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## Dexamethasone suppression test

The dexamethasone suppression test measures whether cortisol secretion by the adrenal gland can be suppressed. It can also help assess the reason for an excess of cortisol in your body such as if it is due to an excess of adrenocorticotropic hormone (ACTH) secretion by the pituitary.

### How the Test is Performed

During this test, you will receive dexamethasone. This is a strong man-made (synthetic) glucocorticoid medicine. Afterward, your blood is drawn so that the cortisol level in your blood can be measured.

There are two different types of dexamethasone suppression tests: low dose and high dose. Each type can either be done in an overnight (common) or standard (3-day) method (rare). There are different processes that may be used for either test. Examples of these are described below.

Common:

- Low-dose overnight -- You will get 1 milligram (mg) of dexamethasone at 11 p.m., and a health care provider will draw your blood the next morning at 8 a.m. for a cortisol measurement.
- High-dose overnight -- The provider will measure your cortisol on the morning of the test. Then you will receive 8 mg of dexamethasone at 11 p.m. Your blood is drawn the next morning at 8 a.m. for a cortisol measurement.

Rare:

- Standard low-dose -- Urine is collected over 3 days (stored in 24-hour collection containers) to measure cortisol. On day 2, you will get a low dose (0.5 mg) of dexamethasone by mouth every 6 hours for 48 hours.
- Standard high-dose -- Urine is collected over 3 days (stored in 24-hour collection containers) for measurement of cortisol. On day 2, you will receive a high dose (2 mg) of dexamethasone by mouth every 6 hours for 48 hours.

Read and follow the instructions carefully. The most common cause of an abnormal test result is when instructions are not followed.

### How to Prepare for the Test

Your provider may tell you to stop taking certain medicines that can affect the test, including:

- Antibiotics

- Anti-seizure medicines
- Medicines that contain corticosteroids, such as hydrocortisone, prednisone
- Estrogen
- Oral birth control (contraceptives)
- Water pills (diuretics)

## How the Test will Feel

When the needle is inserted to draw blood, some people feel moderate pain. Others feel only a prick or stinging. Afterward, there may be some throbbing or slight bruising. This soon goes away.

## Why the Test is Performed

This test is done when your provider suspects that your body is producing too much cortisol. It is done to help diagnose Cushing syndrome and identify the cause.

The low-dose test can help tell whether your body is producing too much ACTH. The high-dose test can help determine whether the problem is in the pituitary gland (Cushing disease) or from a different site in the body (ectopic).

Dexamethasone is a man-made (synthetic) steroid that binds to the same receptor as cortisol. Dexamethasone reduces ACTH release in normal people. Therefore, taking dexamethasone should reduce ACTH level and lead to a decreased cortisol level.

If your pituitary gland produces too much ACTH, you will have an abnormal response to the low-dose test. But you can have a normal response to the high-dose test.

## Normal Results

Cortisol level should decrease after you receive dexamethasone.

Low dose:

- Overnight -- 8 a.m. plasma cortisol lower than 1.8 micrograms per deciliter (mcg/dL) or 50 nanomoles per liter (nmol/L)
- Standard -- Urinary free cortisol on day 3 lower than 10 micrograms per day (mcg/day) or 280 nmol/L

High dose:

- Overnight -- greater than 50% reduction in plasma cortisol
- Standard -- greater than 90% reduction in urinary free cortisol

Normal value ranges may vary slightly among different laboratories. Some labs use different measurements or may test different specimens. Talk to your health care provider about the meaning of your specific test results.

## What Abnormal Results Mean

An abnormal response to the low-dose test may mean that you have abnormal release of cortisol (Cushing syndrome). This could be due to:

- Adrenal tumor that produces cortisol
- Pituitary tumor that produces ACTH
- Tumor in the body that produces ACTH (ectopic Cushing syndrome)

The high-dose test can help tell a pituitary cause (Cushing disease) from other causes. An ACTH blood test may also help identify the cause of high cortisol.

Abnormal results vary based on the condition causing the problem.

Cushing syndrome caused by an adrenal tumor:

- Low-dose test -- no decrease in blood cortisol
- ACTH level -- low
- In most cases, the high-dose test is not needed

Ectopic Cushing syndrome:

- Low-dose test -- no decrease in blood cortisol
- ACTH level -- high
- High-dose test -- no decrease in blood cortisol

Cushing syndrome caused by a pituitary tumor (Cushing disease)

- Low-dose test -- no decrease in blood cortisol
- High-dose test -- expected decrease in blood cortisol

False test results can occur due to many reasons, including different medicines, obesity, depression, and stress. False results are more common in women than men.

Most often, the dexamethasone level in the blood is measured in the morning along with the cortisol level. For the test result to be considered accurate, the dexamethasone level should be higher than 200 nanograms per deciliter (ng/dL) or 4.5 nanomoles per liter (nmol/L). Dexamethasone levels that are lower can cause a false-positive test result.

## Risks

There is little risk involved with having your blood taken. Veins and arteries vary in size from one person to another, and from one side of the body to the other. Taking blood from some people may be more difficult than from others.

Other risks associated with having blood drawn are slight, but may include:

- Excessive bleeding
- Fainting or feeling lightheaded
- Multiple punctures to locate veins
- Hematoma (blood accumulating under the skin)
- Infection (a slight risk any time the skin is broken)

# Alternative Names

DST; ACTH suppression test; Cortisol suppression test

## References

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