TEST

# Electrolytes - urine

A urine test that measures sodium, potassium, and chloride excreted by your kidneys.

**WHAT IT MEASURES**
Sodium, potassium, and chloride released into urine

**SAMPLE**
Urine

**FASTING NEEDED?**
No, unless another test requires fasting

**HOW LONG IT TAKES**
Minutes for spot urine; one day for 24-hour collection

**RESULTS IN**
Usually 1-2 days, depending on the laboratory

**USED FOR**
Diagnosis and monitoring of fluid and kidney-related problems

**MAIN LIMITATION**
Hydration and incomplete 24-hour collection can mislead

## Overview

A urine electrolytes test measures minerals that your kidneys release into urine, usually sodium, potassium, and chloride. These electrolytes help regulate fluid balance, blood pressure, nerve and muscle activity, and the body's acid balance.

The test may use a single spot urine sample or all the urine passed over 24 hours. A spot sample shows electrolyte excretion at one moment, while a 24-hour collection estimates the total amount excreted during a full day.

Results are usually interpreted with blood electrolyte levels, kidney function, urine concentration, medicines, and your current health. A urine result alone rarely identifies the cause of an abnormal blood result.

## Why the test is ordered

The test helps show how your kidneys are responding to changes in fluid or electrolyte balance. It may be ordered after a blood test finds an unusual sodium, potassium, chloride, or

bicarbonate level.

Reasons for testing include:

Urine chloride can help investigate metabolic alkalosis , when the blood is more alkaline than expected. Urine sodium may show whether the kidneys are conserving salt, while urine potassium may help distinguish kidney losses from losses through the digestive system. These patterns are not diagnoses by themselves.

- Investigating low or high blood sodium
- Checking whether potassium is being lost through the kidneys
- Assessing dehydration, fluid overload, or kidney salt handling
- Investigating an acid-base problem
- Monitoring electrolyte excretion during treatment
- Estimating sodium intake using a 24-hour collection

## Who should have the test

You may be offered testing if blood results, symptoms, or your medical history suggest a fluid, kidney, adrenal, or electrolyte problem.

It may also be used if you take medicines that affect salt and water balance, particularly diuretics, or water tablets like furosemide or hydrochlorothiazide . Results must be interpreted in relation to when you took the medicine.

Urine electrolyte testing is not usually used for routine screening without a relevant clinical reason. The clinician will choose a spot or 24-hour sample based on the question being investigated.

## How to prepare

Most spot urine electrolyte tests do not require fasting. Eat and drink normally unless you receive different instructions.

Tell the clinician or laboratory about prescription and non-prescription medicines, vitamins, electrolyte products, and supplements. Do not stop any medicine unless the clinician responsible for it tells you to do so.

For a 24-hour collection, ask whether you should follow your usual diet. Major changes in salt or fluid intake can make the result less representative.

The laboratory should provide a container and written instructions. Check whether it needs refrigeration or cool storage. Some containers include a preservative; do not empty or touch it.

## What happens during the test

For a spot test, you urinate into a sterile container. You may be asked for a midstream sample: begin urinating into the toilet, collect the middle portion, then finish in the toilet.

For a 24-hour collection:

If you miss a sample, spill urine, or collect for the wrong length of time, contact the laboratory. You may need to restart because the result could be inaccurate.

A blood sample may also be taken so blood and urine measurements can be compared.

- Choose a start time, empty your bladder into the toilet, and record the time.
- Collect every subsequent urination for the next 24 hours.
- At the same time the following day, urinate into the container one final time.
- Store and return the container as instructed.

## Understanding your results

Results may be reported as the concentration in a spot sample or the total amount excreted over 24 hours. Units and reference ranges vary between collection methods and laboratories.

There is no single normal range for everyone. Interpretation depends on factors including diet, hydration, medicines, kidney function, age, pregnancy, and the clinical situation.

Low urine sodium may occur when the kidneys are conserving salt because circulating fluid volume is reduced. Higher levels may reflect recent salt intake, medicines, impaired kidney handling, or hormonal and fluid-balance changes.

Urine potassium indicates whether potassium is being lost through the kidneys. Its meaning depends on the blood potassium level: the same urine result may be appropriate when blood potassium is high but inappropriate when it is low.

Urine chloride often follows sodium but may differ in some acid-base disorders. Clinicians consider it alongside blood bicarbonate, vomiting or other digestive losses, medicines, and fluid status.

They may also calculate a urine-to-blood ratio or fractional excretion , which requires paired blood and urine samples.

## What affects the results

Hydration can substantially affect spot samples. Drinking a large amount can dilute urine, while fluid restriction or heavy sweating can concentrate it. Urine creatinine or osmolality may help show how concentrated the sample is.

Recent food intake also matters. Salty meals can increase urine sodium and chloride, while potassium-rich foods, supplements, salt substitutes, and electrolyte drinks can affect potassium.

Other influences include:

A single 24-hour collection may not reflect your usual intake if that day was unusual.

- Diuretics and other medicines
- Vomiting, diarrhoea, fever, or heavy sweating
- Strenuous exercise
- Pregnancy or age-related kidney changes
- Kidney or hormonal conditions
- Intravenous fluids
- An incomplete or incorrectly timed collection

## Accuracy and limitations

Laboratories can accurately measure electrolytes in a properly collected sample. The main limitations are hydration, timing, medicines, and collection errors.

A spot sample may miss changes during the day or appear high or low because the urine is concentrated or dilute. A 24-hour sample is more representative only if every urination is collected. Missing urine can produce a falsely low result, while collecting beyond 24 hours can produce a falsely high result.

Urine sodium may not reliably reflect fluid status in people taking diuretics or with kidney disease, hormonal changes, or recent intravenous fluids. Blood tests, urine osmolality, examination, or other urine measurements may then be needed.

No urine electrolyte result can confirm or exclude a specific condition by itself.

## Risks and complications

Providing a urine sample is non-invasive and has no significant physical risk, although a 24-hour collection can be inconvenient.

If blood is taken, you may have brief discomfort, a small bruise, or feel faint during or after the procedure.

## What happens next

An abnormal result is reviewed with your blood results, medicines, fluid intake, recent illness, and collection method. The test may be repeated if the sample was incomplete or your intake or treatment changed during collection.

Further tests may include blood electrolytes, kidney function, urine osmolality, urine creatinine, hormone tests, or another timed collection. Treatment is based on the underlying cause and your overall condition, not the urine result alone.

Seek urgent medical advice for worsening weakness, repeated vomiting, marked dizziness, or new palpitations. Call emergency services for a seizure, collapse, severe confusion, chest pain, major breathing difficulty, or if someone cannot be awakened. Do not wait for the urine result.

## Common questions

Can I drink coffee before the test?

Usually, unless you were told to fast or restrict caffeine. During a timed collection, avoid drinking much more coffee than usual.

Does the time of day matter?

It can for a spot sample because meals, medicines, activity, and hydration affect electrolyte excretion. Follow any timing instructions.

Can I exercise beforehand?

Normal activity is usually acceptable. Avoid unusually strenuous exercise because it can affect sweating, hydration, and electrolyte excretion.

What if I miss urine during a 24-hour collection?

Tell the laboratory. The collection may need to be restarted because a missed sample can make the result falsely low.

Should I stop my diuretic before the test?

No, not unless your clinician tells you to. Diuretics strongly affect results, but testing may be

intended to assess your response while taking the medicine.

Can I collect the sample during my period?

Often you can, but menstrual blood may contaminate the sample. Ask the laboratory whether to delay it or follow specific collection steps.

## Sources

- MedlinePlus Medical Encyclopedia. Sodium urine test . U.S. National Library of Medicine.
- MedlinePlus Medical Encyclopedia. Potassium urine test . U.S. National Library of Medicine.
- Mayo Clinic Laboratories. Electrolytes, 24 Hour, Urine: Test catalog and collection guidance .
- Spasovski G, Vanholder R, Allolio B, et al. Clinical practice guideline on diagnosis and treatment of hyponatraemia . European Journal of Endocrinology . 2014;170(3):G1-G47.
- Palmer BF, Clegg DJ. The use of selected urine chemistries in the diagnosis of kidney disorders . Clinical Journal of the American Society of Nephrology . 2019;14(2):306-316.
- National Health Service. Instructions for collecting a 24-hour urine sample . NHS patient guidance.