TEST

Blood sugar test

A blood sugar test measures the amount of glucose in your blood.

WHAT IT MEASURES
Glucose in your blood at the time of testing

SAMPLE
Blood from a vein or finger prick

FASTING NEEDED?
Sometimes, usually for a fasting glucose test

HOW LONG IT TAKES
Minutes; about two hours for a glucose tolerance test

RESULTS IN
Minutes to one day, depending on laboratory and method

USED FOR
Screening, diagnosis, and monitoring of blood sugar problems

MAIN LIMITATION
Meals, illness, and timing can change a single result

Overview

A blood sugar test measures glucose, a sugar your body uses for energy. Glucose enters your blood after eating and is released by your liver between meals.

The test may use blood from a vein or a finger prick. It can be performed after fasting, at a random time, or during an oral glucose tolerance test. Home glucose meters are mainly used for monitoring rather than diagnosing diabetes.

Blood glucose reflects what is happening around the time of testing. In contrast, an HbA1c test estimates your average blood sugar over the previous two to three months.

Why the test is ordered

A blood sugar test may be ordered to:

A fasting test measures glucose after several hours without calories. A random test provides a snapshot without fasting. A glucose tolerance test shows how your body handles a measured glucose drink over time.

- Screen for prediabetes or diabetes
- Investigate symptoms of high or low blood sugar
- Confirm an unexpected result
- Monitor diabetes or its treatment
- Check blood sugar during pregnancy
- Assess glucose during illness or before some procedures

Who should have the test

Testing may be recommended if you have increased thirst, frequent urination, blurred vision, unusual tiredness, or unexplained weight loss. These symptoms can have other causes, so the result must be considered with your overall assessment.

Testing may also be offered if you have factors associated with diabetes, including family history, previous gestational diabetes, polycystic ovary syndrome, cardiovascular disease, or excess body weight. Age and some medicines may also affect the decision.

Blood sugar testing is part of routine pregnancy care, although pregnancy uses different methods and thresholds. People with diabetes may also test at home. How often depends on treatment, health, meals, activity, and the risk of low blood sugar.

How to prepare

Ask which type of test you are having because preparation differs.

For a fasting glucose test, follow the laboratory's instructions. Fasting commonly means no food or caloric drinks for at least eight hours. Plain water is usually allowed. Coffee, tea, juice, alcohol, gum, and sweets may affect the result or mean the sample is not considered fasting.

A random glucose test usually needs no preparation.

For a glucose tolerance test, you will usually fast beforehand and remain at the testing site for at least two hours. Do not deliberately follow a low-carbohydrate diet before the test unless instructed.

Tell the testing team about medicines, supplements, pregnancy, recent illness, and recent surgery. Do not stop any medicine unless the clinician responsible for it tells you to.

What happens during the test

For a laboratory test, a healthcare professional inserts a needle into a vein, usually in your arm, and collects a small tube of blood. This normally takes a few minutes.

For a finger-prick test, a fingertip is cleaned and pricked with a lancet. A drop of blood is placed on a test strip, and the meter displays a result within seconds.

During an oral glucose tolerance test, a fasting sample is taken before you drink a measured glucose solution. Further samples are collected at set times, often including one after two hours. You will usually need to sit quietly and avoid eating, smoking, or exercising.

Understanding your results

Results may be reported as milligrams per decilitre (mg/dL) or millimoles per litre (mmol/L).

Interpretation depends on whether you fasted, when you last ate, pregnancy, the sampling method, symptoms, illness, medicines, and why you were tested. Criteria can also differ by location and laboratory.

For non-pregnant adults, commonly used criteria classify fasting laboratory glucose as:

These are not universal reference ranges. Some international criteria use a different lower boundary for impaired fasting glucose, and pregnancy has separate thresholds.

One result in the diabetes range does not always confirm diabetes. If you do not have clear symptoms, a repeat glucose test or another accepted test is generally needed. Home meter readings should not be used alone to diagnose diabetes.

- Below 100 mg/dL, or 5.6 mmol/L: below the usual prediabetes threshold
- 100 to 125 mg/dL, or 5.6 to 6.9 mmol/L: within the American Diabetes Association prediabetes range
- 126 mg/dL, or 7.0 mmol/L, or higher: within the diabetes range

What affects the results

Blood glucose changes throughout the day. Food and caloric drinks raise it, so accurate fasting information is important. Exercise may lower glucose, although intense activity can temporarily raise it. Illness, infection, pain, poor sleep, surgery, and emotional stress may also increase it.

Corticosteroids like prednisone or hydrocortisone , some antipsychotics like olanzapine or risperidone , certain diuretics like furosemide or hydrochlorothiazide , and other medicines may

raise glucose. Insulin and several diabetes medicines may lower it. Do not stop treatment to change a test result.

Pregnancy, kidney disease, and liver disease can affect glucose regulation or interpretation.

For finger-prick testing, food residue may cause a falsely high reading. Wet fingers, expired or damaged strips, extreme temperatures, poor circulation, or too little blood may also make readings inaccurate.

Accuracy and limitations

Laboratory testing of blood from a vein is more accurate than a home meter and is preferred for diagnosis. However, any glucose result is a snapshot.

A fasting test may miss problems that mainly occur after meals. A glucose tolerance test may detect these but is less convenient and can be affected by illness, activity, preparation, or not finishing the drink.

Home meters have an allowed margin of error. If a result is unexpected, wash and dry your hands, use a new strip, and repeat the test. HbA1c may better show long-term patterns, but pregnancy, kidney disease, iron deficiency, blood loss, transfusion, and some haemoglobin variants can affect it.

Risks and complications

A blood draw may cause brief discomfort, bruising, or light-headedness. Finger pricks can cause short-lived soreness.

The glucose drink may cause nausea, bloating, or dizziness. Serious complications from routine testing are uncommon.

What happens next

A result within the expected range may need only routine follow-up. If it is borderline or does not match your symptoms, a clinician may repeat the test or order fasting glucose, HbA1c, or a glucose tolerance test.

Repeat an unexpected home reading after checking your technique and supplies. Record the result, time, food, activity, symptoms, and medicines for review.

Seek prompt medical advice for repeated very high or low readings, especially if you feel

unwell. Get emergency care for confusion, a seizure, loss of consciousness, severe drowsiness, repeated vomiting, deep or difficult breathing, or inability to drink and keep fluids down. Follow your diabetes emergency plan if you have one.

Common questions

Can I drink coffee before a blood sugar test?

Not before a fasting test unless the testing service permits it. Even black coffee may affect glucose. Plain water is usually safest.

Does the time of day matter?

Yes. Glucose changes with meals, sleep, hormones, activity, and medicines. Testing at consistent times makes trends easier to interpret.

Can I exercise beforehand?

Normal activity is usually acceptable. Avoid unusual or strenuous exercise before a diagnostic test because it may raise or lower glucose. Remain seated during a glucose tolerance test unless told otherwise.

Can I take my medicines before the test?

Follow the instructions provided. Some medicines affect glucose, but stopping them without advice may be unsafe. Bring an up-to-date medicines list.

Why is my home meter different from the laboratory result?

The methods differ, and glucose may change between readings. Unwashed hands, strip problems, temperature, hydration, and poor finger circulation can also affect a meter.

Is blood sugar the same as HbA1c?

No. Blood sugar measures glucose at that moment. HbA1c estimates your average over the previous two to three months.

Sources

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