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## Medical Encyclopedia: Cortisol level

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### Alternative names

Hydrocortisone test

### Definition

A cortisol level is a blood test that measures the amount of cortisol, a steroid hormone produced by the adrenal cortex.

### How the test is performed

Blood is drawn from a vein, usually on the inside of the elbow or the back of the hand. The puncture site is cleaned with antiseptic, and an elastic band is placed around the upper arm to apply pressure and restrict blood flow through the vein. This causes veins below the band to fill with blood.

A needle is inserted into the vein, and the blood is collected in an air-tight vial or a syringe. The band is then removed to restore circulation. After blood has been collected the needle is removed, and the puncture site is covered to stop any bleeding.

For an infant or young child, the area is cleansed with antiseptic and punctured with a sharp needle or a lancet. The blood may be collected in a pipette (small glass tube), on a slide, onto a test strip, or into a small container. A bandage may be applied to the puncture site if there is any bleeding.

### How to prepare for the test

The health care provider may advise you to stop taking drugs that can affect the test. Drugs that can increase cortisol measurements include estrogen and synthetic glucocorticoids, like prednisone and prednisolone. Drugs that can decrease cortisol measurements include androgens and phenytoin.

### How the test will feel

When the needle is inserted to draw blood, some people feel moderate pain, while others feel only a prick or stinging sensation. Afterward, there may be some throbbing.

### Why the test is performed

Cortisol levels are often measured to evaluate the pituitary and adrenal function.

### Normal Values

Normal values at 8 a.m. are 6 to 23 mcg/dl. Normal value ranges may vary slightly among different laboratories.

Note: mcg/dl = micrograms per deciliter

### What abnormal results mean

Higher-than-normal levels may indicate:

- Adrenal tumor
- Cushing's syndrome
- Ectopic ACTH-producing tumors

Lower-than-normal levels may indicate:

- Addison's disease
- Hypopituitarism

Additional conditions under which the test may be performed:

- Acute adrenal crisis
- Ectopic Cushing's syndrome
- Pituitary Cushing's (Cushing's disease)

### What the risks are

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

### Special considerations

Cortisol is a steroid hormone released from the adrenal cortex in response to a hormone called ACTH (produced by the pituitary gland). Normally, cortisol levels rise and fall during the day, repeating a 24-hour cycle (diurnal variation). Highest levels are at about 6-8 a.m. and lowest levels are at about midnight.

Physical and emotional stress can increase serum cortisol, because a normal response to stress involves increased secretion of ACTH by the pituitary gland.

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