CONDITION

Low blood sugar

Low blood sugar is a drop in blood glucose that can cause sweating, shaking, confusion, or loss of consciousness.

WHAT IT IS
Blood glucose below a healthy level

BODY SYSTEM
Metabolism, brain, and nervous system

MAIN SYMPTOMS
Sweating, shaking, hunger, confusion

WHAT CAUSES IT
Diabetes medicines, missed meals, illness, or rare disorders

HOW IT IS DIAGNOSED
Glucose measurement during symptoms and response to sugar

MAIN TREATMENT
Fast-acting carbohydrate or emergency glucagon

CAN IT BE CURED?
Sometimes - when the underlying cause is removed

IS IT AN EMERGENCY?
Sometimes - severe confusion, seizure, or unconsciousness

LONG-TERM OUTLOOK
Usually manageable once triggers and causes are addressed

Overview

Low blood sugar, also called hypoglycaemia or hypoglycemia, means there is not enough glucose in your blood for your body's needs. Glucose is a type of sugar and an important source of energy, especially for the brain.

Low blood sugar most often affects people who use insulin or certain other medicines for diabetes. It is less common in people without diabetes. When it occurs without a clear reason, it may need investigation for an underlying condition.

For many people with diabetes, a reading below 70 milligrams per decilitre, or 3.9 millimoles per litre, is an alert to take action. Symptoms and safe targets are not identical for everyone. A glucose meter or continuous glucose monitor can help, but how you feel and whether symptoms improve after treatment also matter.

A mild episode can usually be treated quickly. A severe episode can affect thinking, coordination, or consciousness. Recognising the early signs helps prevent the glucose level from falling further.

Symptoms

Symptoms often begin quickly. Early signs are caused partly by hormones, including adrenaline, that the body releases to raise blood sugar.

You may notice:

Severe low blood sugar may cause a seizure or loss of consciousness. A person in this state cannot treat themselves safely.

Symptoms during sleep can include sweating, disturbed sleep, nightmares, or waking with a headache. Some episodes cause no obvious signs.

People who have frequent episodes may develop hypoglycaemia unawareness . This means the usual warning symptoms become weak or disappear. Confusion may then be the first sign. This raises the risk of severe episodes, but awareness can sometimes improve when low readings are carefully avoided for a period.

Symptoms alone do not prove that your blood sugar is low. Anxiety, dehydration, heart rhythm problems, and other conditions can feel similar.

- Shaking, sweating, hunger, or a pounding heartbeat
- Dizziness, weakness, headache, or tingling around the lips
- Irritability, anxiety, unusual behaviour, or difficulty concentrating
- Blurred vision, confusion, poor coordination, or slurred speech

Causes and risk factors

In people with diabetes, low blood sugar usually happens when insulin or another glucose-lowering medicine lowers the level more than intended. Medicines most strongly linked with it include insulin, sulfonylureas, and meglitinides.

Common triggers include:

Exercise can lower glucose during activity and for hours afterwards. Alcohol can stop the liver from releasing stored glucose, so an episode may occur later, including overnight.

Low blood sugar is uncommon in people who do not take diabetes medicine. Possible causes

include severe liver, kidney, or critical illness; low levels of certain hormones; poor nutrition; or the effects of alcohol or medicines.

Rarely, the pancreas releases too much insulin because of an insulin-producing growth called an insulinoma. Some people develop low blood sugar after meals following stomach or weight-loss surgery. This is known as post-bariatric hypoglycaemia.

Young children, older adults, people with kidney disease, and those who cannot easily recognise or communicate symptoms may be more vulnerable to serious episodes.

- Missing, delaying, or eating less of a meal
- Taking more diabetes medicine than the body needs at that time
- Exercising more or for longer than usual
- Drinking alcohol, especially without enough food
- Vomiting, diarrhoea, or another illness that reduces food intake
- Changes in kidney or liver function that affect medicine clearance

Diagnosis

If you have diabetes, a finger-prick glucose meter or continuous glucose monitor can identify many episodes. Continuous monitors measure glucose in fluid under the skin, so their readings can lag behind blood glucose when levels are changing quickly. Low readings that do not match your symptoms may need checking with a finger-prick test.

A clinician will review when episodes happen, what you ate, physical activity, alcohol use, and all medicines or supplements. Glucose records and continuous-monitor reports can help show patterns.

In someone without diabetes medicine, hypoglycaemia is usually confirmed using three findings, called Whipple's triad :

Blood collected during an episode may be tested for glucose, insulin, and related substances. Depending on the pattern, further tests may assess liver, kidney, or hormone function.

If episodes occur while fasting, a medically supervised fast may sometimes be used. If they happen after meals, a supervised mixed-meal test may be considered. These tests should not be attempted at home.

- Symptoms that could be caused by low blood sugar
- A low laboratory-measured glucose level during those symptoms

- Improvement when the glucose level is raised

Treatment and management

If you are awake, able to swallow, and have a low reading or typical symptoms, use a fast-acting source of carbohydrate. Examples include glucose tablets or gel, regular sugary soft drink, or fruit juice. Follow the amount in your personal diabetes plan or the product instructions.

A commonly used approach is to take about 15 grams of fast-acting carbohydrate and check again after 15 minutes. If the level remains low, treatment is repeated. Children may need a different amount based on their care plan.

Foods high in fat, such as chocolate, are not ideal for immediate treatment because fat slows sugar absorption. Once your glucose has recovered, a meal or snack may be needed if your next planned meal is not soon.

Do not give food, drink, or glucose gel by mouth to someone who is unconscious, having a seizure, or unable to swallow safely. It could enter their airway.

Severe hypoglycaemia may be treated with glucagon. This hormone tells the liver to release stored glucose. It is available in injectable and nasal forms. People at risk may be prescribed a glucagon product, and household members or coworkers can be shown how to use it. Emergency medical help is still needed if the person does not recover promptly or the cause is uncertain.

Longer-term management focuses on preventing another episode. This may involve reviewing diabetes medicines, meal timing, exercise plans, alcohol use, kidney function, and glucose-monitor settings. Do not stop or change prescribed diabetes medicine without medical advice.

If another condition is causing the episodes, treatment is directed at that cause. This might involve changing a medicine, treating a hormone problem, improving nutrition, or managing a pancreatic growth.

Complications

The brain depends heavily on glucose. A falling level can impair judgement, reaction time, balance, and coordination. This can lead to falls, driving collisions, or other injuries.

A severe episode can cause a seizure, unconsciousness, abnormal heart rhythms, or, rarely, lasting brain injury or death. These outcomes are not typical of episodes that are recognised

and treated early.

Repeated episodes may lead to hypoglycaemia unawareness. Fear of another episode can also affect sleep, exercise, work, driving, and diabetes management.

Treating lows too aggressively can cause a rebound high glucose level. A measured amount of fast-acting carbohydrate, followed by rechecking, can help avoid this.

Prevention

Not every episode can be prevented. The risk can often be reduced by understanding your triggers and using a plan suited to your treatment.

If you take medicine that can cause low blood sugar:

A continuous glucose monitor may provide alerts when glucose is falling or low. It can be especially helpful for overnight episodes or reduced awareness, although readings sometimes need confirmation.

Before driving, follow the glucose-checking advice in your diabetes and local driving guidance. Do not drive while your glucose is low or while your thinking and reaction time remain affected.

Low blood sugar caused by an unpredictable illness or rare hormone or pancreatic condition may not be fully preventable until the cause is found and treated.

- Take it as directed and review repeated low readings promptly
- Avoid skipping meals if your medicine plan assumes regular food
- Check glucose around unfamiliar or prolonged exercise when advised
- Carry a measured source of fast-acting carbohydrate
- Use alcohol cautiously and avoid drinking it on an empty stomach
- Keep glucagon available if it has been prescribed
- Wear medical identification if you are at risk of severe episodes

Living with it and what to expect

A single episode caused by a missed meal, unusual exercise, or a medicine mismatch may not continue once the trigger is addressed. Repeated episodes need review rather than simply being accepted as part of diabetes.

Patterns can change over months and years. Weight changes, kidney function, pregnancy,

ageing, physical activity, and changes in food intake can alter how much glucose-lowering medicine the body needs.

Keeping a brief record of the time, glucose reading, symptoms, food, activity, and medicine can reveal useful patterns. Technology can help, but symptoms and day-to-day context still matter.

Many people continue working, exercising, travelling, and driving safely once they have a reliable prevention and treatment plan. People close to you may need to know the warning signs, where fast-acting carbohydrate is kept, and how to use glucagon if prescribed.

If you lose your usual warning symptoms, avoiding further low readings may help restore them. This generally requires support and possible adjustment of glucose targets or treatment.

When to get medical help

Call emergency services if someone with possible low blood sugar:

Place an unconscious person on their side if you can do so safely. Give glucagon if it is available and you know how to use it. Do not give anything by mouth.

Seek urgent same-day medical advice if episodes are repeated, are happening overnight, occur without warning, or continue despite following your treatment plan. Prompt assessment is also appropriate after an unexplained episode if you do not take diabetes medicine.

Arrange routine follow-up if you are having occasional mild lows, need help identifying triggers, or are avoiding activities because of fear of hypoglycaemia. Bring meter or continuous-monitor records if available.

- Is unconscious, having a seizure, or cannot swallow safely
- Remains severely confused after treatment
- Does not improve promptly after glucagon
- Has been injured or may have taken an overdose of diabetes medicine

Common questions

What number counts as low blood sugar?

For many people with diabetes, below 70 mg/dL, or 3.9 mmol/L, is the level for taking action. A value below 54 mg/dL, or 3.0 mmol/L, is more clinically significant. Your personal targets may reflect your age, medicines, pregnancy, or other health needs.

Can I have low blood sugar without diabetes?

Yes, but it is uncommon. Alcohol, severe illness, hormone deficiencies, poor nutrition, certain medicines, previous stomach surgery, and rare insulin-producing growths can cause it. Repeated or confirmed episodes need medical assessment.

Why do I feel low when my glucose reading is normal?

Symptoms can occur when glucose falls quickly from a level your body has become used to, even if it has not crossed the usual low threshold. Other conditions can also cause similar symptoms. Checking your glucose during symptoms helps clarify what is happening.

What should I eat when my blood sugar is low?

Use a measured source of fast-acting carbohydrate, such as glucose tablets, glucose gel, juice, or a regular sugary drink. Recheck after treatment. Once recovered, you may need a snack or meal if your next meal is not soon.

Can low blood sugar happen while I am asleep?

Yes. Night-time episodes may cause sweating, restless sleep, nightmares, or a morning headache, but they can also have no clear symptoms. Glucose-monitor records can help identify a pattern.

Can low blood sugar go away permanently?

Sometimes. An episode caused by a temporary trigger may not return once that trigger is corrected. If diabetes medicine or an ongoing condition is responsible, the risk usually needs continuing management rather than being considered permanently cured.

Sources

- National Institute of Diabetes and Digestive and Kidney Diseases: Low Blood Glucose \(Hypoglycemia\)
- American Diabetes Association Professional Practice Committee: Glycemic Goals and Hypoglycemia-Standards of Care in Diabetes-2024
- Endocrine Society: Evaluation and Management of Adult Hypoglycemic Disorders, Clinical Practice Guideline
- Centers for Disease Control and Prevention: Treatment of Low Blood Sugar \(Hypoglycemia\)
- NHS: Low blood sugar \(hypoglycaemia\)