CONDITION

Heroin overdose

A heroin overdose happens when the drug slows breathing enough to threaten life.

WHAT IT IS
Life-threatening slowing of breathing after too much heroin

BODY SYSTEM
Breathing, brain, heart and circulation

MAIN SYMPTOMS
Unresponsiveness, slow breathing, pinpoint pupils, blue or gray lips

WHAT CAUSES IT
Excess opioid effect, often worsened by fentanyl or sedatives

HOW IT IS DIAGNOSED
Symptoms, breathing assessment, oxygen level, response to naloxone

MAIN TREATMENT
Naloxone, breathing support, oxygen, and emergency monitoring

CAN IT BE CURED?
Yes - rapid treatment can reverse it

IS IT AN EMERGENCY?
Yes - suspected overdose needs immediate emergency care

LONG-TERM OUTLOOK
Recovery is common; brain injury can persist after oxygen loss

Overview

Heroin is an opioid drug. Opioids like oxycodone or morphine affect areas of the brain that control pain, alertness, and breathing. A heroin overdose happens when these effects become strong enough to slow or stop breathing.

Without enough breathing, oxygen levels fall. This can injure the brain and other organs or cause death. A suspected heroin overdose is always an emergency, even if you are not certain what was taken.

Heroin sold outside the medical system may contain fentanyl or another potent opioid without the person knowing. Its strength can also differ greatly between batches. This makes it difficult to judge how much opioid is being taken.

Naloxone is a medicine that can temporarily reverse an opioid overdose. It should be given as

soon as possible when an overdose is suspected, but it does not replace emergency care. Its effect may wear off while heroin, fentanyl, or another opioid is still active.

An overdose does not mean that someone has failed or cannot recover. After the emergency has passed, treatment for opioid use disorder can reduce the chance of another overdose and support longer-term recovery.

Symptoms

The main danger is unusually slow, shallow, irregular, or absent breathing. Someone may make snoring, choking, or gurgling sounds. These sounds do not mean the person is sleeping safely.

Other signs can include:

Skin color changes may be less obvious on darker skin. Check the lips, gums, nail beds, and inside the eyelids for gray, blue, or unusually pale coloring.

Not every overdose has all these signs. Fentanyl, sedatives, alcohol, low blood sugar, head injury, and other emergencies can look similar. If a person is difficult to wake and is not breathing normally, treat the situation as an emergency rather than trying to identify the exact cause.

- Not waking when spoken to, shaken gently, or given firm stimulation
- Very small pupils, sometimes called pinpoint pupils
- Pale, clammy, blue, or gray skin, lips, or fingertips
- A limp body and weak or absent response
- A slow, weak, or irregular pulse
- Vomiting, sometimes while unconscious

Causes and risk factors

Heroin attaches to opioid receptors, which are structures on nerve cells. Too much opioid activity suppresses the brain's drive to breathe. The amount that causes an overdose is not predictable from appearance alone.

Risk is higher when heroin contains fentanyl or another potent substance. A person may not know these substances are present.

Combining heroin with other drugs that reduce alertness or breathing increases risk. These include alcohol, benzodiazepines such as diazepam or alprazolam, and other sedating

medicines or drugs. Naloxone reverses opioid effects, but it does not reverse alcohol or most non-opioid sedatives.

Tolerance also matters. Tolerance means the body has adapted to repeated opioid exposure. It can fall after even a period of reduced use, including during detoxification, hospital admission, treatment, or incarceration. Returning to an amount previously used can then cause an overdose.

Other factors that can increase risk include:

An overdose can occur in a person using heroin for the first time or after years of use.

- A previous opioid overdose
- Using alone, with nobody able to give naloxone or call for help
- Taking an unexpectedly strong or unfamiliar supply
- Switching between opioids or routes of use
- Heart, lung, liver, or kidney problems
- Opioid use disorder, especially without effective treatment

Diagnosis

Emergency clinicians usually diagnose an opioid overdose from the circumstances, symptoms, breathing pattern, and physical examination. Treatment begins immediately when the signs suggest an opioid overdose. It should not wait for a laboratory result.

A pulse oximeter measures oxygen in the blood. Clinicians may also check heart rhythm, blood pressure, temperature, blood sugar, and carbon dioxide levels. Carbon dioxide can rise when breathing becomes too slow.

Improvement after naloxone supports the diagnosis, but the response may be incomplete. The person may have taken a potent opioid, need more breathing support, or have another medical problem at the same time.

Blood or urine toxicology tests may help identify some substances. However, routine drug screens do not detect every opioid, and results may arrive too late to guide immediate care. A negative test does not always rule out fentanyl or another synthetic opioid.

Clinicians may order further tests when they are concerned about complications such as aspiration, lung injury, infection, muscle breakdown, or damage caused by low oxygen.

Treatment and management

The first priorities are restoring breathing, giving naloxone, and calling emergency services.

Naloxone is available as a nasal spray and, in some settings, an injection. Follow the instructions supplied with the product. If the person does not respond, further doses may be needed while emergency help is on the way.

If you suspect an overdose:

Do not put the person in a bath or shower, make them walk, give them food or drink, or try to make them vomit. Do not rely on coffee or other stimulants like methylphenidate or lisdexamfetamine . These steps do not reverse an opioid overdose and may delay effective treatment.

Naloxone can cause sudden opioid withdrawal. The person may wake feeling sick, sweaty, restless, frightened, or in pain. Vomiting can occur. These effects are uncomfortable but are less dangerous than untreated respiratory arrest.

In hospital, treatment may include oxygen, assisted ventilation with a mask, additional naloxone, intravenous fluids, and monitoring. A breathing tube and ventilator may be needed if breathing does not recover adequately.

Observation is important because naloxone may wear off before the opioid does. Breathing can slow again after an apparent recovery, particularly when fentanyl, long-acting opioids, or several substances are involved.

Before discharge, the care team may discuss take-home naloxone and treatment for opioid use disorder. Effective treatments include medicines such as buprenorphine or methadone, along with support suited to the person's needs. Treatment can begin in emergency or community settings.

- Call your local emergency number immediately
- Give naloxone if it is available
- Provide rescue breathing or CPR according to your training and dispatcher instructions
- Place the person on their side if they are breathing but not fully awake
- Stay with them and watch for breathing to slow again
- Tell responders what may have been taken, if known

Complications

The most serious complication is brain injury caused by a lack of oxygen. The outcome is

influenced by how long breathing was impaired and how quickly it was restored.

Possible complications include:

People who inject heroin also face risks that are not limited to the overdose itself, including skin infections, bloodstream infections, hepatitis B, hepatitis C, and HIV. Medical and harm-reduction services can provide testing, vaccination where appropriate, sterile equipment, and treatment without judgment.

- Aspiration, when vomit or fluid enters the lungs
- Pneumonia or other lung injury
- Abnormal heart rhythms or cardiac arrest
- Muscle breakdown after lying unconscious for a long time
- Kidney injury related to muscle breakdown or poor circulation
- Pressure injuries to nerves or muscles
- Injury from falling or losing consciousness
- Lasting problems with memory, movement, attention, or daily activities
- Death

Prevention

Heroin overdose is often preventable, although no strategy removes every risk. The surest way to prevent it is not to use heroin. If you continue to use, practical harm-reduction steps can lower the chance of dying.

Keep naloxone where it can be reached quickly. Friends, family members, and other people nearby should know where it is and how to use it. Replace it after use or when it expires, according to the product instructions.

Avoid using alone. Overdose response or supervised consumption services may be available in some areas. If such services are not available, arranging for someone to check on you is safer than being completely alone.

Do not combine heroin with alcohol, benzodiazepines like diazepam or lorazepam , or other sedating substances. The combined effect on breathing can be greater than expected.

Be especially cautious after any break or reduction in opioid use because tolerance may have fallen. This includes time spent in treatment, hospital, custody, or recovery.

Fentanyl test strips can detect fentanyl in some drug samples and may reduce uncertainty.

They cannot show how much fentanyl is present, may not detect every dangerous substance, and a negative result does not guarantee safety.

Treatment for opioid use disorder is one of the most effective ways to reduce future overdose risk. If stopping heroin is not currently your goal, you can still seek naloxone, safer-use supplies, testing, and medical care.

Living with it and what to expect

A heroin overdose is a sudden event rather than an illness that follows one fixed course. With rapid treatment, some people recover within hours and have no lasting physical effects. Others need hospital care for lung problems, repeated breathing suppression, injury, or complications from oxygen loss.

Tiredness, nausea, headache, body aches, and distress may continue after the immediate effects have passed. Sudden withdrawal after naloxone can be intense but usually improves as the medicine's effect wears off.

If the brain was without enough oxygen, recovery can take months or longer. Problems with memory, concentration, movement, mood, or independence may require rehabilitation. The extent of recovery cannot always be predicted early.

A previous overdose strongly signals future risk. The days and months afterward are an important time to obtain naloxone and consider treatment for opioid use disorder. Medication treatment can be continued long term when it is helping. Counseling, peer support, housing help, and mental health care may also be useful, but they do not replace medication when medication is wanted and appropriate.

Recovery is not always a straight path. Returning to opioid use does not remove the option of restarting treatment. Ongoing care can be adjusted to your goals and circumstances.

When to get medical help

Call your local emergency number now if someone:

Give naloxone if available and follow emergency-dispatch instructions for rescue breathing or CPR. Stay until help arrives. Calling for help is appropriate even when you are unsure whether opioids were involved.

Arrange routine follow-up after any non-fatal overdose, even if you feel well. Follow-up can address lung or injury symptoms, replace naloxone, test for infections when relevant, and

connect you with opioid use disorder treatment.

Seek prompt medical advice after discharge for worsening cough, fever, chest pain, shortness of breath, severe muscle pain, dark urine, confusion, weakness, or new problems with memory or movement.

- Cannot be woken or is only briefly responsive
- Is breathing slowly, irregularly, or not at all
- Makes choking, gurgling, or unusual snoring sounds
- Has blue, gray, or very pale lips, gums, or skin
- Collapses after taking heroin or an unknown drug
- Improves with naloxone, because breathing can slow again

Common questions

Can naloxone completely reverse a heroin overdose?

Naloxone can rapidly reverse opioid-related breathing suppression, but its effect is temporary. More than one dose and continued breathing support may be needed. Emergency assessment remains necessary because overdose symptoms can return.

How long does a heroin overdose last?

There is no single time. It is affected by the amount taken, the presence of fentanyl or other substances, the person's health, and how quickly treatment begins. Monitoring may continue after the person wakes because the opioid can remain active longer than naloxone.

Can I overdose after stopping heroin for a while?

Yes. Opioid tolerance can fall quickly during a period of reduced use or abstinence. An amount previously tolerated may then be fatal. This risk is important after detoxification, treatment, hospital admission, or incarceration.

Can a heroin overdose cause permanent brain damage?

It can if breathing stops or remains too slow for long enough to deprive the brain of oxygen. Prompt naloxone, rescue breathing, and emergency care reduce this risk. Lasting effects are not inevitable.

What if the person wakes up after naloxone?

Keep emergency help coming and stay with them. Encourage them not to take more drugs. Watch their breathing and be prepared to give another naloxone dose according to the

product instructions if overdose signs return.

Will naloxone hurt someone who has not taken an opioid?

Naloxone has no meaningful effect if opioids are not present and is generally considered safe to give when an opioid overdose is suspected. It will not treat other causes of unconsciousness, so emergency care and breathing support are still essential.

Sources

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