CONDITION

Methadone overdose

Methadone overdose is poisoning that dangerously slows breathing after too much methadone enters the body.

WHAT IT IS
Life-threatening poisoning from too much methadone

BODY SYSTEM
Nervous system, lungs, heart and circulation

MAIN SYMPTOMS
Slow breathing, extreme sleepiness, pinpoint pupils, blue lips

WHAT CAUSES IT
Too much methadone, often with other sedatives

HOW IT IS DIAGNOSED
Clinical assessment, toxicology testing, and treatment response

MAIN TREATMENT
Naloxone, breathing support, and hospital monitoring

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

IS IT AN EMERGENCY?
Yes - any suspected methadone overdose

LONG-TERM OUTLOOK
Often full recovery; severe oxygen loss can cause disability

Overview

Methadone is a long-acting opioid medicine. It is used to treat opioid use disorder and, in some situations, severe long-term pain. When taken correctly, it can be an effective treatment.

An overdose happens when methadone suppresses the brain areas that control breathing. Breathing may become slow, shallow, irregular, or stop completely. This reduces the oxygen reaching the brain and other organs.

Methadone overdose can be harder to recognize and manage than an overdose involving a shorter-acting opioid like oxycodone or morphine . Its effects may develop gradually and can last for many hours. A person may improve after receiving naloxone, an opioid-reversal medicine, and then become dangerously sleepy again when the naloxone wears off.

Any suspected methadone overdose is an emergency. Do not wait for every typical symptom to appear.

Symptoms

The main danger is slowed or stopped breathing. Someone who has overdosed may look as though they are deeply asleep, but they cannot be awakened normally.

Possible signs include:

Not everyone develops pinpoint pupils, and skin colour changes can be less obvious on darker skin. Check the lips, gums, nail beds, and inside the eyelids for an unusual blue, grey, or pale colour.

Methadone can also disrupt the heart's electrical rhythm. This may cause palpitations, fainting, or, rarely, cardiac arrest. A person with an overdose may not be able to report these symptoms.

- Very slow, shallow, irregular, or absent breathing
- Loud snoring, choking, gurgling, or gasping sounds
- Extreme sleepiness or no response to voice or touch
- Very small, "pinpoint" pupils
- Blue, grey, or unusually pale lips, fingertips, or skin
- A limp body
- Cold or clammy skin
- A slow or weak pulse
- Low blood pressure, dizziness, or collapse
- Vomiting

Causes and risk factors

Methadone overdose occurs when the amount in the body is more than the person can safely tolerate. This may happen after an accidental extra dose, intentional poisoning, a medication error, or taking methadone that was prescribed for someone else.

Methadone remains in the body for a long time. Its breathing effects can build up even when doses are separated by several hours. This is one reason treatment is usually started and adjusted carefully.

Risk is higher when methadone is combined with other substances that cause sleepiness or slow breathing. These include alcohol, benzodiazepines like diazepam or lorazepam , sleeping tablets, some anti-anxiety medicines, other opioids, and certain sedating medicines.

Other important risk factors include:

Tolerance means the body has become used to an opioid's effects. Tolerance can fall quickly during a period without opioids. An amount previously taken without an overdose may later become dangerous.

Children are especially vulnerable. Even a small accidental exposure can cause severe poisoning and requires immediate emergency care.

- Starting methadone or having its amount recently changed
- Returning to a previous amount after a break in treatment
- Reduced opioid tolerance after detoxification, hospital care, or imprisonment
- Liver, kidney, lung, or heart problems
- Older age or physical frailty
- Medication interactions that increase methadone levels
- Taking an unknown or incorrectly measured amount
- A child accidentally swallowing methadone

Diagnosis

Emergency clinicians usually diagnose opioid poisoning from the circumstances, symptoms, and examination. Slow breathing, reduced consciousness, and small pupils strongly suggest an opioid effect, but these findings are not always all present.

A response to naloxone supports the diagnosis. However, improvement does not prove that methadone was the only substance involved. Lack of an immediate response also does not rule out opioid poisoning, particularly if the person needs further naloxone or has another medical problem.

Monitoring and tests may include:

Routine opioid drug screens do not always detect methadone unless a methadone-specific test is used. A positive test shows exposure, but it does not by itself establish the severity or timing of an overdose. Treatment should not be delayed while waiting for test results.

Clinicians may also check for head injury, stroke, infection, seizure, or poisoning from another substance.

- Continuous measurement of oxygen levels and breathing
- An electrocardiogram, or ECG, to check heart rhythm
- Blood glucose testing, because low blood sugar can also cause unconsciousness
- Blood tests for organ function, acid levels, and electrolyte balance
- Toxicology testing for methadone and other substances

Treatment and management

Immediate treatment focuses on restoring breathing and protecting the brain from oxygen loss.

Naloxone blocks opioid effects and can restore breathing. It may be given into the nose, a muscle, or a vein. Because methadone usually lasts longer than naloxone, repeated treatment or a continuous naloxone infusion may be needed in hospital.

Naloxone can trigger sudden withdrawal in someone who is physically dependent on opioids. This may cause agitation, sweating, vomiting, diarrhoea, or pain. These effects can be distressing, but they do not outweigh the need to reverse dangerously slow breathing.

Other hospital treatment may include:

Aspiration happens when vomit or fluid enters the lungs. It can cause inflammation, breathing problems, or pneumonia.

A person who wakes after naloxone still needs emergency assessment. Methadone's effects can return after the naloxone wears off, so extended observation is often necessary. The required monitoring time is based on symptoms, treatment received, heart rhythm, other substances involved, and the person's health.

- Oxygen and support with breathing
- Placement of a breathing tube and mechanical ventilation when needed
- Intravenous fluids and treatment for low blood pressure
- ECG monitoring
- Correction of abnormal electrolyte levels
- Treatment for aspiration, injuries, or other substances taken

Complications

The most serious complication is brain injury caused by a prolonged lack of oxygen. Its effects can range from temporary confusion to lasting problems with memory, movement, communication, or independence.

Other possible complications include:

Complications are more likely when breathing has been severely reduced, treatment is delayed, or several sedating substances were taken.

Vomiting after naloxone may also create an aspiration risk, especially if the person is still drowsy. This is one reason they should not be left alone after appearing to recover.

- Cardiac arrest
- Dangerous abnormal heart rhythms
- Aspiration-related lung injury or pneumonia
- Muscle and kidney damage after lying unconscious for a long time
- Injuries from falling or collapsing
- Coma
- Death

Prevention

Many methadone overdoses can be prevented. Methadone should be taken only as directed and measured with the device supplied for that medicine. Household spoons are not reliable measuring tools.

Do not take an extra amount to replace a missed dose unless the prescribing or dispensing service specifically advises it. After several missed doses, tolerance may be lower, and restarting may require clinical review.

To reduce risk:

Medication interactions can change methadone levels or increase sleepiness. Starting or stopping another medicine may matter, including some prescription, over-the-counter, and herbal products.

Naloxone access is especially important for people taking opioids and for those around them. Having naloxone does not encourage unsafe opioid use; it provides time for emergency care to arrive.

- Tell healthcare professionals and pharmacists about all medicines and substances used

- Avoid mixing methadone with alcohol or non-prescribed sedatives
- Do not share methadone with anyone
- Keep it locked away, out of sight and reach of children
- Return unused methadone through an approved medicine disposal service
- Keep naloxone available and make sure close contacts know how to use it
- Seek advice before restarting after a treatment break

Living with it and what to expect

Methadone overdose is an acute event rather than a continuing condition. With prompt treatment and no major period of oxygen loss, many people recover fully. Sleepiness and other opioid effects may continue or return for some time, which is why hospital monitoring can last longer than expected.

Recovery over the following days may include tiredness, poor concentration, muscle soreness, or emotional distress. Lung injury, heart rhythm problems, or brain injury can make recovery longer and may require rehabilitation.

An overdose does not mean methadone treatment has failed or that it must always be stopped. For someone taking methadone for opioid use disorder or pain, abruptly stopping can create other risks. Follow-up should review what happened, possible medication interactions, safe storage, treatment goals, and access to naloxone.

If the overdose was intentional, mental health assessment and ongoing support are important. If it was related to non-prescribed opioid use, follow-up can include evidence-based treatment for opioid use disorder and practical harm-reduction support.

Routine follow-up is appropriate after discharge to discuss continuing symptoms and safer treatment. New severe sleepiness, slow breathing, fainting, chest symptoms, or confusion are not routine recovery symptoms and need urgent reassessment.

When to get medical help

Call emergency services immediately if someone may have taken too much methadone or has slow breathing, cannot be awakened, is making choking or gurgling sounds, or has blue or grey lips.

While waiting for help:

Do not make the person vomit. Do not put them in a cold bath, force them to walk, or give coffee. These actions do not reverse an opioid overdose and may cause harm.

Do not let someone "sleep it off." Apparent snoring may actually be a sign that their airway is partly blocked.

After emergency treatment, arrange routine follow-up with the service managing the methadone or with primary care. Seek earlier medical review for ongoing cough, fever, breathlessness, palpitations, fainting, weakness, memory problems, or unusual confusion.

- Give naloxone if it is available, following the product instructions
- If the person is not breathing normally, begin CPR or rescue breathing as directed by the emergency dispatcher
- If they are breathing but unconscious, place them on their side
- Stay with them and watch their breathing
- Give further naloxone if instructed and symptoms return
- Tell emergency responders what was taken and when, if known

Common questions

How long does a methadone overdose take to happen?

Symptoms can begin gradually and may be delayed. Methadone also stays active for a long time, so there is no safe waiting period after a suspected extra amount. Contact emergency services or a poison centre immediately rather than waiting for symptoms.

Can someone overdose on prescribed methadone?

Yes. Prescribed methadone can cause an overdose if too much accumulates, tolerance has fallen, or it is combined with alcohol or other sedatives. Taking it exactly as directed and discussing medication changes reduces risk.

Will one dose of naloxone be enough?

It may not be. Naloxone often wears off before methadone does. Breathing problems can return, even after the person wakes up, so emergency assessment and monitoring remain necessary.

Can I let someone sleep after naloxone wakes them?

No. They may become unconscious again as naloxone wears off. Keep them under close observation, follow emergency instructions, and ensure they are assessed by medical professionals.

Does a methadone overdose cause permanent damage?

Not always. Many people recover without lasting effects when breathing is restored quickly. Permanent brain or organ damage can occur if the body is deprived of oxygen for too long.

Should methadone be stopped after an overdose?

Do not make an abrupt change without clinical guidance unless emergency professionals direct it. Follow-up should identify why the overdose happened and decide how treatment can continue more safely.

Sources

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