TEST

Cortisol urine test

A cortisol urine test measures unbound cortisol passed into urine over 24 hours.

WHAT IT MEASURES
Unbound cortisol released into urine over 24 hours

SAMPLE
Urine

FASTING NEEDED?
No

HOW LONG IT TAKES
24-hour home collection

RESULTS IN
Usually 1-3 days after delivery; laboratory schedules differ

USED FOR
Screening, diagnosis, and monitoring of cortisol excess

MAIN LIMITATION
Incomplete collection or kidney impairment can falsely lower results

Overview

A cortisol urine test measures cortisol that passes into your urine, usually over a full 24-hour period. It is often called a 24-hour urinary free cortisol test.

Cortisol is a steroid hormone made by the adrenal glands above the kidneys. It helps regulate blood pressure, metabolism, inflammation, and responses to physical or emotional stress.

Most cortisol in the blood is attached to proteins. This test measures the small unbound, or "free," portion filtered into urine. A 24-hour collection estimates cortisol production across a whole day rather than at one moment.

The test is mainly used to look for unusually high cortisol production. It is not usually the best test for finding low cortisol levels.

Why the test is ordered

The test may be ordered when symptoms, an examination, or medical history suggest prolonged cortisol excess. This can occur in Cushing syndrome, a group of conditions caused

by too much cortisol.

Features that may lead to testing include:

These changes are common and often have other causes. The result is therefore used as part of an assessment, not as a diagnosis by itself.

The test may also help assess an adrenal or pituitary growth found during imaging or monitor cortisol production after treatment.

- Easy bruising or wide purple stretch marks
- Muscle weakness, especially around the hips or shoulders
- High blood pressure or blood sugar that is difficult to manage
- Unexplained bone thinning or fractures
- Weight gain with other features of cortisol excess
- Slower growth with weight gain in a child

Who should have the test

A healthcare professional may suggest this test if you have several worsening or unusual features of cortisol excess.

It is not generally used as a broad screening test for everyone with weight gain, tiredness, high blood pressure, or diabetes. These concerns are common, while abnormal cortisol production is only one possible cause.

The test may be less useful if you have significantly reduced kidney function because less free cortisol reaches the urine. Another test may be preferred. Pregnancy also changes cortisol production and requires pregnancy-specific interpretation.

How to prepare

Fasting is not normally needed. Eat and drink as usual unless your laboratory gives different instructions.

Tell the healthcare professional about all medicines, injections, inhalers, creams, supplements, and non-prescription products you use. Corticosteroids like prednisone or hydrocortisone are especially important, including hydrocortisone, prednisone, prednisolone, dexamethasone, and some steroid inhalers or skin creams.

Do not suddenly stop a prescribed steroid unless you have been given a safe plan. Sudden

withdrawal can be harmful after regular or high-dose use.

Check whether the collection container must be refrigerated or contains a preservative. Do not empty any supplied liquid or powder. Avoid touching it and follow the laboratory's safety instructions.

Keep your fluid intake and routine reasonably normal. Avoid unusually strenuous exercise unless told otherwise, because it can temporarily increase cortisol.

What happens during the test

The laboratory will provide a large collection container and instructions. A typical collection works like this:

The first urine is discarded because it was produced before the collection began. The final urine completes the 24-hour period.

Avoid contaminating the sample with stool, toilet paper, menstrual blood, or toilet water. If you miss a sample or spill a meaningful amount, contact the laboratory. You may need to restart.

- Choose a start time, often after waking
- Empty your bladder into the toilet and record the time
- Collect every urine sample for the next 24 hours
- At the same time the following day, collect one final sample
- Store the container exactly as instructed
- Return it promptly with the start and finish times

Understanding your results

Results are usually reported as the amount of free cortisol passed in 24 hours, such as micrograms or nanomoles per 24 hours.

Reference ranges vary by laboratory, testing method, age, sex, pregnancy status, medicines, kidney function, and clinical context. Use the range on your report.

A high result does not by itself confirm Cushing syndrome. Illness, stress, pregnancy, alcohol use, some mental health conditions, medicines, and collection problems can also raise cortisol.

Cortisol production varies from day to day, so more than one collection may be needed. An abnormal result may be checked with another urine collection or a different cortisol test.

A result within range makes sustained major cortisol excess less likely but may miss mild or intermittent excess. A low urine cortisol result cannot reliably diagnose adrenal insufficiency.

The laboratory may also measure urine volume or creatinine to help assess whether the collection was complete.

What affects the results

Missing urine can make the result falsely low. Collecting for too long, including urine produced before the start time, or combining more than one day can make it misleading.

Other influences include:

Estrogen-containing medicines affect blood cortisol more than urinary free cortisol but still matter when interpreting the overall assessment.

- Kidney function: Reduced filtration can cause a falsely low result
- Fluid intake: Extremely large amounts may raise measured cortisol
- Exercise: Unusually strenuous activity can temporarily increase cortisol
- Illness or stress: Illness, pain, surgery, sleep loss, or major emotional stress can raise cortisol
- Pregnancy: Normal hormonal changes increase cortisol production
- Medicines: Steroids can alter natural production or interfere with some laboratory methods
- Alcohol use or withdrawal: These can temporarily resemble cortisol excess
- Depression or poorly controlled diabetes: These may raise cortisol without a lasting cortisol-producing disorder
- Timing errors: A collection shorter or longer than 24 hours changes the result
- Intermittent cortisol excess: Testing on a lower-production day can give a result within range

Accuracy and limitations

A well-collected sample can identify sustained cortisol excess, but the test is not perfect.

It can miss excess when production is mildly raised, intermittent, or affected by reduced kidney function. Lost urine can also cause a falsely low result.

Significant illness or stress, pregnancy, heavy alcohol use, severe depression, poorly controlled diabetes, or excessive fluid intake may produce a high result without a lasting cortisol disorder.

Laboratory methods also differ. Immunoassays may mistake similar steroid molecules for cortisol. Liquid chromatography and mass spectrometry can separate them more precisely, although results still require clinical interpretation.

No single urine result identifies the cause of excess cortisol. Late-night salivary cortisol or an overnight dexamethasone suppression test may be more suitable in some situations. Blood cortisol, stimulation testing, and specialist assessment are generally better when low cortisol is suspected.

Risks and complications

Urine collection is painless and has no significant physical risk. The main difficulties are collecting every sample and safely handling any preservative in the container.

What happens next

Results are usually reviewed during routine follow-up. If the result is raised, the next step may be another 24-hour collection or a different cortisol test. Further blood tests or imaging are generally considered only after biochemical testing supports cortisol excess.

If the result is normal but intermittent cortisol excess is still strongly suspected, testing may be repeated at another time.

Do not change or stop steroid medicine based only on the result. Your prescriber may need to reduce it gradually.

The urine result itself is not usually an emergency. Seek urgent medical help for serious symptoms rather than waiting for the result, including severe confusion, fainting, persistent vomiting with dehydration, chest pain, sudden difficulty breathing, or a rapidly worsening serious infection.

Common questions

Can I drink coffee during the collection?

Usually, yes. Keep caffeine intake close to your usual amount unless the laboratory tells you otherwise.

Does the time of day matter?

The exact start time is flexible, but the collection must cover a complete 24 hours. Record the start and finish times accurately.

Can I exercise beforehand?

Normal activity is usually fine. Avoid unusually strenuous exercise before and during collection because it can temporarily raise cortisol.

How much water should I drink?

Drink your usual amount. Do not deliberately drink excessive quantities.

What if I miss one urine sample?

Contact the laboratory. Even one missed sample can make the result falsely low, so you may need to restart.

Can I collect urine during my period?

It may be possible, but menstrual blood can contaminate the sample. Ask the laboratory whether to postpone collection or use specific precautions.

Sources

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