

NASEMSO Issue Brief: The Use of Naloxone in Out-of-Hospital Settings

National Association of State EMS Officials



Background

According to the Centers for Disease Control and Prevention (CDC), “Deaths from drug overdose have been rising steadily over the past two decades and have become the leading cause of injury death in the United States. Every day in the United States, 105 people die as a result of drug overdose, and another 6,748 are treated in emergency departments (ED) for the misuse or abuse of drugs. Nearly 9 out of 10 poisoning deaths are caused by drugs.” In 2010, the CDC reports that drug overdose caused more deaths than motor vehicle traffic crashes among people 25-64 years old. The Drug Enforcement Administration (DEA) notes that prescription drug abuse and the diversion of prescription drugs have become the number one priority and the number one problem in the U.S. The White House recently published its *National Drug Control Strategy* indicating, “...about 22 million Americans need treatment for a substance use disorder, and yet only 2 million—about 1-in-10—actually receive the treatment they need.”

Opioids -- also called opiates or narcotics -- are medications made from opium, which comes from the poppy plant. They reduce the intensity of pain signals reaching the brain and affect those brain areas controlling emotion, resulting in diminished perception of a painful stimulus. Hydrocodone products are the opioid most commonly prescribed for a variety of painful conditions, including dental and injury-related pain. Morphine is often used before and after surgical procedures to alleviate severe pain. Morphine and codeine are the two *natural* products of opium. Synthetic modifications or imitations of morphine produce the other opioids:

- Heroin (street drug)
- Dilaudid® (hydromorphone)
- Percocet®, Percodan®, OxyContin® (oxycodone)
- Vicodin®, Lorcet®, Lortab®, Zyhydro® (hydrocodone)
- Demerol® (meperidine or pethidine)
- Methadone
- Duragesic® (fentanyl)

Opioids act by attaching to specific proteins called opioid receptors, which are found in the brain, spinal cord, gastrointestinal tract, and other organs in the body. When these drugs attach to these receptors, they reduce the perception of pain. Opioids can also produce drowsiness, mental confusion, nausea,

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constipation, and, depending upon the amount of drug taken, can depress respiration. Some people experience a euphoric response to opioid medications since these drugs also affect the brain regions involved in reward. Those who abuse opioids may seek to intensify their experience by taking the drug in ways other than prescribed. For example, OxyContin® is an oral medication used to treat moderate to severe pain through a slow, steady release of the opioid. People who abuse OxyContin® may crush the tablets and snort or inject it, thereby increasing their risk for serious medical complications, including overdose. Taken as prescribed, opioids can be used to manage pain safely and effectively. The uncontrolled use of opioids either for prescribed benefits or non-medicinal effects leads to increased tolerance and addiction. When abused, even a single large dose can cause severe respiratory depression and death. Someone who is physically dependent on an opioid medication will experience withdrawal symptoms when use of the drug is abruptly reduced or stopped. These symptoms can be mild or severe (depending on the drug) and can usually be managed medically or avoided by slowly tapering the amount used.

Fentanyl is a powerful synthetic opiate analgesic similar to but more potent than morphine. It is typically used to treat patients with severe pain, or to manage pain after surgery. It is also sometimes used to treat people with chronic pain who are physically tolerant to opiates. Like heroin, morphine, and other opioid drugs, fentanyl works by binding to the body's opiate receptors, highly concentrated in areas of the brain that control pain and emotions. When prescribed by a physician, fentanyl is often administered via injection, transdermal patch, or in lozenge form. However, the type of fentanyl associated with recent overdoses was produced in clandestine laboratories and mixed with (or substituted for) heroin in a powder form. Mixing fentanyl with street-sold heroin or cocaine markedly amplifies their potency and potential dangers. Effects include: euphoria, drowsiness, respiratory depression and/or arrest, nausea, confusion, constipation, sedation, unconsciousness, coma, tolerance, and addiction. Opiate drugs can elevate the dopamine levels in the brain's reward areas, producing a state of euphoria and relaxation.

The National Association of State EMS Officials believes that the increase of substance abuse in the United States is a significant public health and public safety concern that warrants consideration of several related issues:

- Acknowledgement of substance addiction as a serious health-threatening medical condition that requires intervention and treatment by medical professionals.
- Opiate overdose occurs when the opiate binds to the μ_2 receptors in the brain stem, desensitizing it to the carbon dioxide levels in the blood. When this occurs, the normal breathing control mechanisms are not triggered when carbon dioxide levels rise, leading to respiratory failure, respiratory arrest, and imminent death if not properly and emergently managed by a medical professional.

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- Community efforts to control opiate overdose should include medical professionals, law enforcement, caregivers/family members, at-risk populations, and advocates working together to develop compassionate and collaborative strategies to reduce harm to victims of drug overdose.

In 2012, the Food and Drug Administration (FDA) Center for Drug Evaluation and Research (CDER) conducted public hearings to discuss the potential value of making naloxone (manufactured under the brand names of Narcan® and Evzio®), an opioid antagonist used to prevent unintentional death from opioid/narcotic overdose, more readily available. As recently as 2013, widespread drug shortages of naloxone were reported due to manufacturing delays and other supply factors that have and continue to adversely affect access to the product by EMS and other emergency care practitioners.

Legislative Actions

As of May 2014, nineteen states and the District of Columbia have enacted some form of “Drug Overdose Immunity ‘Good Samaritan’ Law.” These laws generally provide immunity only from low-level criminal offenses such as possession or personal use when a person, who is either experiencing an opiate-related overdose or observing an overdose, calls 9-1-1 for assistance or seeks medical attention for themselves or another. Twenty-five states and the District of Columbia have implemented a law or developed a pilot program to allow administration of medication to reverse the effects of an opiate-related overdose by professional or lay persons, including law enforcement personnel. According to the National Conference of State Legislatures:

States with 9-1-1 criminal immunity laws include: California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia, Illinois, Maryland, Massachusetts, Minnesota, New Jersey, New Mexico, New York, North Carolina, Rhode Island, Utah, Vermont, Washington and Wisconsin.

States with immunity laws related to prescribing and administering medication to reverse the effects of suspected opioid overdose: California, Colorado, Connecticut, District of Columbia, Georgia, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Minnesota, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Rhode Island, Tennessee, Utah, Vermont, Virginia, Washington and Wisconsin.

Medical Issues

Some advocacy groups encourage legislators to eliminate mandatory training and education as an “unnecessary barrier” to accessing naloxone. NASEMSO believes this approach is problematic for several reasons:

- Many life-threatening conditions other than opiate overdose can cause altered mental status include trauma, stroke, sepsis, shock, dehydration, metabolic (chemical) imbalances, and low blood sugar. Each of these time-sensitive conditions require immediate intervention by

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licensed medical personnel and can be overlooked in patients with drug overdose if both conditions occur at the same time. Delayed appropriate medical diagnosis and intervention can result in permanent disability and even death.

- The administration of naloxone causes the release of catecholamines that may precipitate acute narcotic withdrawal or unmask severe pain in those who regularly take opioids.
- Side effects to the administration of naloxone to a person using opiates can be potentially life-threatening if individuals are not properly trained to recognize and respond to them. These can include--
 - Chest pain, tachycardia, irregular heartbeat that can precipitate myocardial ischemia;
 - Hypertension;
 - Cough, wheezing, feeling short of breath;
 - Pulmonary edema;
 - Severe nausea or vomiting than can result in aspiration;
 - Severe headache, agitation, anxiety, confusion;
 - Seizures
- Acute withdrawal can precipitate confusion and agitation, especially in patients that have combined the use of opioids with other substances. This could lead to violent confrontations with anyone that administers naloxone, including law enforcement.
- Opioid addiction is associated with a multitude of associated medical and psychological problems including acute and chronic diseases, life-threatening infections, the risk for infectious disease, and severe and refractory pain that deserve proper evaluation and ongoing management by specially trained medical professionals.
- In one study, the serum half-life of naloxone in adults ranged from 30 to 81 minutes (mean 64 ± 12 minutes). This half-life is shorter than the half-life of many opiates. When the dose of naloxone wears off, the victim can relapse into a life-threatening situation that is even more difficult to manage.
- Given the shorter serum half-life of naloxone compared to most opiates, the patient must be closely monitored to determine need for repeated doses.

Policy Issues and Recommendations

NASEMSO believes that state legislation intended to reduce harm caused by unintentional overdose by providing access and immunity related to the administration of naloxone should also:

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- 1. Require mandatory education and training in the prevention, detection, and appropriate response to drug overdose including:**
 - activating the EMS system (“call 9-1-1”) prior to administering medications
 - recognition of opioid overdose symptoms
 - proper technique for administration of the opioid antagonist
 - positioning of the victim
 - first aid for respiratory failure and acute opioid withdrawal
 - performance of cardiopulmonary resuscitation
 - essential follow-up procedures
- 2. Require medical (physician) oversight over all community opioid antagonist programs to help maintain quality standards including proper packaging and labeling, training, and follow-up.**
- 3. Support drug misuse/abuse prevention efforts, access to treatment, and recovery support services.**
- 4. Require medical (physician) supervision of individuals that dispense opioid antagonists for the treatment of drug overdose.**
- 5. Require the agency dispensing the opioid antagonist to maintain records on the source, labeling, packaging, use and effects of opioid antagonist administration.**
- 6. Provide resources for medical examiners to submit a report to the state on every death in which a drug is detected in a decedent, including information on the manner of death (unintentional, suicide, homicide, or undetermined) and which drug(s) were detected in the decedent (including prescription drugs, illicit drugs, and alcohol). For each drug detected, the medical examiner should determine whether it played a causal role in the death or was merely present.**
- 7. Increased demand for access to naloxone and other opioid antagonists can create unexpected drug shortages, thus pharmacists and wholesale distributors should be required to prioritize naloxone and other opioid antagonist supplies to MEDICAL personnel such as EMS, emergency departments, and hospitals.**

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