TEST

Calcium - urine

A urine calcium test measures how much calcium leaves your body in urine.

WHAT IT MEASURES
Calcium released into urine over 24 hours or one sample

SAMPLE
Urine

FASTING NEEDED?
No, unless another test requires it

HOW LONG IT TAKES
24 hours for timed collection; minutes for spot sample

RESULTS IN
Usually 1-3 days; timing varies by laboratory

USED FOR
Diagnosing and monitoring kidney stones and calcium disorders

MAIN LIMITATION
Missing urine can make a 24-hour result falsely low

Overview

A urine calcium test measures how much calcium passes from your body into your urine. Calcium helps build bones and supports muscles, nerves, and the heart.

Most tests use all the urine produced over 24 hours, giving a better picture of daily calcium loss than a single sample. A spot urine test may sometimes be used instead, often with urine creatinine to partly account for urine concentration.

Urine calcium is different from blood calcium. Blood calcium may remain within the laboratory's range even when urine calcium is high or low, so the tests are often interpreted together.

Why the test is ordered

The test can help investigate abnormal calcium levels, kidney stones, or conditions affecting calcium balance. It may also monitor treatment intended to reduce urinary calcium.

Reasons for ordering it include:

The parathyroid glands in the neck help control calcium. In someone with high blood calcium, low urine calcium may support an inherited condition called familial hypocalciuric hypercalcaemia. The urine result cannot establish this diagnosis by itself.

- Investigating calcium-containing kidney stones
- Checking a high or low blood calcium result
- Assessing parathyroid gland function
- Distinguishing between causes of high blood calcium
- Looking for calcium loss that may affect bones
- Monitoring dietary changes or medicines used for stone prevention

Who should have the test

You may be offered testing after a kidney stone, especially if stones have returned or analysis shows that a stone contains calcium.

It may also be appropriate when blood tests show abnormal calcium or other findings suggest a parathyroid, kidney, vitamin D, or bone-related problem.

Testing is not routinely needed for everyone. Its usefulness depends on your medical history, symptoms, medicines, other results, and the question being investigated.

How to prepare

Most urine calcium tests do not require fasting. If blood tests are being collected at the same time, follow their preparation instructions.

Unless told otherwise, eat and drink normally. A sudden change in calcium, salt, protein, caffeine, or fluid intake can make the result less representative of your usual calcium loss.

Tell the healthcare team about all medicines, vitamins, antacids, and supplements. Calcium, vitamin D, and some water tablets like furosemide or hydrochlorothiazide , or diuretics, can affect the result. Do not stop medicines or supplements unless the clinician who ordered the test tells you to, as stopping them may be unsafe.

For a 24-hour collection, ask how to store the container. It may need refrigeration or a cool place. Some containers contain a preservative; do not empty it out or touch it.

What happens during the test

For a 24-hour test, choose a day when you can collect every urine sample.

When you wake, urinate into the toilet and note the time. Do not collect this first sample. From then on, collect all urine for the next 24 hours, including overnight. At the same time the following morning, collect your final sample.

You may receive a smaller clean container for urinating into before transferring the urine to the main container. Avoid contamination with toilet paper, stool, or menstrual blood.

If you miss a sample, tell the laboratory or healthcare team. You may need to restart because missing urine can make the calcium result appear lower than it is.

For a spot test, you provide one urine sample in a sterile container, usually during a clinic or laboratory visit.

Understanding your results

A 24-hour report may show the total calcium passed during the collection. A spot sample may report calcium alone or as a calcium-to-creatinine ratio.

There is no single suitable range for everyone. Interpretation varies by laboratory, age, sex, pregnancy status, medicines, diet, kidney function, and clinical context. Use the range printed on your report.

A higher result means more calcium was present in the collected urine. Possible explanations include high salt or calcium intake, medicines or supplements, increased parathyroid activity, or other conditions affecting calcium handling. Some people have high urinary calcium without an identifiable underlying disorder.

A lower result can occur with low calcium intake, reduced gut absorption, low vitamin D, reduced kidney function, certain medicines, or an incomplete collection.

The result is not interpreted alone. Blood calcium, parathyroid hormone, vitamin D, kidney function, urine creatinine, diet, and kidney stone analysis may help explain it.

What affects the results

Even an accurate laboratory measurement can be misleading if the sample does not represent your usual urine calcium.

Important influences include:

Creatinine measured in the same collection can help assess whether a 24-hour sample appears complete, although it is not a perfect check.

Menstrual blood can contaminate the sample. If you are menstruating, ask whether to delay the collection or follow specific instructions.

- Missing urine or collecting for more or less than 24 hours
- Major changes in fluid, calcium, salt, or animal protein intake
- Calcium, vitamin D, or antacid supplements
- Thiazide diuretics, which commonly lower urinary calcium
- Loop diuretics, which may increase urinary calcium
- Kidney function and hydration
- Age, sex, body size, pregnancy, and muscle mass
- Recent illness, vomiting, diarrhoea, or prolonged bed rest

Accuracy and limitations

Laboratories can accurately measure calcium in a properly collected sample. The main source of error is often the collection, particularly missed urine.

Urinary calcium varies from day to day, so one collection may not reflect your usual level. If a result is unexpected or treatment depends on it, another 24-hour collection may be useful.

A spot calcium-to-creatinine ratio is convenient but does not always match total daily calcium loss. A 24-hour sample is generally more informative when assessing recurrent kidney stones.

The test cannot identify the cause of an abnormal result by itself. A high value does not prove a parathyroid disorder, and a low value does not confirm an inherited condition. Reduced kidney function, vitamin D deficiency, low calcium intake, and thiazide use can complicate interpretation.

Risks and complications

Providing a urine sample is painless and has no direct medical risk. The main difficulties are spills and collecting every sample correctly.

If the container contains a chemical preservative, avoid skin or eye contact. Follow the laboratory's instructions if contact or a spill occurs.

What happens next

A result within the laboratory's expected range may need no further action, although it will still be considered with blood tests and kidney stone risk factors.

An unexpected result may lead to another collection, a review of diet and medicines, or blood tests for calcium, parathyroid hormone, vitamin D, and kidney function. Imaging or stone analysis may also be appropriate.

Do not change your calcium intake or stop prescribed medicines based only on the result.

The result itself is not an emergency. Seek urgent medical care if you have severe side or back pain with fever or chills, cannot pass urine, or are repeatedly vomiting. Call emergency services for collapse, severe confusion, or another sudden life-threatening symptom.

Common questions

Can I drink coffee before or during the test?

Usually, yes. Keep caffeine intake close to normal unless told otherwise. An unusually large amount may affect urine volume and short-term calcium loss.

Does the time of day matter?

Not for a complete 24-hour collection because it includes daytime and overnight urine. For a spot test, follow the timing instructions provided.

Can I exercise during the collection?

Normal activity is usually fine. Avoid unusually strenuous exercise because changes in sweating and hydration may make the collection less representative.

Do I need to stop calcium or vitamin D supplements?

Not unless specifically told to. The clinician may want to assess calcium loss while you take them. Confirm the plan before collecting.

What if I forget one urine sample?

Record what happened and contact the laboratory. Even one missed sample can cause a falsely low result, so restarting may be necessary.

Can I collect urine while menstruating?

Menstrual blood may contaminate the sample. Ask whether to delay the test or follow additional collection instructions.

Sources

- MedlinePlus Medical Test: Calcium in Urine Test
- Mayo Clinic Laboratories: Calcium, 24 Hour, Urine
- American Urological Association: Medical Management of Kidney Stones
- Endotext: Approach to Hypercalcemia
- Journal of Bone and Mineral Research: Evaluation and Management of Primary Hyperparathyroidism, Fifth International Workshop Guidelines