



Medical Direction and Practices Board

White Paper

Naloxone (Narcan)

Background

In 2017, 418 drug-induced deaths occurred in the state of Maine representing an 11% increase from 2016. Deaths secondary to fentanyl and fentanyl analogs increased by 27% in 2017 while heroin-related deaths decreased. Eighty-five percent of the deaths involved at least one opioid, including both prescribed and illegal opioids. Naloxone (Narcan) was detected in 31% of the people who died from drug overdoses.

Naloxone is an opioid antagonist that can be administered IV/IO/IM/IN/SC. It is indicated for the partial or complete reversal of opioid depression, including respiratory depression, caused by natural and synthetic opioids. The duration of action of some opioids exceeds that of naloxone so repeat doses of naloxone may be required. Additionally, extended release formulations and opioids with longer half-lives, such as buprenorphine and methadone, may require naloxone doses greater than 4 mg.

Opiate Overdose Protocol

The goal for treating patients with known or suspected opioid overdose is to reverse respiratory depression. Supplemental oxygen and airway/ventilatory management are the highest priorities. In patients presenting with known or suspected opioid overdose and a respiratory rate of 12 breaths/minute or less, naloxone may be administered IN/IV/IO/IM depending upon the provider's license level. Naloxone does not always create an abrupt change in level of consciousness. Improvement in respiratory drive and airway protection dictate treatment and naloxone should only be repeated *after* 2-5 minutes if the respiratory status has only minimally improved or has not improved at all.

Per protocol, naloxone should not be given to neonates as this may precipitate acute withdrawal and seizures which can be dangerous in this age group. Neonates should be treated by managing the airway and ventilation.

Adverse Effects

Abrupt reversal of opioid poisoning in patients with opioid dependence precipitates abrupt withdrawal symptoms which may include body aches, fever, sweating, runny nose, sneezing, piloerection, yawning, shivering, irritability, nausea, vomiting, diarrhea, abdominal cramps, hypertension, hypotension, tachycardia, and combativeness. Potentially life-threatening side effects include pulmonary edema (associated, not proven to be causal), hypertension/hypotension, encephalopathy, seizures, coma,

ventricular tachycardia, and cardiac arrest. Life-threatening side effects tend to occur with the use of higher doses of naloxone and in patients receiving repeat naloxone doses.

In order to avoid adverse and life-threatening side effects, naloxone should be administered at the *lowest dose possible and titrated for effect*. Adequate time should be given between doses as specified in the protocol.

Use of Naloxone in Cardiac Arrest

Opioid overdose leads to cardiac arrest in a specific sequence of events. Opiate overdose causes respiratory arrest which, if untreated, will cause cardiac arrest. Naloxone can be useful for treating the effects of an opioid overdose in a patient who *still* has a pulse where it can act on the mu receptors to improve symptoms such as diminished respiratory drive or respiratory arrest. Naloxone does not have a useful role in a patient who has progressed to cardiac arrest; the heart does not contain mu receptors. Naloxone will not re-start the heart. **Do not** give naloxone to a patient who is in cardiac arrest. This practice is not helpful and may be harmful as it distracts from the best performance of tasks that are necessary for the successful resuscitation of cardiac arrest.

References

1. Attorney General Janet Mills Maine State Drug Deaths Statistics. February 22, 2018.
2. Rx List. Naloxone. January 17, 2019
3. WebMD. Naloxone Injection: Uses, Side Effects, Interactions, Pictures, Warnings and Dosing.