CONDITION

Meperidine hydrochloride overdose

Meperidine hydrochloride overdose is poisoning that can slow breathing and affect the brain, heart, and circulation.

WHAT IT IS
Dangerous effects from too much meperidine

BODY SYSTEM
Brain, breathing, heart and circulation

MAIN SYMPTOMS
Slow breathing, extreme sleepiness, pinpoint pupils, seizures

WHAT CAUSES IT
Excess meperidine or harmful medicine interactions

HOW IT IS DIAGNOSED
Clinical assessment, breathing tests, targeted toxicology testing

MAIN TREATMENT
Breathing support, naloxone, monitoring, and seizure control

CAN IT BE CURED?
Yes, prompt treatment often brings recovery

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

LONG-TERM OUTLOOK
Full recovery common; delayed treatment can cause lasting injury

Overview

Meperidine hydrochloride is an opioid pain medicine. An overdose happens when meperidine has stronger effects than the body can safely manage. This may follow one large dose, repeated doses that build up, an accidental medication error, or use with another substance that slows breathing.

The most immediate danger is respiratory depression, meaning breathing becomes too slow or shallow. This lowers the amount of oxygen reaching the brain and other organs. Severe poisoning can lead to unconsciousness, heart and circulation problems, seizures, or death.

Meperidine has an additional concern that is less common with some other opioids like oxycodone or morphine . The body breaks it down into normeperidine, a substance that can overstimulate the nervous system. Normeperidine may build up after repeated use, particularly

when the kidneys are not working well. It can cause shaking, agitation, muscle twitching, or seizures.

A suspected overdose should not be watched at home to see whether it improves. Emergency assessment and treatment are needed, even if the person initially responds to naloxone.

Symptoms

Symptoms may begin with unusual sleepiness, slowed thinking, poor coordination, or slurred speech. The person may be difficult to wake or unable to stay awake.

Typical opioid overdose signs include:

Pinpoint pupils can support the diagnosis, but they are not always present. Pupils may become larger if the brain has been deprived of oxygen or if other substances were taken.

Meperidine and normeperidine can also cause nervous system excitation. Possible signs include agitation, tremor, muscle twitching, overactive reflexes, confusion, hallucinations, or seizures.

Meperidine can contribute to serotonin syndrome when combined with medicines that raise serotonin, a chemical used by the brain and nerves. Symptoms can include restlessness, sweating, fever, diarrhea, stiff or jerking muscles, and rapid changes in blood pressure or heart rate. This reaction is particularly concerning with monoamine oxidase inhibitors, or MAOIs, a group of medicines used for certain mental health and neurological conditions.

- Slow, shallow, irregular, or stopped breathing
- Very small "pinpoint" pupils
- Limp muscles, weak pulse, or low blood pressure
- Pale, cool, or bluish lips and skin

Causes and risk factors

Overdose may result from taking more meperidine than intended, taking doses too close together, or using more than one product containing an opioid. A child or another person may also swallow the medicine accidentally.

Alcohol and sedating medicines can greatly increase the risk of slowed breathing. These include sleeping medicines, benzodiazepines like diazepam or lorazepam , other opioids, some muscle relaxants, and certain medicines used for mental health conditions. Illicit substances

may contain unexpected opioids or sedatives, making their effects difficult to predict.

Risk can also increase when:

Meperidine should not be combined with an MAOI or used soon after stopping one because the interaction can cause severe nervous system, breathing, temperature, and circulation problems.

An overdose can be accidental or intentional. It can also occur in someone with opioid use disorder, a medical condition in which opioid use becomes difficult to control despite harm.

- Kidney problems allow normeperidine to accumulate
- Liver problems reduce the body's ability to process meperidine
- The person is older, frail, or has serious breathing disease
- Opioid tolerance has fallen after a period without use
- Meperidine is combined with a medicine that affects serotonin
- A medication is mistaken for another product or taken twice

Diagnosis

Emergency clinicians usually diagnose opioid poisoning from the circumstances, symptoms, breathing pattern, and physical examination. Treatment begins when overdose is suspected rather than waiting for a laboratory result.

The team may measure oxygen levels with a finger sensor and check carbon dioxide or acid levels with a blood test. Carbon dioxide can rise when breathing is too slow. Blood glucose is checked because very low glucose can also cause unconsciousness.

Other testing may include an electrocardiogram, or ECG, to examine the heart's electrical activity. Blood tests can assess kidney and liver function, muscle injury, and possible complications. Testing for other medicines may be needed if a mixed overdose is possible.

Routine urine "opiate" screening may not reliably detect meperidine. A negative screening result therefore does not rule it out. Targeted blood or urine testing can identify meperidine or normeperidine, but results may not be available quickly enough to guide emergency care.

Improvement after naloxone supports opioid poisoning, but a limited response does not exclude it. The person may need more breathing support, may have taken other substances, or may be having normeperidine-related seizures that naloxone does not treat.

Treatment and management

The first priority is to restore and maintain breathing. Emergency teams may open the airway, provide oxygen, assist breathing with a mask and bag, or place a breathing tube if needed. Heart rhythm, blood pressure, oxygen level, temperature, and alertness are monitored.

Naloxone is an opioid-reversal medicine. It can rapidly improve meperidine-related respiratory depression. It may be given through the nose, into a muscle, or into a vein, depending on the setting.

Naloxone may wear off before the opioid effects do. Repeated doses or a continuous hospital infusion may be needed. A person who wakes after naloxone still requires observation because slow breathing can return.

Naloxone reverses opioid effects but does not directly treat the stimulating effects of normeperidine. Seizures are generally treated with medicines that calm excessive brain activity, while the team protects breathing and checks for other causes.

If serotonin syndrome is suspected, meperidine and other serotonin-raising substances are stopped. Care may include fluids, temperature control, sedation, and treatment of circulation or breathing problems.

Activated charcoal is used only in selected recent ingestions when clinicians believe it can be given safely. It should not be given at home because a sleepy person may vomit and inhale it into the lungs. Do not try to make someone vomit.

Complications

The main complication is lack of oxygen. If breathing remains severely reduced, oxygen deprivation can injure the brain, heart, kidneys, and other organs.

Vomiting while unconscious can allow stomach contents to enter the lungs. This is called aspiration and may cause inflammation or pneumonia. Fluid can also collect in the lungs after an opioid overdose, making breathing more difficult.

Prolonged unconsciousness may cause muscle breakdown from lying in one position. The damaged muscle releases substances that can harm the kidneys. Pressure injuries to skin, nerves, or muscles can also occur.

Seizures may cause falls, injuries, aspiration, high body temperature, or further oxygen loss. Severe serotonin syndrome can lead to dangerous overheating, muscle breakdown, abnormal heart rhythms, or organ injury.

These complications are not inevitable. Rapid breathing support and close monitoring reduce

the chance of lasting harm.

Prevention

Many meperidine overdoses can be prevented, although not every medication reaction can be predicted.

Take meperidine only as directed and do not take an extra dose after forgetting whether one was taken. A medication list or dose log may help prevent duplicate doses. Do not share the medicine with anyone.

Keep meperidine in its original, child-resistant container, locked away from children, visitors, and anyone for whom it was not prescribed. Use an approved medicine take-back option for unwanted tablets or liquid.

Avoid alcohol and do not add sleeping medicines, sedatives, other opioids, or serotonin-raising medicines unless the combination has been specifically reviewed by the prescribing clinician or pharmacist. Make sure they know about kidney or liver problems and every prescription medicine, nonprescription product, and supplement being used.

People at risk of opioid overdose and those around them may benefit from access to naloxone and training in how to use it. Naloxone is not a substitute for emergency care.

Living with it and what to expect

Meperidine overdose is usually a sudden event rather than an illness that continues for years. Many people who receive prompt treatment and have no major complications recover fully. Hospital observation may continue after symptoms improve because breathing problems can return and normeperidine may remain in the body, especially when kidney function is reduced.

After discharge, tiredness or soreness may last for a short time. Longer recovery can follow aspiration pneumonia, seizures, muscle breakdown, kidney injury, or a period of low oxygen. Follow-up is based on the complications that occurred, not simply on the overdose label.

A medication review can identify dosing errors, interacting medicines, or health problems that increased the risk. A different approach to pain treatment may be considered, but any change should be planned with the clinician responsible for the prescription.

If the overdose was intentional, mental health follow-up is an important part of recovery. If it was connected with difficulty controlling opioid use, treatment for opioid use disorder can reduce future overdose risk. This may include medicines, counselling, practical support, and

keeping naloxone available.

One overdose does not guarantee lasting injury, but it does signal a need to understand what happened and reduce the chance of another event.

When to get medical help

Call emergency services immediately if someone who may have taken meperidine:

Give naloxone if it is available. Call emergency services even if the person wakes up. Follow the dispatcher's instructions, provide rescue breathing or CPR if trained, and give another naloxone dose if directed or if symptoms return.

Place a breathing but unconscious person on their side if this can be done safely. Stay with them. Do not give food, drink, stimulants like methylphenidate or lisdexamfetamine , or a cold shower, and do not make them vomit.

In the United States, Poison Control can be reached at 1-800-222-1222. Elsewhere, contact the local poison information service. For slow or stopped breathing, unconsciousness, or seizures, call emergency services first.

Routine follow-up is appropriate after recovery to review medicines, kidney and liver health, pain care, mental health needs, and access to naloxone.

- Cannot be woken or does not respond normally
- Is breathing slowly, irregularly, or not at all
- Has blue, grey, or very pale lips or skin
- Has a seizure, severe confusion, or marked muscle jerking
- Develops high temperature, stiff muscles, or extreme agitation
- Collapses or has a very weak pulse

Common questions

How much meperidine causes an overdose?

There is no single amount that causes overdose in everyone. Risk is affected by opioid tolerance, age, kidney and liver function, other medicines, alcohol, and the amount taken over time. Any dose followed by unusual sleepiness or slow breathing needs urgent attention.

Does naloxone work for meperidine overdose?

Naloxone can reverse the opioid effects of meperidine, especially slowed breathing and unconsciousness. Its effects may be shorter than the poisoning, so symptoms can return. It also does not directly stop seizures caused by normeperidine.

How long does a meperidine overdose last?

The strongest effects may last for hours, but the safe monitoring period cannot be judged at home. Repeated dosing, kidney problems, mixed substances, or complications can extend the illness. Emergency clinicians decide how long observation is needed from the person's breathing and overall condition.

Can a standard urine drug test detect meperidine?

Not reliably. Many routine opiate screening tests are designed to detect morphine-related substances and may miss meperidine. Targeted laboratory testing may be needed, but treatment should not wait for the result.

Will someone recover fully after an overdose?

Full recovery is common when breathing is restored quickly and serious complications do not occur. Recovery may take longer if there was prolonged oxygen loss, aspiration, a seizure, muscle breakdown, or kidney injury. The medical team can explain what follow-up is needed after the immediate emergency has passed.

Should I make someone vomit after they swallow meperidine?

No. Vomiting can cause choking or aspiration, especially if the person becomes sleepy. Call emergency services for concerning symptoms and contact a poison information service for immediate guidance.

Sources

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