CONDITION

# Thiazide overdose

A thiazide overdose happens when someone takes enough thiazide diuretic medicine to cause harmful fluid and salt loss.

**WHAT IT IS**
Harmful exposure to a thiazide diuretic

**BODY SYSTEM**
Kidneys, heart and circulation

**MAIN SYMPTOMS**
Dizziness, weakness, nausea, confusion

**WHAT CAUSES IT**
Taking too much thiazide medicine

**HOW IT IS DIAGNOSED**
Exposure history, blood tests, and ECG

**MAIN TREATMENT**
Supportive care, fluids, and electrolyte correction

**CAN IT BE CURED?**
Yes - effects usually resolve with supportive care

**IS IT AN EMERGENCY?**
Yes - after any suspected excessive dose

**LONG-TERM OUTLOOK**
Most recover fully after prompt treatment

## Overview

Thiazides are medicines that help the kidneys remove salt and water from the body. They are often called "water pills like furosemide or hydrochlorothiazide " or diuretics. They are commonly used for high blood pressure and sometimes for fluid buildup.

Examples include hydrochlorothiazide and thiazide-like medicines such as chlorthalidone, indapamide, and metolazone. Some tablets combine a thiazide with another blood pressure medicine.

A thiazide overdose happens when someone takes enough medicine to cause harmful effects. This may follow a dosing mistake, a child swallowing tablets, or an intentional overdose. The amount that causes problems is not the same for everyone.

The main danger is excessive loss of water and electrolytes. Electrolytes are minerals, including sodium and potassium, that help control fluid balance, muscles, nerves, and heart rhythm. An overdose can cause dehydration, low blood pressure, kidney problems, or an abnormal heartbeat.

Symptoms may not appear immediately. If an overdose may have happened, contact a poison centre promptly rather than waiting to see what develops.

## Symptoms

The effects of a thiazide overdose often come from increased urine production, fluid loss, and disturbed electrolyte levels.

Possible early symptoms include:

As fluid or electrolyte problems become more serious, someone may develop confusion, marked drowsiness, fainting, very low blood pressure, or an irregular heartbeat. Severe potassium or sodium changes can affect the muscles, brain, and heart.

Urine output may eventually fall if dehydration reduces blood flow to the kidneys. Low urine output should not be taken as evidence that the overdose has passed.

The symptoms may also come from another medicine in the same tablet. For example, some thiazide products include an angiotensin-converting enzyme inhibitor like lisinopril or ramipril, an angiotensin receptor blocker, a beta blocker, or another drug. These combination products can cause additional effects that are not typical of thiazides alone.

- Frequent urination
- Thirst or a dry mouth
- Nausea or vomiting
- Dizziness, especially when standing
- Unusual tiredness or weakness
- Muscle cramps

## Causes and risk factors

The direct cause is taking more thiazide medicine than the body can safely handle. This may happen through:

The seriousness of an overdose is influenced by the medicine, the amount taken, and whether

other substances were involved. Chlorthalidone, for example, can have a longer-lasting effect than some other thiazides.

Dehydration before the overdose may increase the risk of low blood pressure and kidney injury. Vomiting, diarrhoea, hot weather, or poor fluid intake can contribute.

People with kidney or heart conditions may be more vulnerable to changes in fluid balance. Existing low sodium or potassium can also increase risk. Alcohol, other diuretics, blood pressure medicines, and medicines that affect heart rhythm may change the effects.

These factors cannot be used at home to decide that an overdose is safe. Poison specialists consider the exact product, amount, timing, symptoms, age, health conditions, and any other medicines taken.

- Taking a second dose after forgetting that the first was taken
- Confusing tablets or strengths
- Using another product containing the same medicine
- A child or another household member reaching stored medication
- Intentional self-harm

## Diagnosis

Thiazide overdose is diagnosed from the exposure history, symptoms, examination, and test results. There is not usually a rapid blood test that directly measures a thiazide level or confirms how severe the poisoning is.

It helps to identify the medicine's name, strength, possible number of tablets, and approximate time it was taken. The container or a photograph of its label may be useful. Do not delay an emergency call while trying to find this information.

In a healthcare setting, tests may include:

Blood tests may need to be repeated because fluid and electrolyte changes can develop over time. Additional testing may be needed when the product contains another medicine or when another substance may also have been taken.

- Blood tests for sodium, potassium, chloride, bicarbonate, glucose, and kidney function
- An electrocardiogram, or ECG, to check heart rate and rhythm
- Blood pressure, pulse, breathing, and oxygen measurements
- Monitoring of urine output

## Treatment and management

There is no specific antidote that reverses a thiazide overdose. Treatment supports the body while the medicine is cleared and corrects fluid or electrolyte problems.

A poison centre may recommend home observation after some minor dosing mistakes, but that decision must be based on the exact circumstances. Other exposures require assessment in an emergency department.

Hospital treatment may include intravenous fluids for dehydration or low blood pressure. Sodium, potassium, or other electrolyte disturbances are corrected carefully and monitored with repeat blood tests. Heart monitoring may be used if there are significant electrolyte changes, low blood pressure, symptoms affecting the heart, or exposure to another medicine.

Activated charcoal can sometimes reduce absorption after a recent, potentially harmful ingestion. It is not used routinely, and it can be dangerous if the person is drowsy, vomiting, or unable to protect their airway. It should only be given when a poison specialist or healthcare professional recommends it.

Do not make the person vomit. Do not give salt, potassium supplements, large amounts of water, or another home remedy unless a poison specialist tells you to. Drinking too much plain water can worsen a low sodium level.

The length of observation depends on the product, symptoms, test results, and other substances involved. A longer-acting medicine or combination tablet may require extended monitoring.

If the overdose was intentional, treatment should also include a compassionate mental health assessment and support once immediate medical needs have been addressed.

## Complications

Most people recover with timely supportive care, but complications can occur when fluid or electrolyte losses are substantial.

Possible complications include:

Acute kidney injury means the kidneys suddenly stop working as well as expected. It is often reversible when dehydration and blood pressure are corrected, but follow-up blood tests may be needed.

The risk may be higher when other medicines were taken. In a combination tablet, the second ingredient may cause slow heart rate, high potassium, marked low blood pressure, or other

complications.

- Severe dehydration
- Very low blood pressure
- Low sodium or potassium
- Abnormal heart rhythms
- Acute kidney injury
- Falls or injuries caused by dizziness or fainting
- Seizures or reduced consciousness in severe electrolyte disturbance

## Prevention

Thiazide overdose is usually preventable. Practical steps include keeping medicines in their original labelled containers and storing them where children and other household members cannot reach them.

A pill organiser or medication checklist can reduce accidental double dosing. If you are unsure whether a dose was already taken, check the dispensing label or contact a pharmacist rather than automatically taking another tablet.

Do not combine prescriptions, share medicines, or keep loose tablets in an unlabelled container. Check the ingredients of combination blood pressure products so that the same medicine is not taken twice.

Return unwanted medication through a pharmacy or approved take-back programme when available. Do not keep extra tablets "just in case."

If there is a risk of intentional overdose, reducing access to large quantities of medication may form part of a safety plan developed with a healthcare or mental health professional.

## Living with it and what to expect

A thiazide overdose is an acute event rather than a condition that usually continues for months or years. Mild effects may settle as the medicine leaves the body and fluid balance returns to normal. More significant poisoning can require hospital observation until blood pressure, kidney function, electrolytes, and heart rhythm are stable.

Many people recover without lasting effects. Recovery can take longer after severe dehydration, kidney injury, a major electrolyte disturbance, or exposure to a long-acting

medicine. The course is also affected by other drugs taken at the same time.

After discharge, temporary tiredness or light-headedness may continue. Follow the discharge plan for fluids, activity, and repeat blood tests. Arrange routine follow-up if you were told that kidney function or electrolytes need to be checked again.

Do not restart, stop, or change the usual thiazide dose on your own after an overdose. A prescriber may review whether the medicine remains suitable and whether changes to packaging or medication routines could prevent another error.

Long-term treatment is not usually needed when the person has fully recovered and there is no organ injury. An intentional overdose may require ongoing mental health care, even after the physical effects have resolved.

## When to get medical help

Contact a poison centre immediately after a suspected thiazide overdose, even if there are no symptoms. In the United States, call Poison Control at 1-800-222-1222 or use its online service. In other countries, contact the local poison information centre or emergency medical service.

Call emergency services now if the person:

Stay with the person while help is arranged. If safe, keep the medicine container or packaging available. Do not drive someone who is faint, severely drowsy, confused, or medically unstable.

Routine follow-up is different from emergency care. After treatment, contact the recommended clinician for repeat blood tests, medication review, or continuing dizziness. New fainting, worsening confusion, very low urine output, or severe weakness needs urgent reassessment rather than waiting for a routine appointment.

- Collapses, faints, or cannot be awakened
- Has trouble breathing
- Has a seizure
- Is severely confused
- Has chest pain or a markedly irregular heartbeat
- Has taken an intentional overdose
- May have taken several medicines or an unknown substance

## Common questions

I accidentally took one extra thiazide tablet. Will I be okay?

One extra dose does not always cause serious poisoning, but its effect depends on the exact medicine, strength, your health, and other medicines you take. Contact a pharmacist or poison centre promptly for advice specific to the exposure. Do not take further doses until you have been told how to proceed.

How long do thiazide overdose symptoms last?

The timing differs between medicines. Some effects may improve within hours, while longer-acting products can affect fluid and electrolyte balance for longer. Symptoms, blood pressure, kidney function, and blood test results help determine when the risk has passed.

Should I drink lots of water after taking too much?

No. Do not force large amounts of water. Although dehydration can occur, too much plain water may worsen a low sodium level. A poison specialist or healthcare professional can advise whether fluids are appropriate.

Is there an antidote for hydrochlorothiazide overdose?

There is no specific antidote. Treatment focuses on monitoring and correcting dehydration, low blood pressure, electrolyte disturbances, and heart rhythm problems.

Can a thiazide overdose damage the kidneys?

It can. Severe dehydration and low blood pressure may reduce blood flow to the kidneys and cause acute kidney injury. This often improves with treatment, but repeat kidney function tests may be needed.

Can a thiazide overdose be fatal?

Severe poisoning can be life-threatening, especially with major electrolyte changes, very low blood pressure, heart rhythm problems, or other medicines taken at the same time. Prompt poison-centre advice and supportive treatment improve the chance of recovery.

## Sources

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