

# Cortisol (Blood)



## Does this test have other names?

Blood cortisol; plasma cortisol; cortisol, plasma

## What is this test?

A serum cortisol test may help in the diagnosis of two fairly uncommon medical conditions: Cushing syndrome and Addison disease. The test also screens for other diseases that affect your pituitary and adrenal glands. It does so by measuring your blood level of a stress hormone called cortisol.

Cortisol is a steroid hormone made by your adrenal glands. It helps your body respond to stress, regulate blood sugar, and fight infections. In most people, cortisol levels are highest in the morning when they wake up and lowest around midnight. Your body also pumps out excess cortisol when you're anxious or under intense stress, which can affect your health if the levels stay too high for too long. If your cortisol levels are too high or too low, you may have a condition that needs treatment.

## Why do I need this test?

You may need this test if your healthcare provider suspects a medical problem caused by too much or too little cortisol.

A high cortisol level could be a sign of Cushing syndrome. Symptoms of Cushing syndrome include:

- Obesity, especially in the torso, face, and neck, with thinner arms and legs
- Round face
- Fatty hump at the base of the neck and/or between the shoulders
- High blood pressure
- High blood sugar
- Thin skin that bruises easily
- Pink or purple stretch marks on the stomach, breast, hips, thighs, or buttocks
- Muscle weakness
- Osteoporosis
- Acne
- For women, irregular menstrual periods and excess hair on the face and chest

Too little cortisol could be a sign of Addison disease, also called primary adrenal insufficiency. It could also be a sign of another problem with your adrenal glands. This may cause these symptoms:

- Weight loss
- Muscle and joint pain
- Extreme, long-lasting tiredness (fatigue)
- Low blood pressure

- Belly pain
- Nausea or vomiting
- Loss of appetite
- Diarrhea
- Dark patches of skin
- Irritability and depression
- For women, decreased armpit and pubic hair and decreased sexual desire

You may also need this test if your healthcare provider suspects an adrenal crisis. This can be a life-threatening emergency. Symptoms include:

- Shock, or very low blood pressure and loss of consciousness
- Sudden, severe pain in the belly
- Vomiting
- Weakness and tiredness
- Confusion

## What other tests might I have along with this test?

Besides a blood test for cortisol, your healthcare provider may test the cortisol levels in your urine or saliva.

Your healthcare provider will likely order other blood tests that measure your body's response to certain hormones to help determine the cause of your abnormal cortisol levels.

You may also have tests to look inside your body for abnormal growths or tumors. These can affect cortisol levels. Tests may include:

- CT scan
- MRI

## What do my test results mean?

Test results may vary depending on your age, gender, health history, and other things. Your test results may be different depending on the lab used. They may not mean you have a problem. Ask your healthcare provider what your test results mean for you.

Your test result will tell you the level of cortisol in your blood at the time of the test. Normal cortisol levels are usually highest early in the morning and lowest about midnight. Normal ranges vary depending on the type of test. For most tests, normal ranges are:

- 6 to 8 a.m.: 10 to 20 micrograms per deciliter (mcg/dL)
- Around 4 p.m.: 3 to 10 mcg/dL

Abnormal cortisol levels are often caused by long-term use of steroids (glucocorticoid medicines), such as those taken to control asthma, autoimmune diseases, or inflammation. If this is the cause, your healthcare provider may gradually reduce your doses of these medicines.

## How is this test done?

The test is done with a blood sample. A needle is used to draw blood from a vein in your arm or hand.

The timing of the test is important because cortisol levels change throughout the day. It's common to test serum cortisol twice in the same day—early in the morning and again around 4 p.m.

## Does this test pose any risks?

Having a blood test with a needle carries some risks. These include bleeding, infection, bruising, and feeling lightheaded. When the needle pricks your arm or hand, you may feel a slight sting or pain. Afterward, the site may be sore.

## What might affect my test results?

Your cortisol levels change in response to many events. For instance, if you work nights and sleep during the day, your cortisol levels may not be in the normal range.

Your cortisol levels may be higher than normal because of physical trauma and stress. Women in their last three months of pregnancy and highly trained athletes may have higher-than-normal levels of cortisol. Other reasons your cortisol level may be higher than normal include depression, alcoholism, malnutrition, and panic disorder.

A number of medicines, especially oral contraceptives and any medicine that contains glucocorticoids, or steroid hormones similar to cortisol, can also affect your cortisol levels.

## How do I get ready for this test?

You may need to rest before the test to keep stress levels down. You will also need to avoid medicines that can affect the results of the test. Be sure your healthcare provider knows about all medicines, herbs, vitamins, and supplements you are taking. This includes medicines that don't need a prescription and any illegal drugs you may use.

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