CONDITION

Codeine overdose

Learn how to recognize a codeine overdose, respond with naloxone and emergency care, understand treatment, and reduce the risk of future overdose.

WHAT IT IS
Opioid poisoning causing dangerously reduced breathing or loss of consciousness

BODY SYSTEM
Nervous system and breathing

MAIN SYMPTOMS
Slow or stopped breathing, inability to wake, blue or gray skin, pinpoint pupils

WHAT CAUSES IT
Excess codeine or sedating substance combinations

HOW IT IS DIAGNOSED
Clinical examination, history, response to naloxone

MAIN TREATMENT
Naloxone and emergency breathing support

CAN IT BE CURED?
Yes - prompt treatment can reverse overdose

IS IT AN EMERGENCY?
Yes - all opioid overdoses are emergencies

LONG-TERM OUTLOOK
Permanent brain injury or death possible after prolonged oxygen loss

Overview

Codeine is an opioid medicine used to relieve pain and, in some products, suppress coughing. The body converts some codeine into morphine. Morphine acts on areas of the brain that control pain, alertness, and breathing.

A codeine overdose happens when codeine causes dangerously reduced breathing or loss of consciousness. This can follow a large dose, repeated doses taken too close together, a medication error, or use with alcohol or other sedating substances. Serious toxicity can sometimes occur at an intended dose because people process codeine differently.

An opioid overdose is a medical emergency. Without enough oxygen, the brain, heart, and other organs can be injured. Naloxone, a medicine that rapidly blocks opioid effects, can restore breathing temporarily. Emergency evaluation is still needed because naloxone may

wear off while codeine remains active.

Many codeine products contain another medicine, such as acetaminophen, aspirin, or ibuprofen. An overdose may therefore cause more than opioid poisoning. For example, too much acetaminophen can damage the liver even when the person initially feels well.

Symptoms

Symptoms may develop quickly or become more noticeable over several hours. A person does not need to have every classic sign.

The main warning signs of opioid overdose are:

Other symptoms can include extreme sleepiness, confusion, slurred speech, poor coordination, nausea, vomiting, and itching. Low blood pressure may cause weakness or collapse. Vomiting while deeply drowsy raises the risk of inhaling stomach contents into the lungs.

Call emergency services immediately if someone is hard to wake, is not breathing normally, or may have taken a dangerous amount of codeine. Give naloxone if it is available, following the product instructions. Additional doses may be needed as directed by the package or emergency dispatcher.

If the person is not breathing, begin rescue breathing or cardiopulmonary resuscitation if you are trained, or follow the dispatcher's instructions. If the person is breathing but unconscious, place them on their side when it is safe to do so. Stay with them.

Do not make the person vomit. Do not use coffee, food, a cold shower, or physical stimulation as a substitute for emergency care.

In the United States, Poison Control can be reached at 1-800-222-1222 for immediate advice about a possible poisoning. If severe symptoms are present, call emergency services first.

- Breathing that is slow, shallow, irregular, or stopped
- Inability to wake up or respond normally
- Choking, snoring, or gurgling sounds in someone who cannot be awakened
- Blue, gray, or unusually pale lips, fingertips, or skin
- Very small "pinpoint" pupils, although pupils are not always small
- A limp body, weak pulse, or cool and clammy skin

Causes and risk factors

Codeine slows activity in the central nervous system, which includes the brain and spinal cord. Excessive opioid activity can suppress the brain's automatic signal to breathe. Carbon dioxide then builds up, and oxygen levels fall.

Common overdose situations include taking more codeine than directed, taking doses too close together, confusing products or strengths, or using someone else's medication. Crushing or otherwise altering a product may also change how quickly a medicine is absorbed. Pills obtained outside a licensed pharmacy may contain unexpected substances, including more powerful opioids like oxycodone or morphine .

Combining codeine with other substances that cause sleepiness can greatly increase risk. These include alcohol, benzodiazepines like diazepam or lorazepam , sleeping medicines, other opioids, some muscle relaxants, and other sedating drugs. A person should not stop a prescribed medicine suddenly, but should ask a clinician or pharmacist whether a combination is safe.

Certain health and personal factors can increase sensitivity to codeine:

Codeine's effects also vary because of differences in an enzyme called CYP2D6. Some people convert codeine to morphine unusually quickly and can develop dangerous morphine levels. Others convert very little and may not receive much pain relief. Taking more codeine to overcome poor relief is unsafe.

Because of reports of life-threatening breathing problems, the U.S. Food and Drug Administration restricts codeine use in children and warns against its use while breastfeeding. Morphine produced from codeine can pass into breast milk and may cause severe sleepiness or breathing problems in an infant.

- Lung disease, sleep apnea, or another condition that affects breathing
- Liver or kidney disease, which may change how medicines are processed or cleared
- Older age, frailty, or serious illness
- Recent abstinence from opioids, which lowers tolerance
- A history of substance use disorder or a previous overdose
- Limited knowledge of the product's strength or ingredients

Diagnosis

Emergency clinicians first assess breathing, oxygen level, circulation, alertness, and the need

for immediate support. Treatment may begin before the exact substance or amount is known.

Information from family members, witnesses, medication bottles, pharmacy records, or emergency responders can help. Clinicians may ask what was taken, when it was taken, how much may be missing, and whether alcohol or other medicines were involved.

Blood tests may check oxygen and carbon dioxide levels, blood sugar, kidney function, liver function, and electrolyte balance. An electrocardiogram, or ECG, records the heart's electrical activity. Chest imaging may be needed if vomiting, aspiration, or another lung problem is suspected.

If the codeine product contains acetaminophen, clinicians commonly measure the acetaminophen level because early poisoning may have few symptoms. Tests may also be needed for aspirin or other possible ingredients.

Urine drug screening may support the assessment, but it has limits. A positive opiate result does not show how much was taken, when it was taken, or whether the detected opioid caused the symptoms. Some drugs may not appear on routine screening. Clinicians therefore rely mainly on the examination, history, and response to treatment.

Improved breathing and alertness after naloxone supports opioid poisoning, but it does not identify codeine specifically. Other illnesses, including low blood sugar, stroke, head injury, infection, or poisoning by another sedative, can resemble an opioid overdose.

Treatment and management

The immediate treatment goal is to restore and maintain breathing. Emergency responders may provide oxygen, assist breathing with a mask and ventilation bag, or place a breathing tube if necessary. Heart rate, blood pressure, oxygen level, temperature, and alertness are monitored.

Naloxone is an opioid antagonist, meaning it temporarily blocks opioid receptors. It can reverse slowed breathing from codeine and other opioids. Naloxone may be given as a nasal spray or by injection. Treatment is adjusted to support adequate breathing rather than simply making the person fully alert.

Naloxone can wear off before codeine or its active metabolites do. Sleepiness and breathing problems may return, so the person needs continued observation and may need repeat treatment. Someone who improves after community naloxone should not be left alone or allowed to "sleep it off."

In a person who is physically dependent on opioids, naloxone can trigger sudden withdrawal. This may cause agitation, sweating, vomiting, diarrhea, pain, or a rapid heart rate. These

symptoms can be distressing, but restoring breathing remains the priority.

Hospital observation time depends on the person's symptoms, the product involved, other substances taken, response to naloxone, and underlying health. Longer monitoring may be needed after repeated naloxone, persistent breathing problems, a long-acting product, or an uncertain ingestion.

Activated charcoal is not routine home treatment. In selected recent overdoses, specialists may consider it in a controlled setting, but only when the airway can be protected. "Stomach pumping" is rarely used.

Additional treatment depends on other ingredients. For example, acetaminophen poisoning has a specific antidote that is most effective when started promptly. Aspirin or ibuprofen toxicity requires different monitoring and care. This is one reason the package or medication container should go to the hospital when available.

Complications

The most serious complication is a prolonged lack of oxygen. This can cause permanent brain injury, heart rhythm problems, cardiac arrest, coma, or death.

A person who vomits while unconscious may inhale vomit into the lungs. This is called aspiration and can cause airway blockage, lung inflammation, or pneumonia. Opioid poisoning can also be associated with fluid in the lungs, sometimes called pulmonary edema.

Remaining unconscious in one position for a long time may compress muscles and nerves. Severe muscle injury can release proteins into the blood and damage the kidneys. Falls, head injuries, pressure injuries, and low body temperature can also occur.

Combination products create additional risks. Acetaminophen-related liver injury may not cause obvious early symptoms. Aspirin can disturb breathing and the body's acid balance, while excess ibuprofen can affect the stomach, kidneys, or nervous system.

Prompt recognition, naloxone, breathing support, and emergency care reduce the chance of these complications.

Follow up

After discharge, follow the care team's instructions about medicines, laboratory tests, and activity. Arrange routine follow-up with the prescribing clinician to review why the overdose occurred and whether codeine remains appropriate. A pharmacist can help identify duplicate

ingredients and dangerous interactions.

Seek emergency help again if unusual sleepiness, confusion, slow or difficult breathing, blue or gray coloring, fainting, or inability to wake returns. These are not symptoms to wait for at a routine appointment.

If the event involved acetaminophen or another non-opioid ingredient, follow-up blood tests may be needed even if the person feels better. New severe abdominal pain, repeated vomiting, yellowing of the skin or eyes, or worsening confusion requires prompt medical assessment.

A follow-up plan may include safe medication storage, disposing of unused opioids, and keeping naloxone available. Household members can learn where naloxone is stored and how to use it. Naloxone is not a replacement for emergency care.

If the overdose was related to nonmedical opioid use, cravings, or difficulty controlling use, compassionate treatment is available. A clinician can discuss medications for opioid use disorder, counseling, and local support. After a period without opioids, tolerance falls, so returning to a previous amount can be especially dangerous.

Sources

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