Naloxone (Narcan)

Adult Overview and Guidelines

The number of deaths related to opioid toxicity continues to rise. An increasing number of these deaths are from heroin and synthetic opioids which are now exceeding those from prescription opioid abuse. Fentanyl and its analogs also pose a potential hazard to first responders, law enforcement, their K-9 partners and public health care workers. Dermal absorption or inhalation exposure can be deadly. Emergency responders must use extreme caution and take proper precautions to avoid exposure.

As of June 2017, the Georgia Bureau of Investigation's Crime Lab has identified two new fentanyl analogues, acrylfentanyl and tetrahydrofuran fentanyl. Other formulations of the synthetic opioids include furanyl fentanyl and U-47700, and all the have been classified in Georgia as Schedule I drugs which have a high potential for abuse and no currently accepted medical treatment use in the United States.

Naloxone remains the drug of choice due to its rapid duration of action when someone has overdosed and the respiratory and nervous system are affected.

Pharmacologic Category

Antidote; Opioid Antagonist

Mechanism of Action

Competes with and displaces opioids at opioid receptor sites

Indication

Respiratory and/or central nervous system depression in a situation where opioids may be present
Signs and Symptoms:

- Excessive sleepiness, cannot be aroused with a loud voice or sternal rub
- Slow, shallow, or no respirations, or pinpoint pupils in patient difficult to arouse
- Blue or purple fingernails or lips, patient may emit a death rattle
- Slow heartbeat and/or low blood pressure

Administration

IV, IM, SubQ:

- Initial: 0.4 to 2 mg (Evzio®); may need to repeat doses every 2 to 3 minutes
- A lower initial dose (0.1 to 0.2 mg) should be considered for patients with opioid dependence to avoid acute withdrawal or if there are concerns regarding concurrent stimulant overdose
- After reversal, may need to readminister dose(s) at a later interval (ie, 20 to 60 minutes)
- If no response is observed after 10 mg total, consider other causes of respiratory depression
- IV administration has the most rapid onset of action. The dose should be titrated to the smallest effective doses that maintains spontaneous normal respiratory drive
- IM administration may be suitable for patients with suspected opioid use disorder because it provides a slower onset of action and a prolonged duration of effect, which may minimize rapid onset of withdrawal symptoms

Intranasal:

- 2 or 4 mg (contents of 1 nasal spray(Narcan Nasal Spray®)) as a single dose in one nostril
- May repeat every 2 to 3 minutes in alternating nostrils until medical assistance becomes available
- Off-label dosing: 2 mg (1 mg per nostril) using generic injectable solution prefilled syringe (with a mucosal atomization device); may repeat in 3 to 5 minutes if respiratory depression persists

Endotracheally (off-label dosing):

- 2 to 2.5 times the initial IV dose (ie, 0.8 to 5 mg)

Continuous infusion (off-label dosing): IV:

- IV infusion: Dilute naloxone 2 mg in 500 mL of NS or D5W to make a final concentration of 4 mcg/mL

Onset of Action

- IV: ~2 minutes
- Intranasal: ~8 to 13 minutes
- Endotracheal, IM, SubQ: 2 to 5 minutes
- Inhalation via nebulization: ~5 minutes

Monitoring Parameters

- Respiratory rate, heart rate, blood pressure, temperature, level of consciousness, ABGs or pulse oximetry

Pearls

- Naloxone has a duration of action of approximately 20-90 minutes depending on the dose and route of administration and overdose symptoms
- The duration of most opioids last longer than that of naloxone. Therefore symptoms may return
- If symptoms return or desired response not achieved Naloxone may be given every two-three minutes
- Rescue breathing should be continued while waiting for naloxone to take effect
- The goal of therapy should be to restore adequate spontaneous breathing, but not necessarily complete arousal
- Naloxone use may precipitate withdrawal in opioid-dependent patients. And although rapid opioid withdrawal in tolerant patients may be unpleasant, it is not life-threatening
- Patients who have overdosed on partial agonists and mixed agonist-antagonists such as buprenorphine may not respond well
- If naloxone is given to a patient who is not opioid-dependent or is not opioid-intoxicated, it has NO CLINICAL EFFECT
- Note that naloxone has NO EFFECT on non-opioid overdoses, such as those involving cocaine, benzodiazepines, or alcohol

Recommended Emergency Services Naloxone Availability and Utilization

- Law Enforcement: 4 mg Narcan Nasal Spray per Officer
- Law Enforcement: 4 mg available for K-9 partner (usual dose 0.04-0.1mg/kg Nasally) using mucosal atomization device for intranasal administration
- EMS First Responders: 2 mg Naloxone Prefilled Syringe x two syringes per EMT using mucosal atomization device for intranasal administration
- EMS Drug Boxes: 2 mg Naloxone Prefilled Syringe x four syringes per box

References

- Detail-Document; Pharmacist's Letter 2016; 32(8): 320802
- National Institute for Occupational Safety and Health (https://www.cdc.gov/NIOSH/) Education and Information Division; Fentanyl: Preventing Occupational Exposure to Emergency Responders (CDC)
- Lexicomp: Naloxone
- Experts Weigh Minimum Naloxone Dose as Opioid Crisis Evolves: ASHP: 11/10/2016: Kate Traynor News Writer, News Center; AJHP
- SAMHSA (Substance Abuse and Mental Health Services Administration) Five Essential Steps for FIrst Responders
- Georgia Bureau of Investigation: Two Fentanyl Analogues New to GBI Crime Lab Encountered; July 3, 2017
- University of Georgia College of Veterinary Medicine

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