TEST

Urine 24-hour volume

This test measures the total amount of urine you pass over 24 hours.

WHAT IT MEASURES
Total urine passed during one complete 24-hour period

SAMPLE
Urine collected over 24 hours

FASTING NEEDED?
No, unless another ordered test requires it

HOW LONG IT TAKES
24 hours, plus container pickup and return

RESULTS IN
Usually one to two days, varying by laboratory

USED FOR
Investigating and monitoring urine output and fluid balance

MAIN LIMITATION
Missed urine makes the measured volume falsely low

Overview

A urine 24-hour volume test measures all the urine you produce during one complete day and night. You collect every urination in a special container, which is then returned to a laboratory.

The result is usually reported in millilitres per 24 hours. One litre equals 1,000 millilitres.

This test measures urine volume, not how often you use the toilet. Someone can urinate frequently but pass only small amounts each time. That is different from producing an unusually large total volume.

Urine volume is often recorded as part of a broader 24-hour urine test. The same collection may be tested for protein, creatinine, calcium, sodium, hormones or other substances. Those measurements answer different questions from urine volume alone.

Why the test is ordered

Your healthcare professional may order this test to check whether your total urine production is higher or lower than expected for your situation.

It may help investigate:

Urine volume alone usually cannot identify the cause of a change. It is interpreted with your fluid intake, symptoms, medicines and other test results.

- Passing large amounts of urine, including during the night
- Frequent urination when it is unclear whether the total volume is high
- Changes in fluid balance or hydration
- Certain kidney, hormone or metabolic conditions
- Whether a 24-hour urine collection for another substance was complete

Who should have the test

There is no need for most people to measure their urine for 24 hours. The test is generally used when symptoms, examination findings or other results suggest that a timed measurement would be useful.

You may be asked to do it if you report producing a large amount of urine, waking repeatedly to urinate or passing much less urine than usual. It may also be used when monitoring a known kidney or hormone condition.

Some people are asked to complete the collection because another test needs a full day's urine. In that situation, the volume helps the laboratory calculate how much of the tested substance was passed over 24 hours.

How to prepare

The laboratory or clinic will give you a collection container. You may also receive a smaller jug, urine "hat" or other device to help transfer urine without spilling it.

Unless you are told otherwise, follow your usual diet and drink your usual amount of fluid. Do not deliberately drink extra water or restrict fluids to change the result.

Fasting is not normally needed for urine volume alone. However, another test ordered with it may have special instructions.

Tell the ordering healthcare professional about prescription medicines, non-prescription medicines and supplements. Water tablets like furosemide or hydrochlorothiazide , also called diuretics, can increase urine production. Do not stop any medicine unless you have been specifically told to do so.

Ask how the container should be stored. Many collections must be kept refrigerated or in a cool place. Some containers used for other urine measurements contain a preservative. Do not empty or touch it.

Choose a day when you can collect every urination. A typical working day may give a more representative result than a day with unusual travel, exercise or fluid intake.

What happens during the test

Start at the time given by the laboratory, often after waking in the morning.

Urinate into the toilet at the start time. Do not collect this first urine. Write down the exact time.

After that, collect every drop of urine for the next 24 hours. This includes urine passed during bowel movements and overnight. Use the smaller collection device if one was provided, then carefully transfer the urine to the main container.

At exactly the same time the next day, urinate one final time and add that urine to the container. This completes the collection.

Keep the container stored as instructed and return it promptly. If you miss a urination, spill some urine or collect for the wrong length of time, tell the laboratory. You may need to start again with a new container.

Understanding your results

The result shows the total volume collected over 24 hours. There is no single ideal volume for everyone because urine production changes with fluid intake, sweating, diet, medicines and health conditions.

Reference ranges and interpretation vary by laboratory, age, sex, pregnancy status, medicines and clinical context. Your result should also be compared with how much you drank and whether the collection was complete.

A high volume can occur after drinking more fluid or taking a diuretic. It can also occur when the body has difficulty controlling blood sugar, concentrating urine or regulating water balance. The result does not show which explanation applies.

A low volume may reflect low fluid intake, fluid loss through sweating, vomiting or diarrhoea, reduced kidney filtration, or difficulty emptying the bladder. An incomplete collection can produce the same result.

The ordering healthcare professional may focus on changes over time rather than one isolated number.

What affects the results

The most important source of error is an incomplete collection. Missing even one urination makes the reported volume lower than the amount your body actually produced.

Other factors include:

Menstrual blood or stool may contaminate tests performed on the same sample, although they do not directly change the urine volume. Contact the laboratory if contamination occurs.

- Starting late, finishing early or collecting for longer than 24 hours
- Spilling urine or accidentally passing urine into the toilet
- Drinking much more or less than usual
- Coffee, tea, alcohol and other drinks that can alter urine production
- Diuretics and medicines that affect blood sugar, kidneys or fluid balance
- Intravenous fluids given during the collection
- Heavy exercise, hot weather, fever or sweating
- Vomiting or diarrhoea
- Pregnancy and age-related changes in kidney water handling
- Poor kidney function or difficulty emptying the bladder
- Incorrect storage or failure to return the container promptly

Accuracy and limitations

If every urination is collected for exactly 24 hours, volume can be measured directly and accurately. Most inaccurate results come from collection problems rather than the laboratory's measurement.

There is no standard rate for how often this test "misses" a condition or incorrectly suggests one. It does not give a yes-or-no diagnosis. A falsely low result commonly follows missed urine, while collecting for too long or adding extra liquid can make the result falsely high.

One day may not represent your usual pattern. Fluid intake, activity, weather and symptoms can change from day to day. The test may therefore miss an intermittent problem or make an

unusual day appear typical.

A bladder diary may be more useful when the main concern is urgency, leakage, frequent small urinations or waking at night. Blood glucose, kidney blood tests, urine concentration tests or hormone tests may be needed to investigate the cause of an abnormal volume. In hospital, a catheter and collection bag may be used when urine output must be monitored closely over shorter periods.

Risks and complications

Collecting urine does not involve needles, radiation or an internal procedure. There are no direct physical risks from producing the sample.

Spills and contamination are the main practical problems. Wash your hands after handling the container, keep it away from food and children, and follow any safety instructions if the container contains a preservative.

What happens next

If the result fits your fluid intake and clinical situation, no further testing may be needed. If it is unexpected, the first step may be to check whether the collection was complete or repeat it on another day.

Further assessment may include a fluid and urination diary, blood tests, a urine concentration test or measurement of specific substances in urine. The choice depends on why the test was ordered.

Arrange routine follow-up if your urine volume has changed without an obvious reason, particularly if the change continues or is associated with increased thirst, nighttime urination or swelling.

Seek urgent medical care if you cannot pass urine and have a painful, swollen lower abdomen. Very little or no urine accompanied by fainting, confusion, severe dehydration, breathing difficulty or rapidly worsening illness also needs urgent assessment.

Common questions

Can I drink coffee during a 24-hour urine collection?

Usually, yes. Keep your intake close to normal unless you were given different instructions.

Coffee can temporarily increase urine production, so note any amount that is unusual for you.

Do I need to fast?

Not for urine volume alone. You may need to fast if the collection is being combined with another blood or urine test that requires it.

Does the time of day matter?

The exact starting hour matters less than collecting for a complete 24 hours. Starting after you wake is often easiest. Follow the laboratory's specified start and finish times.

Can I exercise beforehand or during the collection?

Normal activity is usually acceptable. Unusually strenuous exercise can change fluid intake, sweating and urine production, making the day less representative.

What if I forget one sample?

Tell the laboratory. Do not hide the mistake or add water to replace the missed urine. In many cases, you will need to restart with a clean container.

Can I collect urine while having my period?

The volume can still be measured, but menstrual blood may affect other tests performed on the sample. Ask the laboratory whether to continue, delay or use specific precautions.

Sources

- MedlinePlus Medical Encyclopedia, U.S. National Library of Medicine. "24-Hour Urine Collection."
- UCSF Health. "Urine 24-Hour Volume," Medical Tests.
- Merck Manual Professional Edition. "Polyuria."
- National Institute of Diabetes and Digestive and Kidney Diseases. "Diabetes Insipidus."
- Alberta Health Services. "24-Hour Urine Collection: Care Instructions."