

Original Article: <http://www.mayoclinic.com/health/addisons-disease/DS00361> By Mayo Clinic staff

Addison's disease is a disorder that results when your body produces insufficient amounts of certain hormones produced by your adrenal glands. In Addison's disease, your adrenal glands produce too little cortisol, and often insufficient levels of aldosterone as well.

Also called adrenal insufficiency or hypocortisolism, Addison's disease can occur at any age, but is most common in people ages 30 to 50. Addison's disease can be life-threatening.

Treatment for Addison's disease involves your taking hormones to replace the insufficient amounts being made by your adrenal glands, in order to mimic the beneficial effects those naturally made hormones would normally produce.

Symptoms

Addison's disease symptoms usually develop slowly, often over several months, and may include:

- Muscle weakness and fatigue
- Weight loss and decreased appetite
- Darkening of your skin (hyperpigmentation)
- Low blood pressure, even fainting
- Salt craving
- Low blood sugar (hypoglycemia)
- Nausea, diarrhea or vomiting
- Muscle or joint pains
- Irritability
- Depression

Acute adrenal failure (addisonian crisis)

Sometimes, however, the signs and symptoms of Addison's disease may appear suddenly. In acute adrenal failure (addisonian crisis), the signs and symptoms may also include:

- Pain in your lower back, abdomen or legs
- Severe vomiting and diarrhea, leading to dehydration
- Low blood pressure
- Loss of consciousness
- High potassium (hyperkalemia)

Causes



Adrenal glands

Your adrenal glands are located just above each of your two kidneys. These glands are part of your endocrine system, and they produce hormones that give instructions to virtually every organ and tissue in your body.

Your adrenal glands are composed of two sections. The interior (medulla) produces adrenaline-like hormones. The outer layer (cortex) produces a group of hormones called corticosteroids, which include glucocorticoids, mineralocorticoids and male sex hormones (androgens).

Some of the hormones the cortex produces are essential for life — the glucocorticoids and the mineralocorticoids.

- **Glucocorticoids.** These hormones, which include cortisol, influence your body's ability to convert food fuels into energy, play a role in your immune system's inflammatory response and help your body respond to stress.
- **Mineralocorticoids.** These hormones, which include aldosterone, maintain your body's balance of sodium and potassium and water to keep your blood pressure normal.

Primary adrenal insufficiency

Addison's disease occurs when the cortex is damaged and doesn't produce its hormones in adequate quantities. Doctors refer to the condition involving damage to the adrenal glands as primary adrenal insufficiency.

The failure of your adrenal glands to produce adrenocortical hormones is most commonly the result of the body attacking itself (autoimmune disease). For unknown reasons, your immune system views the adrenal cortex as foreign, something to attack and destroy.

Other causes of adrenal gland failure may include:

- Tuberculosis
- Other infections of the adrenal glands
- Spread of cancer to the adrenal glands
- Bleeding into the adrenal glands

Secondary adrenal insufficiency

Adrenal insufficiency can also occur if your pituitary gland is diseased. The pituitary gland makes a hormone called adrenocorticotropic hormone (ACTH), which stimulates the adrenal cortex to produce its hormones. Inadequate production of ACTH can lead to insufficient production of hormones normally produced by your adrenal glands, even though your adrenal glands aren't damaged. Doctors call this condition secondary adrenal insufficiency.

Another more common possible cause of secondary adrenal insufficiency occurs when people who take corticosteroids for treatment of chronic conditions, such as asthma or arthritis, abruptly stop taking the corticosteroids.

Addisonian crisis

If you have untreated Addison's disease, an Addisonian crisis may be provoked by physical stress, such as an injury, infection or illness.

When to seek medical advice

See your doctor if you have signs and symptoms that commonly occur in people with Addison's disease. Most people with this condition experience darkening areas of skin (hyperpigmentation), severe fatigue, unintentional weight loss, and gastrointestinal problems,

such as nausea, vomiting and abdominal pain. Dizziness or fainting, salt cravings, and muscle or joint pains also are common.

Your doctor can determine whether Addison's disease or some other medical condition may be causing these problems.

Tests and diagnosis

Your doctor will talk to you first about your medical history and your signs and symptoms. If your doctor thinks that you may have Addison's disease, you may undergo some of the following tests:

- **Blood test.** Measuring your blood levels of sodium, potassium, cortisol and ACTH gives your doctor an initial indication of whether adrenal insufficiency may be causing your signs and symptoms. A blood test can also measure antibodies associated with autoimmune Addison's disease.
- **ACTH stimulation test.** This test involves measuring the level of cortisol in your blood before and after an injection of synthetic ACTH. ACTH signals your adrenal glands to produce cortisol. If your adrenal glands are damaged, the ACTH stimulation test shows that your output of cortisol in response to synthetic ACTH is blunted or nonexistent.
- **Insulin-induced hypoglycemia test.** Occasionally, doctors suggest this test if pituitary disease is a possible cause of adrenal insufficiency (secondary adrenal insufficiency). The test involves checking your blood sugar (blood glucose) and cortisol levels at various intervals after an injection of insulin. In healthy people, glucose levels fall and cortisol levels increase.
- **Imaging tests.** Your doctor may have you undergo a computerized tomography (CT) scan of your abdomen to check the size of your adrenal glands and look for other abnormalities that may give insight to the cause of the adrenal insufficiency. Your doctor may also suggest a CT scan or MRI scan of your pituitary gland if testing indicates you have secondary adrenal insufficiency.

Treatments and drugs

If you receive an early diagnosis of Addison's disease, treatment may involve taking prescription corticosteroids. Because your body isn't producing sufficient steroid hormones, your doctor may have you take one or more hormones to replace the deficiency. Cortisol is replaced using hydrocortisone (Cortef), prednisone or cortisone acetate. Fludrocortisone (Florinef) replaces aldosterone, which controls your body's sodium and potassium needs and keeps your blood pressure normal.

You take these hormones orally in daily doses that mimic the amount your body normally would make, thereby minimizing side effects. If you're facing a stressful situation, such as an operation, an infection or a minor illness, your doctor will suggest a temporary increase in your dosage. If you're ill with vomiting and can't retain oral medications, you may need corticosteroid injections.

In addition, your doctor may recommend treating androgen deficiency with an androgen replacement called dehydroepiandrosterone. Some studies indicate that, for women with Addison's disease, androgen replacement therapy may improve overall sense of well-being, libido and sexual satisfaction.

Addisonian crisis

An Addisonian crisis is a life-threatening situation that results in low blood pressure, low blood

levels of sugar and high blood levels of potassium. This situation requires immediate medical care. Treatment typically includes intravenous injections of:

- Hydrocortisone
- Saline solution
- Sugar (dextrose)

Coping and support

These steps may help you cope better with a medical emergency if you have Addison's disease:

- **Carry a medical alert card and bracelet at all times.** In the event you're incapacitated, emergency medical personnel know what kind of care you need.
- **Keep extra medication handy.** Because missing even one day of therapy may be dangerous, it's a good idea to keep a small supply of medication at work, at a vacation home and in your travel bag, in the event you forget to take your pills. Also, have your doctor prescribe a needle, syringe and injectable form of corticosteroids to have with you in case of an emergency.
- **Stay in contact with your doctor.** Keep an ongoing relationship with your doctor to make sure that the doses or replacement hormones are adequate but not excessive. If you're having persistent problems with your medications, you may need adjustments in the doses or timing of the medications.