



American College of Medical Toxicology

Physicians Specializing in the Care of Poisoned Patients

Opioid Overdose and Bystander Naloxone

What are opioids?

An **opioid** is a chemical that acts on specific parts of the body's natural pain relief system. Commonly used opioids include pharmaceutical drugs like hydrocodone (Vicodin®), oxycodone (Percocet®, OxyContin®) and hydromorphone (Dilaudid®) that are prescribed by a doctor with the intent to provide pain relief. Opioids also include illicit drugs like heroin and opium, which are illegal substances used with the intent to get "high." **Narcotic**, a less accurate term often used to describe these substances, is generally used to label any drug that is used illegally and has potential for harm.

Who is at risk for opioid overdose?

Any person who uses an opioid, whether for pain relief or to get high, can accidentally overdose. A person does not need to be addicted to opioids or to intentionally abuse opioids to be at risk for overdose. For this reason, everyone who is prescribed opioid medications or who uses opioids illegally (without a prescription) should be aware of the undesired side effects and risks of use. Ideally, friends or family members of these individuals would also: 1) understand the risks of opioids; 2) be able to identify when someone has overdosed on opioids, and; 3) have access to and be trained in the administration of rescue **naloxone** "just in case."

What are the warning signs that someone may have overdosed on opioids?

When used at high doses, opioids can produce a deep sleep state or coma. Even more concerning, opioids can slow breathing to life-threatening levels. When breathing slows or stops, the body does not get the oxygen it needs to carry out life-sustaining functions. This is how an opioid overdose causes death.

When someone has overdosed on opioids, he/she may be difficult to arouse, and may appear to be breathing very slowly, shallowly or not at all. After a more prolonged period, a bluish discoloration may appear on the lips, face and hands, indicating a significant lack of oxygen. Another method to use to identify an opioid

overdose in an unconscious person is to look at the pupils: if they are very small or pinpoint, this further suggests that someone has overdosed.

What is naloxone? How does it work to reverse opioid overdose?

Naloxone is a medication that acts by blocking the effects of opioids on the body. The result is that both the desired and undesired effects of opioids are rapidly reversed. Naloxone is highly effective at reversing coma and improving breathing. However it may also reverse the pain relief that opioids provide, and in patients who are long-term opioid users, may even cause an unpleasant withdrawal syndrome. Still, naloxone is an excellent antidote for saving lives after opioid overdose.

How is naloxone administered?

Naloxone can be given or “administered” through various “routes.” Doctors prefer to administer naloxone through an intravenous (IV) catheter, because the antidote acts fastest by this method. Naloxone can also be given intramuscularly (IM) as a shot, with a needle or auto-injector, similar to the way an EpiPen® is used to treat an allergic reaction. When neither of these routes are feasible, naloxone can be effectively and easily delivered by nasal spray, known as the “intranasal” (IN) route. While the IN route takes longer to produce opioid reversal than the IV route, this method is still effective.

Remember, rescue naloxone is just *part* of overdose treatment. Whenever naloxone is administered outside of a health care setting, **911** should be called at once and the person should be transported to the closest emergency department as quickly as possible. Before naloxone starts to take effect, providing rescue breathing or external stimulation to the person, by shaking or calling his/her name, may also be needed.

What happens after someone with opioid overdose receives naloxone?

Shortly after giving the antidote, one may expect to see an increase in the rate and depth of breathing. The person who receives naloxone for opioid overdose may also become more responsive and even wake up. Because naloxone reverses the *desired* as well as *undesired* effects of opioids, reversal of euphoria may produce an awake individual with anxiety, agitation or even aggressive behavior; additionally, they may have vomiting or diarrhea. This can be expected to occur in those individuals that use opioids on a regular basis.

There are a few reasons why someone may not respond to naloxone. If the person is unconscious due to an illness unrelated to opioids, naloxone will not work. Also, if someone ingested an opioid along with other substances that produce sedation, naloxone may only provide minimal benefit. Some individuals who have overdosed on opioids may not respond to naloxone if their brain has gone too long without

oxygen, while others may require a second dose. If you give rescue naloxone to someone and they do not respond after 2-3 minutes, it is reasonable to try a second dose after calling **911**.

Is naloxone safe in children?

Occasionally, children are unintentionally exposed to a family member's medications (i.e. when pill bottles are left within reach or when individual pills fall to the ground). When a child ingests an opioid, even in small doses that are appropriate for adults, significant and life-threatening poisoning may occur. The warning signs of opioid overdose in children are the same as those seen in adults. The treatment is also the same. Naloxone is not only effective in treating children with opioid overdose, it is also quite safe.

If a child is ever exposed to an opioid, immediately call 911 or a regional poison center (1-800-222-1222), even if the child does not have any symptoms of poisoning, and even if the child has been given naloxone at home with good effect. Some opioids produce delayed symptoms or symptoms that can return even after being reversed with naloxone. Poison center specialists are available 24 hours a day, 7 days a week to advise you on what to do based on the specific opioid involved.

Where can I learn more about naloxone distribution programs in my state?

While some states allow any health care provider to prescribe and/or distribute home naloxone kits, other states require distribution through Opioid Overdose Prevention Programs (OOPP). In order to learn more about the naloxone distribution laws specific to your state, as well as other state-specific legal interventions designed to reduce overdose deaths, a number of helpful web-based resources exist.

The [Network for Public Health Law](#) is an organization whose mission is to promote the advancement of public health through legal action. Their website provides specific information and resources on [Drug Overdose Prevention and Harm Reduction](#). Details about the specific legal interventions that exist by state to reduce overdose mortality can be found on their website [here](#).

The [South Boston Hope and Recovery Coalition](#) is an organization founded to confront the growing substance abuse and addiction epidemic in the local community. Through their website, one can access a number of resources, including a national database of Opioid Overdose Prevention Programs, [searchable](#) by zip code.

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