tr>
<td>Speech is slowed/slurred</td>
<td>Very infrequent or no breathing</td>
<td></td>
</tr>
<tr>
<td>Sleepy looking</td>
<td>Deep snoring or gurgling</td>
<td></td>
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<tr>
<td>Nodding but will respond to stimulation like yelling, sternal rub, pinching, etc.</td>
<td>Heavy nod, not responsive to stimulation</td>
<td>Slow or no heart beat/pulse</td>
</tr>
</tbody>
</table>

*Source: Boston Department of Public Health*
How to Respond to an Overdose

- Check to see if they respond
  - Light shake
  - Yell their name
  - Sternum rub
- Call 9-1-1
  - Say “I have a person who has stopped breathing” or “My friend is unconscious and I cannot wake them up”
- Perform Rescue Breathing
Naloxone Administration

How to Give Nasal Spray Naloxone

1. Pull or pry off yellow caps

2. Pry off red cap

3. Grip clear plastic wings.

4. Gently screw capsule of naloxone into barrel of syringe.

5. Insert white cone into nostril; give a short, vigorous push on end of capsule to spray naloxone into nose: one half of the capsule into each nostril.

6. If no reaction in 2-5 minutes, give the second dose.
How to Respond to an Overdose

- Give nasal naloxone
  - Continue rescue breathing
  - If no response within 5 minutes, give 2nd dose of naloxone
- Place person in the recovery position
Review of OOPPs

Seven studies representing programs in:

- **Rhode Island (PONI)** (Yorkell et al. 2011)
- **Pittsburgh (Prevention Point Pittsburgh)** (Bennett et al. 2011)
- **Massachusetts** (Doe-Simkins et al. 2009)
- **San Francisco (DOPE)** (Enteen et al. 2010)
- **New York City** (Markham Piper et al. 2008)
- **Chicago (Chicago Recovery Alliance)** (Sherman et al. 2008)
- **North Carolina (Project Lazarus)**
Review of OOPPs

Primary findings:

• Participants tend to be 39 years old, white (75%) and male (64%)
• Lay persons can and will administer naloxone
• High rates of participants’ either experiencing (51%) or witnessing an overdose (32-92%)
• Medical personnel contacted (28-74%)
• Increased use of rescue breathing & confidence in overdose response
• Total of 751 reversals
Review of OOPPs

Limitations:

• No randomized trials
• Passive follow-up with participants
• High attrition
• No standardized tool to evaluate OOPPs
• May not generalization to non-IV heroin users or prescription opioid users
• Based on self-reports
Cost Effectiveness

- Based on naloxone distribution to 20% of heroin users
- Estimated 6% overdose deaths averted
- 1 save per 227 naloxone kits distributed
- Incremental cost $53
- Each death prevented by distribution of naloxone kits will cost $438 (ICER)
- **BOTTOM LINE: HIGHLY COST EFFECTIVE**

SOURCE: Coffin & Sullivan (2013) *Annals of Internal Medicine*
What Needs to be done?

1) Increase awareness & availability of naloxone as an opioid overdose medication

2) Expand the scope of practice so that all EMTS & first responders in can administer naloxone

3) Provide legal protection for bystanders that call 911

4) Allow non-medical persons to administer naloxone
Expanding Access to Naloxone

Nationally:

• Center’s for Disease Control and Prevention (CDC)
• American Medical Association (AMA)
• American Society of Addiction Medicine (ASAM)
• American Public Health Association (APHA)
• National Institute on Drug Abuse (NIDA)
• Substance Abuse and Mental Health Services Administration (SAMHSA)
• Office of National Drug Control Policy (ONDCP)
Naloxone: Key Points

- Safer than ibuprofen
- Harmless if administered at higher doses (even up to 700x)
- Harmless if administered accidentally to someone who has not overdosed
- Inexpensive ($20 per dose)
- It can be administered by non-medical person with minimal training
- Recipients are more likely to initiate treatment

IT SAVES LIVES