TEST

Glucose urine test

A glucose urine test checks whether sugar is passing from your blood into your urine.

WHAT IT MEASURES
Glucose, a type of sugar, in urine

SAMPLE
Urine

FASTING NEEDED?
No, unless combined with a fasting blood test

HOW LONG IT TAKES
A few minutes for a spot urine sample

RESULTS IN
Minutes to one day, depending on laboratory

USED FOR
Screening and monitoring alongside more accurate blood tests

MAIN LIMITATION
Misses high blood sugar below the kidney's glucose threshold

Overview

A glucose urine test measures glucose, a type of sugar, in your urine. It may be part of a routine urinalysis, in which a urine sample is checked for several substances.

Your kidneys filter glucose from your blood and usually return most of it to your bloodstream. Glucose begins to pass into urine when the amount in your blood exceeds what your kidneys can reabsorb. This point is called the renal threshold .

A urine glucose test is usually done with a treated test strip called a dipstick. The strip changes colour when glucose is present. Some laboratories can also measure the amount more precisely.

Urine glucose is less useful than blood glucose for diagnosing or monitoring diabetes. A blood test shows your glucose level at a particular time, while HbA1c estimates your average blood glucose over the previous two to three months. Urine results are also strongly affected by how your kidneys handle glucose.

Why the test is ordered

A glucose urine test may be ordered:

The test was once commonly used to monitor diabetes. Blood glucose meters and continuous glucose monitors are more accurate for this purpose and show current blood glucose directly.

A positive urine result does not diagnose diabetes. Blood testing is needed to determine whether your blood glucose is high.

- As one part of a general urine examination
- To investigate thirst, frequent urination or other possible signs of high blood glucose
- To follow up an unexpected urine dipstick result
- To look for glucose loss caused by a kidney tubule problem
- In some pregnancy or medicine-monitoring settings

Who should have the test

You may have this test during a routine urinalysis or when a healthcare professional is investigating possible high blood glucose. It may also be useful when blood glucose is normal but glucose continues to appear in urine, which can suggest that the kidneys are allowing glucose to escape more easily than usual.

If you take a sodium-glucose cotransporter-2 inhibitor, usually called an SGLT2 inhibitor, glucose is expected in your urine. Examples include empagliflozin, dapagliflozin and canagliflozin. These medicines work partly by making the kidneys remove glucose through urine, so urine glucose should not be used to judge how well they are controlling your diabetes.

Urine glucose testing is not a substitute for recommended blood testing during pregnancy or for diagnosing diabetes.

How to prepare

A stand-alone glucose urine test usually does not require fasting. You can generally eat, drink and take your usual medicines unless you have been given different instructions.

Preparation may be different if the urine sample is being collected alongside a fasting blood glucose test. In that situation, follow the fasting instructions provided for the blood test.

Tell the person arranging the test about your medicines and supplements, especially an SGLT2 inhibitor or high-dose vitamin C. Do not stop a prescribed medicine just for this test unless you

have been specifically told to do so.

If you are menstruating, tell the laboratory or clinic. Menstrual blood does not create urine glucose, but it can affect other parts of a urinalysis.

What happens during the test

Most tests use a single fresh urine sample. You will usually be given a clean container and asked to provide a midstream sample.

To collect it:

A dipstick may be tested within minutes at a clinic. If the sample goes to a laboratory, the result may take longer.

Occasionally, a timed collection is requested. This means collecting all your urine over a set period, often to measure how much glucose is lost over time. Follow the collection instructions closely because missing a sample can make the result inaccurate.

- Wash your hands and follow any cleaning instructions provided
- Begin urinating into the toilet
- Move the container into the urine stream without touching your skin
- Collect the requested amount, then finish in the toilet
- Replace the lid and return the sample promptly

Understanding your results

A result may be reported as negative, trace, or positive at increasing levels. A laboratory measurement may instead give a concentration or the total amount collected over time.

A negative result means that the test did not detect glucose. This does not rule out diabetes or a temporary rise in blood glucose. Your blood glucose may be high but still below your kidneys' threshold for releasing glucose into urine.

A positive result means glucose was detected. Possible explanations include:

The result must be considered with blood glucose testing, symptoms, medicines and other urine findings. Reference ranges and interpretation vary by laboratory, age, sex, pregnancy status, medicines and clinical context. There is no single urine glucose cut-off that diagnoses diabetes.

- High blood glucose, including from diabetes or temporary illness
- An SGLT2 inhibitor
- Pregnancy, which can lower the kidney's glucose threshold
- Renal glycosuria, where glucose enters urine despite normal blood glucose
- A kidney tubule disorder affecting glucose reabsorption

What affects the results

Urine glucose can be misleading even when the laboratory performs the test correctly.

Your kidney threshold is especially important. Pregnancy and some inherited or acquired kidney tubule conditions can lower the threshold, producing urine glucose when blood glucose is not high. Older age and reduced kidney function may raise the threshold, so significant high blood glucose can occur without a positive urine test.

Other influences include:

Recent exercise may alter hydration and blood glucose, but ordinary activity is unlikely to invalidate the test. A recent blood transfusion affects HbA1c interpretation more than urine glucose and does not usually alter this test directly.

- SGLT2 inhibitors: Cause genuine urine glucose as part of their intended action
- Vitamin C: Large amounts can cause some dipsticks to miss glucose
- Sample delay: Bacteria and cells may use glucose while urine sits unrefrigerated
- Dilute urine: Heavy fluid intake can reduce the measured concentration
- Timing: Urine reflects glucose accumulated since you last emptied your bladder
- A recent carbohydrate-rich meal: May temporarily raise blood and urine glucose
- Ketones or concentrated urine: Can reduce the response of some test strips
- Cleaning products: Oxidising chemicals in a container can produce a false positive
- Strongly coloured urine: May make a colour-based strip harder to read

Accuracy and limitations

Urine glucose testing can miss high blood glucose. This happens when the blood level has not exceeded your kidney threshold, when the urine is dilute, or when vitamin C or sample handling

interferes with the strip. Because kidney thresholds differ widely, there is no single reliable percentage describing how often the test misses high blood glucose.

The test can also suggest a blood glucose problem when blood glucose is normal. Pregnancy, renal glycosuria, kidney tubule disorders and SGLT2 medicines can all produce this pattern. Contamination by some cleaning chemicals can create a false positive.

Most dipsticks are designed specifically to detect glucose. They may not detect other sugars that can occasionally appear in urine.

For diagnosing diabetes, fasting plasma glucose, HbA1c or an oral glucose tolerance test is more appropriate. For day-to-day diabetes monitoring, a blood glucose meter or continuous glucose monitor gives more useful information.

Risks and complications

Providing a urine sample is painless and has no significant physical risk. The main practical concern is collecting or storing the sample incorrectly, which may require another sample.

What happens next

A negative result may need no further action if the test was routine and there are no other concerns. If symptoms or risk factors suggest high blood glucose, a blood test may still be arranged because urine testing can miss it.

An unexpected positive result is usually followed by blood glucose testing and a review of medicines, pregnancy status and kidney function. Persistent urine glucose with normal blood glucose may lead to further blood and urine tests.

Contact a healthcare professional routinely if you have ongoing thirst, frequent urination, unexplained weight loss or repeated positive urine results.

A positive urine glucose result alone is not usually an emergency. Seek urgent medical help if it occurs with repeated vomiting, severe abdominal pain, deep or rapid breathing, increasing drowsiness, confusion, or an inability to keep fluids down. These symptoms can occur during a serious metabolic problem and need prompt assessment.

Common questions

Can I drink coffee before a glucose urine test?

Usually, yes. A stand-alone urine test does not normally require fasting. Avoid sugar or syrup if you are also having a fasting blood test, and follow the instructions given for that test.

Does the time of day matter?

It can affect the result because urine contains glucose collected since you last emptied your bladder. Use the collection time requested. If no time was specified, a fresh sample is usually acceptable.

Can I exercise beforehand?

Normal activity is generally fine. Strenuous exercise can affect hydration and glucose levels, so mention recent intense exercise if an unexpected result is being investigated.

Does glucose in urine mean I have diabetes?

No. It may occur with high blood glucose, but pregnancy, kidney glucose handling and SGLT2 medicines can also cause it. Diabetes is diagnosed using blood tests rather than urine glucose alone.

Can the test be negative even if my blood sugar is high?

Yes. Your blood glucose may not have crossed your kidney threshold, or the strip may be affected by dilute urine, vitamin C or delayed testing.

Can I test urine glucose at home?

Home strips are available, but they are less useful than blood glucose testing and continuous monitoring. If you have been asked to test at home, use the specified strips, check their expiry date and follow the reading time exactly.

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