Decision Rules and Risk-Stratification of Naloxone Resuscitation

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REVIEW

Do heroin overdose patients require observation after receiving naloxone?

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ABSTRACT

Context: Heroin use in the US has exploded in recent years, and heroin overdoses requiring naloxone are very common. After awakening, some heroin users refuse further treatment or transport to the hospital. These patients may be at risk for recurrent respiratory depression or pulmonary edema. In those transported to the emergency department, the duration of the observation period is controversial. Additionally, non-medical first responders and lay bystanders can administer naloxone for heroin and opioid overdoses. There are concerns about the outcomes and safety of this practice as well.

Objectives: To search the medical literature related to the following questions: (1) What are the medical risks to a heroin user who refuses ambulance transport after naloxone? (2) If the heroin user is treated in the emergency department with naloxone, how long must they be observed prior to dis...
Can EMS providers risk stratify patients following naloxone reversal?
If you get your first Naloxone from... what is the chance you will get a second?

- Citizen: 80%
- Police: 70%
- Fire: 60%
- EMS: 30%
After the administration of naloxone for presumed opioid overdose, patients can be safely discharged by EMS if they meet all 6 criteria:

- Can mobilize as usual
- Have a normal $O_2$ saturation >95%
- Have a normal respiratory rate (>10 and <20 breath/min)
- Have a normal temperature
- Have a normal heart rate (>50 and <100 beats/min)
- Have a Glasgow Coma Scale score of 15

+ Provider judges them to be safe for discharge

Average: 37 minutes

Typically > 4 hours
Predefined Hospital Interventions/Adverse Events

- More Naloxone
- Death
- Bipap
- Intubation
- Oxygen
- etc.

81 (16%) subjects had a predefined events
So What’s My Chance of an Having a Problem?

• If you don’t pass all the criteria or the provider does not judge you to be safe:
  – 1 out of 5 (PPV = 0.217)

• If you pass all 6 criteria and the provider judges you to be safe:
  – 1 out of 50 (NPV = 0.980)
Do EMS providers have to wait 37 minutes before risk stratifying patients?
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<td>Time after naloxone</td>
<td>37 minutes</td>
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<td>Miss rate</td>
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<td>37 minutes</td>
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Avoiding EMS (Over) Use of Naloxone in Opioid Overdose

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Is This the Correct Dose of Narcan?

Is there any downside?
A Case

• Middle aged male w suspected OD. Reported to be in cardiac arrest.
• EMS: pt in a bed at back of trailer with acquaintance doing CPR. Reported to have snorted oxycodone and possibly fentanyl and meth
• PE: Airway patent with repositioning, inadequate ventilation but spontaneous ventilation present. Strong carotid pulse
• BP.. P 103  RR 18  SpO2 66%  BGL 208
• Lungs “Clear BBS” GCS 3
A Case: Treatment

- Narcan 2 mg IN then 0.5 mg IV
- Blood noted in airway
- Sp02 improved to 92% during BVM
- Pt suddenly became alert and extremely combative for 4-5 minutes
- Ketamine
- Sp02 decreased
- BVM: copious amounts of blood suctioned from airway
Airway Management

- RSI
- Bradycardia and witnessed arrest
- CPR
- Asystole and prolonged arrest
- ROSC
- Died in ICU. Multiorgan failure

Michael Levy MD
“IF YOU ARE GOING TO GET WASTED, THEN GET WASTED ELEGANTLY.”
Unconscious-Unknown-Breathing Absent =
RESPOND to an OPIOID OVERDOSE
You can save a life!

1. Shake their shoulders
2. Call 911 if non-responsive
3. Naloxone
   Inject 1 ampule (1cc) of Naloxone
   Injection at Leg muscle

...Wha
No-No-Go!

Thanks to Julie Buckingham and Seattle RA
Dyspnea After a Heroin Overdose

By JUSTIN KOSILOG, MD and WESLEY EILBERT, MD ON JANUARY 17, 2018

http://epmonthly.com/article/dyspnea-heroin-overdose/
Opioid Overdose

Opioids are group of licit and illicit compounds that act upon natural receptors that modulate pain and breathing, among other effects. They differ regarding potency and duration of action.

Guidelines
AFD providers shall approach known or suspected opioid overdose as an “unconscious/unknown” respiratory emergency. Early recognition and treatment of hypoxemia and ventilatory failure are the management goals.

Clinical Presentation: 3 Hallmarks
- (1) **Respiratory depression or apnea**: Respiratory rate > 12 is not consistent with opiate overdose. **CONSIDER OTHER CAUSES**
- (2) **Stupor or unconsciousness**
- (3) **Miosis**: a common finding, but may not be present
- Airway compromise and/or aspiration may be present
- Pulmonary edema may be present or may become manifest with use of naloxone
- Some patients may have received Public Access Naloxone prior to EMS arrival
- Combative and/or violent behavior is may occur with the use of Naloxone particularly with large doses
Treatment

- Exam and vital signs
- Airway and ventilatory support as indicated
- Cardiac monitor with EtCo2 waveform capnography and SpO2 pulse oximetry on all unconscious patients
- Determination of ventilatory status and oxygenation state drives decision on Naloxone dosage and provider intent to ‘wake patient up’
- Naloxone administration as per Medication Standing Orders
- Patients receiving oxygen, ventilatory assistance and/or Naloxone will be on a cardiac monitor (EtCo2 waveform and pulse oximetry)
Adult Dose

**IV, IO:** 0.4mg iv and titrate. Consider adding 2mg to 10cc flush cleared of 2cc (then 10cc total) and titrate dose as 0.2mg/ml

**IM:** 0.4mg. May repeat in 2-3 minutes. May have a more rapid onset than and is a preferred route of administration to **IN**

**IN:** 1mg. May repeat in 2-3 minutes
Conclusion

• Overdose events are either
  – Actual therapeutic endpoints
  – Respiratory emergency
  – Cardiopulmonary arrest

• We know how to handle respiratory emergency

• Large doses of naloxone can have unintended consequences and are unnecessary for EMS