TEST

Creatinine urine test

A creatinine urine test measures creatinine in urine to support kidney assessment

WHAT IT MEASURES
Creatinine released into urine

SAMPLE
Urine

FASTING NEEDED?
No, unless other tests require it

HOW LONG IT TAKES
Minutes for spot urine; 24 hours for timed collection

RESULTS IN
Usually 1-2 days, varying by laboratory

USED FOR
Kidney assessment and checking timed urine collections

MAIN LIMITATION
Incomplete collection can make results misleading

Overview

A creatinine urine test measures creatinine, a waste product made during normal muscle activity. The kidneys filter creatinine from the blood and release it into urine.

The test may use a single spot sample or all the urine you produce over 24 hours. A spot test usually measures concentration. A timed collection estimates how much creatinine leaves your body during that period.

Urine creatinine may be combined with:

Creatinine clearance estimates how much blood the kidneys filter each minute. It is related to, but not the same as, estimated glomerular filtration rate (eGFR), which is usually calculated from a blood test.

- Urine albumin or protein, to adjust for urine concentration
- Blood creatinine, to calculate creatinine clearance
- Other substances measured in a 24-hour collection

Why the test is ordered

A spot urine creatinine measurement is commonly included with a urine albumin or protein test. Reporting albumin or protein as a ratio to creatinine reduces the effect of how diluted or concentrated the urine is.

A 24-hour urine creatinine test may be ordered to:

Blood-based estimates may be less dependable in people with unusually high or low muscle mass. Additional tests may then be appropriate, although a 24-hour creatinine clearance is not always the best alternative.

Creatinine clearance can also inform decisions about some medicines. Medicine-specific dosing methods vary, so eGFR and creatinine clearance should not automatically be treated as interchangeable.

- Estimate kidney filtration through creatinine clearance
- Check whether a timed collection was likely complete
- Help interpret other substances in the collection
- Investigate a blood-based kidney estimate that may be unreliable

Who should have the test

You may have this test when urine creatinine is needed to calculate an albumin-to-creatinine or protein-to-creatinine ratio.

A timed test may be considered when your healthcare team needs more information about kidney filtration or is measuring substances such as sodium, calcium or protein over a full day. Creatinine can help indicate whether the collection is complete.

Urine creatinine alone is not a general screening test for kidney disease. Assessment usually combines blood creatinine and eGFR with a urine albumin-to-creatinine ratio.

How to prepare

A spot test usually requires no fasting. Drink your usual amount unless instructed otherwise; drinking much more than normal just before the test can dilute the sample.

Tell the healthcare professional about medicines, supplements and creatine products you use. Do not stop prescribed medicine unless told to do so.

For a 24-hour collection, obtain the correct container and written instructions before starting. Ask how to store it; many collections must be refrigerated or kept cool.

Choose a day when you can collect every sample. Missing even one urination can make the daily amount and creatinine clearance appear too low.

What happens during the test

For a spot test, you urinate into a clean container. For a midstream sample, begin urinating into the toilet, collect urine in the container, then finish in the toilet.

A 24-hour collection usually involves:

Tell the laboratory if you miss a sample, spill urine or collect for too long. You may need to restart.

A blood creatinine test is also required to calculate creatinine clearance. It is usually taken during or close to the urine collection period.

- Urinating into the toilet on the first morning and recording the time
- Collecting all urine for the next 24 hours
- Collecting one final sample at the same time the following morning
- Storing and returning the container as instructed

Understanding your results

Results may be reported as a urine concentration, total amount over 24 hours, creatinine clearance or part of a ratio. These measurements use different units and cannot be compared directly.

There is no single suitable range for everyone. Interpretation depends on the laboratory, age, sex, pregnancy, medicines, muscle mass, body size and sample type.

A high spot concentration may simply mean the urine is concentrated, while a low concentration may reflect dilute urine. Neither result alone shows how well the kidneys work.

For a 24-hour collection, an unexpectedly low amount may result from missed samples, low muscle mass or reduced creatinine removal. A high amount may reflect greater muscle mass, diet, supplements or collecting beyond the planned period.

A lower creatinine clearance can suggest reduced kidney filtration, but it must be considered with eGFR, other tests and your health history.

What affects the results

Collection errors are the main source of misleading timed results. Missing urine makes the total and clearance appear lower. Collecting for too long, including urine from before the start or recording the wrong duration can make them appear higher.

Other influences include:

Trimethoprim and cimetidine can affect creatinine secretion and clearance calculations without causing an equivalent change in true kidney filtration. Tell the healthcare professional about all medicines you take.

- Hydration: Changes spot urine concentration
- Muscle mass: More muscle generally produces more creatinine
- Strenuous exercise: Can temporarily increase creatinine production
- Meat or creatine supplements: May increase measurements
- Kidney function: Changes blood and urine creatinine relationships
- Age, sex and pregnancy: Affect creatinine production or filtration
- Medicines: May alter creatinine handling or laboratory measurement
- Timing: Urine concentration varies during the day

Accuracy and limitations

Laboratories can measure creatinine precisely, but collection timing, completeness and normal biological variation may affect whether the result is meaningful.

A normal urine creatinine result does not rule out kidney disease. Blood eGFR and urine albumin-to-creatinine ratio are generally more useful for detecting kidney problems.

Dilute or concentrated urine, unusual muscle mass, recent exercise or an incomplete collection can produce an abnormal result without kidney disease.

Creatinine clearance can overestimate true filtration because the kidneys filter creatinine and also release a small additional amount into urine. If greater accuracy is needed, a specialist filtration test may be used.

An unexpected spot albumin-to-creatinine or protein-to-creatinine ratio may be repeated, often using a first-morning sample.

Risks and complications

Providing urine has no significant physical risk, although a 24-hour collection can be inconvenient. If blood is also taken, you may have brief discomfort, a small bruise or feel faint.

What happens next

Your healthcare professional will interpret the result with blood creatinine, eGFR and urine albumin or protein measurements. An unexpected timed result may lead to a repeat collection, particularly if urine may have been missed.

Follow-up may include repeating a urine ratio, reviewing medicines and supplements, checking blood pressure or arranging another kidney test. An abnormal urine creatinine value alone does not establish a diagnosis.

Do not wait for a routine result if you develop a sudden major reduction in urine, visible blood in the urine, severe side or back pain, or rapidly worsening swelling. Seek urgent medical advice. Severe breathing difficulty, collapse or new confusion requires emergency care.

Common questions

Can I drink coffee before a urine creatinine test?

Usually, yes. Coffee may change urine volume, so follow any special instructions for a timed collection or other tests.

Do I need to fast?

Usually not, unless other blood or urine tests require it. Follow the instructions for the complete set of tests.

Does the time of day matter?

A spot concentration changes with fluid intake and time of day. A first-morning sample may be requested. For a timed collection, accurate start and finish times are essential.

Can I exercise beforehand?

Normal activity is usually acceptable. Avoid strenuous exercise if your healthcare professional or laboratory asks you to.

What if I miss part of my 24-hour collection?

Tell the laboratory or healthcare professional. The collection may need to be restarted

because missing urine can falsely lower the result.

Can I collect the sample during my period?

You may be able to, but menstrual blood can contaminate urine and affect other measurements. Ask whether to delay the test or follow a specific collection method.

Sources

- MedlinePlus Medical Test: Creatinine Test , US National Library of Medicine
- National Institute of Diabetes and Digestive and Kidney Diseases: Assess Urine Albumin , US National Institutes of Health
- KDIGO 2024 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease , Kidney Disease: Improving Global Outcomes
- National Kidney Foundation: Creatinine , patient and professional kidney health information
- Mann SJ, Gerber LM. "Addressing the problem of inaccuracy of measured 24-hour urine collections due to incomplete collection." Journal of Clinical Hypertension . 2019;21(11):1626-1634