TEST

Urea nitrogen urine test

A urine test that measures nitrogen from urea to assess protein intake and breakdown.

WHAT IT MEASURES
Nitrogen in urine carried in the waste product urea

SAMPLE
Urine, usually collected over 24 hours

FASTING NEEDED?
No, unless another test requires it

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

RESULTS IN
Usually a few days; timing varies by laboratory

USED FOR
Monitoring protein intake, breakdown, and nutritional treatment

MAIN LIMITATION
Missed or extra urine can distort timed results

Overview

A urea nitrogen urine test measures the amount of nitrogen in your urine that comes from urea. It is often called a urine urea nitrogen test, or UUN test.

Urea is a waste product made by your liver when your body processes protein. Your kidneys remove most urea from your blood and pass it into your urine.

The test is usually performed on all the urine you produce over 24 hours. A single, or "spot," urine sample may sometimes be used, but it gives less information about your total daily urea loss.

Urine urea nitrogen is not the same as blood urea nitrogen, or BUN. BUN measures urea nitrogen circulating in your blood. The urine test measures what your kidneys have removed.

Why the test is ordered

The test is mainly used to understand protein intake and protein breakdown. It is not a routine screening test for the general population.

A healthcare professional may order it to:

Nitrogen balance compares nitrogen taken in through protein with nitrogen lost from the body. A negative balance means losses appear greater than intake. A positive balance means intake appears greater than losses.

This calculation is only an estimate. Urea nitrogen does not include every form of nitrogen lost through urine, stool, skin, wounds, or medical drains.

- estimate how much protein your body is using or losing
- help calculate nitrogen balance during nutrition support
- monitor a prescribed protein intake
- assess major changes in protein breakdown after illness, injury, or surgery
- support nutritional assessment in some people with kidney disease

Who should have the test

You may need this test if your healthcare team is closely monitoring your nutrition or protein needs. This is more common during hospital treatment, tube feeding, intravenous nutrition, severe illness, or recovery from major injury or surgery.

It may also be used under specialist supervision in kidney disease. In that setting, urine urea can help estimate dietary protein intake when interpreted with your diet, kidney function, and other results.

The test is not usually the best first test for finding kidney damage. Blood creatinine and estimated glomerular filtration rate, or eGFR, help assess kidney filtration. A urine albumin-to-creatinine ratio is generally more useful for detecting abnormal protein leakage from the kidneys.

How to prepare

Most people do not need to fast. Continue your usual diet unless you have been given a specific nutrition plan.

Do not deliberately eat more or less protein before the test. A sudden dietary change can make the result less representative of your normal intake.

Tell your healthcare team about medicines and supplements you take. Do not stop prescribed medicines unless you have been specifically instructed to do so.

For a 24-hour collection, you will usually receive a large container and written instructions. The container may need to be refrigerated or kept in a cool place. Follow the storage directions from the laboratory, especially if the container contains a preservative.

Plan the collection for a day when you can collect every urine sample. Ask for advice before starting if you have diarrhea, urinary incontinence, or another issue that may make a complete collection difficult.

What happens during the test

For a 24-hour collection, you usually begin by urinating into the toilet and recording the time. This first urine is not collected.

After that, collect all urine for the next 24 hours. At the same time the following day, urinate once more and add that final sample to the container.

Avoid getting stool, toilet paper, or menstrual blood in the sample. Use a separate clean collection cup if that makes transferring urine into the main container easier.

If you miss a sample, collect beyond the finishing time, or accidentally spill urine, contact the laboratory. You may need to restart because the total amount is needed for an accurate result.

A spot test requires only one urine sample. It takes a few minutes, but the timing and your recent fluid intake can affect its concentration.

Understanding your results

A 24-hour result is commonly reported as the total amount of urea nitrogen passed during the collection period. A spot result may be reported as a concentration or compared with another urine measurement.

There is no single healthy result that applies to everyone. Ranges and interpretation vary by laboratory, age, sex, pregnancy status, medicines, diet, kidney function, and clinical context.

A higher result may reflect a high-protein diet or increased protein breakdown. Protein breakdown can rise during fever, infection, major injury, burns, surgery, or treatment with certain medicines.

A lower result may reflect lower protein intake, incomplete urine collection, reduced kidney excretion, or reduced urea production by the liver. It may also occur when the body is building new tissue, such as during growth or pregnancy.

A high or low result does not identify the cause by itself. It needs to be interpreted with your

food intake, medical situation, blood tests, and whether the collection was complete.

What affects the results

Collection problems are the most important source of misleading 24-hour results. Missing even one urine sample can make the total appear too low. Collecting for longer than instructed or adding urine from before the start time can make it appear too high.

Other influences include:

Bleeding into the digestive tract can also increase urea production because the body digests the blood as protein. Losses through diarrhea, wounds, burns, or drains can make a nitrogen-balance calculation less reliable because the urine test does not measure those losses.

- Protein intake: Meat, fish, eggs, dairy products, and plant proteins can raise urea production
- Recent illness or injury: Fever, infection, surgery, burns, or trauma may increase protein breakdown
- Kidney function: Reduced filtration can change how much urea reaches the urine
- Liver function: The liver makes urea, so reduced production can lower the result
- Hydration: Fluid intake strongly affects a spot urine concentration, although it has less effect on a complete daily total
- Medicines: Corticosteroids and some other medicines can alter protein breakdown
- Dialysis: Dialysis removes urea and changes how urine results should be interpreted
- Pregnancy and growth: Protein needs and tissue building differ during these periods
- Unusual exercise: Prolonged or strenuous exercise may temporarily alter protein metabolism

Accuracy and limitations

A correctly collected 24-hour sample usually gives a better estimate of daily urea nitrogen loss than a spot sample. However, 24-hour collections are often incomplete, and the laboratory cannot always tell that urine was missed.

This test does not have one standard rate for missed cases or false alarms because it does not give a simple yes-or-no diagnosis. A high result may correctly show increased urea loss but

cannot reliably distinguish a high-protein diet from increased protein breakdown. A low result may appear to show low intake when the true problem is an incomplete collection.

Urine urea nitrogen accounts for much, but not all, of the nitrogen your body loses. Nitrogen-balance formulas add an estimated amount for other losses. That estimate becomes less accurate with severe diarrhea, large wounds, burns, fistulas, or surgical drains.

Results are also less dependable when your condition or protein intake is changing quickly. A dietary assessment may be better for understanding what you eat. Blood creatinine, eGFR, and urine albumin are better tests for many questions about kidney function or kidney damage.

Risks and complications

Providing a urine sample does not usually cause physical complications. The main difficulties are inconvenience, accidental spills, contamination, and having to repeat an incomplete collection.

What happens next

Your result will be reviewed with your diet, fluid intake, kidney and liver function, medicines, and reason for testing. If the collection may have been incomplete, repeating it is often more useful than acting on the number alone.

Routine follow-up may involve adjusting a nutrition plan or repeating urine and blood tests. Do not make major changes to protein intake based only on this result.

The test result itself rarely requires emergency action. Seek urgent medical advice if you are producing very little urine, cannot pass urine, or develop new swelling or breathlessness. Severe breathing difficulty, marked confusion, or unresponsiveness requires emergency care regardless of the urine test result.

Common questions

Can I drink coffee before or during the test?

Usually, yes. Keep your intake close to normal unless instructed otherwise. Coffee can increase urine volume in some people, which may affect a spot sample more than a complete 24-hour total.

Do I need to fast?

Usually not. If the urine test is being done with fasting blood tests, follow the instructions for those tests.

Does the time of day matter?

For a 24-hour test, the exact starting hour matters less than collecting for the full period. Record the start and finish times carefully. For a spot sample, use the time requested by the laboratory.

Can I exercise beforehand?

Usual light or moderate activity is generally acceptable. Avoid an unusually strenuous workout unless your healthcare team wants the test to reflect that activity, because intense exercise can change protein metabolism.

What if I miss one urine sample?

Contact the laboratory. Even one missed sample can lower the measured total, so you may be asked to restart the collection.

Should I stop my medicines or supplements?

No, not unless you have specific instructions. Provide a current list, particularly if you take corticosteroids like prednisone or hydrocortisone , nutrition supplements, or medicines that affect kidney function.

Sources

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