CONDITION

Amitriptyline hydrochloride overdose

Learn how amitriptyline overdose affects the heart, brain, and breathing, and why suspected poisoning requires immediate medical care.

WHAT IT IS
Poisoning from taking too much amitriptyline

BODY SYSTEM
Heart and circulation, nervous system and breathing

MAIN SYMPTOMS
Severe drowsiness, seizures, trouble breathing, irregular heartbeat

WHAT CAUSES IT
Taking too much amitriptyline

HOW IT IS DIAGNOSED
ECG, clinical assessment and blood tests

MAIN TREATMENT
Emergency supportive hospital care

CAN IT BE CURED?
Sometimes, many recover with prompt treatment

IS IT AN EMERGENCY?
Yes, any known or suspected overdose

LONG-TERM OUTLOOK
Many recover, but lasting neurological injury is possible

Overview

Amitriptyline hydrochloride is a prescription medicine used for depression and, in some cases, conditions such as nerve pain or migraine prevention. It belongs to a group of medicines called tricyclic antidepressants, often shortened to TCAs.

An amitriptyline overdose happens when someone takes more than the amount intended for them. It may result from a dosing mistake, accidental ingestion, or intentional self-harm. Combining amitriptyline with other medicines, alcohol, or drugs can make the situation more complicated.

In overdose, amitriptyline can interfere with electrical signals in the heart. It can also affect the brain, breathing, blood pressure, and the body's ability to control temperature. A person may appear only mildly unwell at first and then worsen over a short period.

Any known or suspected amitriptyline overdose requires immediate professional advice. Do not wait for symptoms. In the United States, call Poison Control at 1-800-222-1222. Outside the United States, contact the local poison center or emergency service.

Call emergency services immediately if the person has collapsed, is having a seizure, has trouble breathing, has a very fast or irregular heartbeat, or cannot be awakened. Do not make the person vomit. Do not give food, drinks, or home remedies unless a poison specialist or medical professional tells you to do so.

Symptoms

Symptoms often begin within the first several hours after ingestion, but timing can vary. The amount taken, other substances involved, and the person's health can all affect what happens.

Possible early effects include:

More serious poisoning can cause seizures, severe drowsiness, coma, or slowed and ineffective breathing. Blood pressure may fall. The heartbeat may become dangerously fast, slow, or irregular.

Some symptoms result from an anticholinergic effect . This means the medicine blocks acetylcholine, a chemical that helps control functions such as sweating, digestion, urination, alertness, and heart rate.

Amitriptyline also blocks sodium channels in heart cells. Sodium channels help electrical signals travel through the heart. When they are blocked, electrical conduction slows and abnormal rhythms may develop. These changes may be visible on an electrocardiogram, or ECG.

The absence of symptoms immediately after ingestion does not show that the person is safe. Medical advice is still needed after any suspected overdose.

- Unusual sleepiness, confusion, agitation, or poor coordination
- Blurred vision and enlarged pupils
- Dry mouth, flushed or warm skin, and reduced sweating
- Nausea or vomiting
- Difficulty passing urine
- A fast heartbeat

Causes and risk factors

Overdose may happen when a person takes extra tablets by mistake, misunderstands instructions, or uses more medicine because a dose seemed ineffective. It can also occur when a child or another household member gains access to the medication.

Some overdoses are intentional and may occur during a mental health crisis. A person who may have taken amitriptyline to harm themselves needs both urgent medical treatment and compassionate mental health support.

Factors that may increase the chance of severe effects include:

Tablet strength and the amount remaining in a container may help clinicians assess the situation, but they cannot predict the outcome by themselves. People respond differently, and the reported amount may be incomplete. Treatment is guided mainly by symptoms, vital signs, and ECG findings.

- Taking amitriptyline with other antidepressants like sertraline or fluoxetine , sedatives, opioids like oxycodone or morphine , alcohol, or medicines that affect heart rhythm
- Taking several substances together, even when the exact amounts are unknown
- Delayed access to emergency care
- Existing heart disease or problems with electrical conduction in the heart
- Seizures, low oxygen levels, or major changes in the body's acid balance
- Very young or older age, which may affect how poisoning is recognized or managed

Diagnosis

Amitriptyline overdose is evaluated as an emergency. Clinicians first assess the person's airway, breathing, circulation, alertness, and temperature. Treatment may begin before every detail of the ingestion is known.

If it can be done safely, useful information includes the medicine name, tablet strength, possible number taken, time of ingestion, and any alcohol, drugs, or other medicines involved. Bringing the medication container or a photograph of its label can help. No one should delay emergency care to search for this information.

An ECG is a central part of the evaluation. It records the heart's electrical activity and can show slowed conduction or abnormal rhythms. Clinicians may repeat the ECG because changes can develop over time.

Blood tests may be used to check glucose, electrolytes, kidney function, and the body's

acid-base balance. Testing for common co-ingestions, such as acetaminophen, may be appropriate when the history is unclear. Other tests depend on the person's symptoms and circumstances.

A blood test can sometimes detect tricyclic antidepressants, but the measured level does not reliably show how severe the poisoning is. Clinicians do not wait for this result before treating concerning symptoms or ECG changes.

The person is usually monitored closely in an emergency department or hospital. The length and level of monitoring depend on symptoms, ECG findings, treatment needs, and whether other substances may have been taken.

Treatment and management

There is no single antidote that removes all of amitriptyline's effects. Treatment focuses on supporting breathing and circulation, correcting dangerous heart effects, controlling seizures, and preventing further absorption when appropriate.

Emergency care may include oxygen, intravenous access, continuous heart monitoring, and frequent checks of blood pressure and alertness. A breathing tube and mechanical ventilation may be needed if the person cannot protect their airway or breathe effectively.

Sodium bicarbonate is a key hospital treatment when amitriptyline causes concerning ECG changes, abnormal heart rhythms, or low blood pressure. It can reduce the medicine's sodium-channel effects and help correct excess acidity in the blood. The amount and timing are determined by the medical team using the person's ECG, blood tests, and response.

Seizures are generally treated with benzodiazepine medicines. Ongoing seizures need rapid treatment because they can worsen low oxygen, blood acidity, and heart toxicity.

Low blood pressure may be treated with intravenous fluids. If fluids are not enough, clinicians may use medicines called vasopressors to support blood pressure. These treatments require close monitoring.

Activated charcoal may be considered in selected cases, usually when the ingestion was recent and the person's airway is protected. Charcoal can bind some medicine in the digestive tract. It can also enter the lungs if given to someone who is very drowsy or vomiting, so it should not be used at home.

Some heart-rhythm medicines may worsen the type of electrical blockage caused by amitriptyline. Treatment choices are therefore made by clinicians familiar with poisoning or in consultation with a medical toxicologist or poison center.

For poisoning that remains life-threatening despite standard treatment, specialist teams may consider advanced support. Options can include intravenous lipid emulsion or extracorporeal life support, which temporarily supports the heart and circulation. These are rescue treatments used in carefully selected situations.

Hemodialysis, which filters the blood, does not remove amitriptyline effectively because the medicine binds strongly to proteins and moves widely into body tissues.

Complications

The most serious complications affect the heart, brain, and lungs. Abnormal heart rhythms can reduce blood flow to vital organs and, in severe cases, lead to cardiac arrest. Very low blood pressure can also damage organs if it continues.

Seizures may cause injury, low oxygen levels, or inhalation of vomit into the lungs. This inhalation is called aspiration and can lead to breathing problems or pneumonia.

Deep unconsciousness can interfere with breathing and airway protection. If the brain receives too little oxygen, lasting neurological injury is possible. Prolonged seizures or severe agitation may also contribute to muscle breakdown, known as rhabdomyolysis, which can strain the kidneys.

Many people recover with prompt, appropriate treatment. The risk and recovery time depend on the severity of poisoning, complications, and whether other substances were involved.

Follow up

After emergency treatment, monitoring continues until the person's symptoms, blood pressure, mental state, and ECG are stable. A clinician determines when it is safe to stop hospital monitoring. A suspected overdose should not be managed through routine home observation unless a poison center or medical professional specifically advises it.

After discharge, routine follow-up may include reviewing all medicines, checking for ongoing side effects, and discussing how to prevent another dosing error. Medicines should be stored in their original labeled containers and kept securely away from children and anyone for whom they were not prescribed.

If the overdose may have been intentional, a mental health assessment is an important part of care. Follow-up may include a safety plan, counseling, support from trusted people, and review of how medicines are stored or supplied. This is intended to support recovery rather than assign blame.

Seek emergency help after discharge for a seizure, fainting, severe confusion, difficulty breathing, inability to wake, chest pain, or a fast or irregular heartbeat. Mild tiredness or questions about restarting regular medicines can usually be discussed through routine follow-up, but amitriptyline should not be restarted, stopped, or changed without guidance from the prescribing clinician.

Anyone having thoughts of suicide or self-harm should seek immediate support. In the United States, call or text 988 for the Suicide & Crisis Lifeline. If there is immediate danger or a possible overdose has already occurred, call emergency services instead.

Sources

- Lavonas EJ, Akpunonu PD, Arens AM, et al. "2023 American Heart Association Focused Update on the Management of Patients With Cardiac Arrest or Life-Threatening Toxicity Due to Poisoning." Circulation . 2023;148(16):e149-e184.
- U.S. National Library of Medicine. DailyMed: Amitriptyline Hydrochloride Tablet, Prescribing Information . Overdosage section.
- MedlinePlus Medical Encyclopedia. "Amitriptyline Hydrochloride Overdose." U.S. National Library of Medicine.
- Woolf AD, Erdman AR, Nelson LS, et al. "Tricyclic Antidepressant Poisoning: An Evidence-Based Consensus Guideline for Out-of-Hospital Management." Clinical Toxicology . 2007;45(3):203-233.
- Chyka PA, Seger D, Krenzelok EP, Vale JA. "Position Paper: Single-Dose Activated Charcoal." Clinical Toxicology . 2005;43(2):61-87.
- Thanacoody HKR, Thomas SHL. "Tricyclic Antidepressant Poisoning: Cardiovascular Toxicity." Toxicological Reviews . 2005;24(3):205-214.