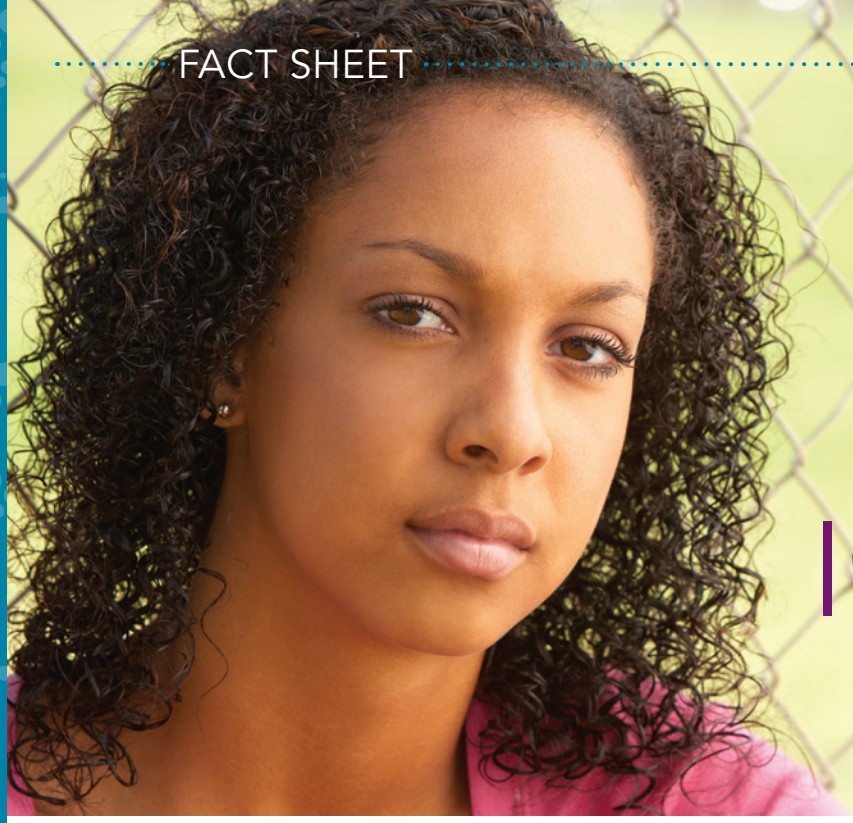
FACT SHEET



Hormone Health NETWORK
Keep your body in balance

# Adrenal Insufficiency

## WHAT IS ADRENAL INSUFFICIENCY?

The adrenal glands, located on top of the kidneys, make hormones that are essential for body functions. The outer layer (cortex) of the adrenal glands makes three types of steroid hormones. In adrenal insufficiency (AI), the cortex does not make enough steroid hormones.

There are two kinds of AI:

- **Primary AI,** also called Addison's disease. In this rare condition, the adrenal glands do not work properly and cannot make enough cortisol (a "stress" hormone). Usually, production of aldosterone and androgens (the other hormones made by the adrenal glands) is also low.
- **Secondary AI.** This far more common type of AI results when the pituitary gland, a small gland near the brain, does not signal the adrenal glands to make cortisol.

The adrenal glands do not get "adrenal fatigue" or lose function because of mental or physical stress. True AI is a rare health problem. Only an endocrinologist, an expert in hormones, should diagnose it using standard tests.

**ADRENAL STEROID HORMONES**

| Hormone | Purpose |
|---|---|
| **Cortisol** (a glucocorticoid) | Helps the body cope with stress, illness, and injury. Regulates (controls) blood glucose (sugar) and blood pressure levels. |
| **Aldosterone** (a mineralocorticoid) | Helps keep a proper balance of salt and water in the body. Regulates blood volume and blood pressure. |
| **Adrenal androgens** (weak male sex hormones present in both sexes) | Helps regulate pubic and armpit hair growth in women. |

## DID YOU KNOW?

**Adrenal insufficiency is a true medical condition that can be detected through blood tests, unlike "adrenal fatigue."**

## WHAT CAUSES AI?

**Primary AI.** The most common cause of primary AI is autoimmune disease, meaning the body's defense system attacks and destroys the body's own tissues. When adrenal glands are damaged, they can't produce hormones. Other causes of primary AI include bleeding in the glands, infections, genetic (inherited) diseases, and surgical removal of the adrenal glands.

**Secondary AI.** Problems with the pituitary gland cause secondary AI. Normally, the pituitary gland makes a hormone called ACTH, which tells the adrenal glands to make cortisol. But in secondary AI, the pituitary gland does not send ACTH to the adrenal glands. No cortisol is made.

Some causes may be temporary, such as taking certain prescription medicines like prednisone, hydrocortisone, or dexamethasone. Other causes may be permanent. These include hormone problems present at birth, tumors or infections in the pituitary, or surgical or radiation damage to the pituitary.

## WHAT ARE THE SYMPTOMS OF AI?

Symptoms (what you feel) begin little by little. They include fatigue, muscle weakness, decreased appetite, and weight loss. Some people experience nausea, vomiting, and diarrhea. Other symptoms include

- Pain in the muscles and joints
- Low blood pressure leading to dizziness upon standing

- Cravings for salt (in primary AI)
- Symptoms of low blood glucose, such as sweating
- Darkened skin on the face, neck, and back of the hands (in primary AI)
- Irregular menstrual periods in women

Some people don't know they have AI until they have a sudden worsening of symptoms called an adrenal crisis.

## HOW IS AI DIAGNOSED?

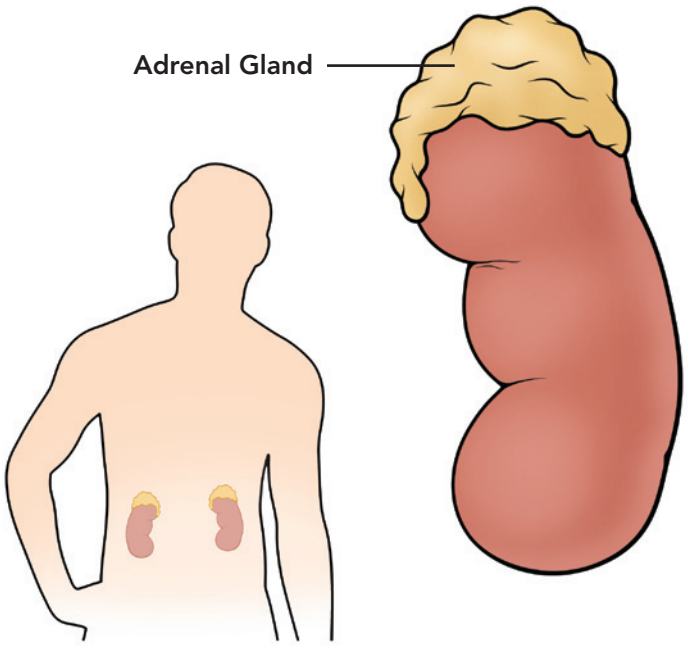
Doctors review a patient's symptoms and medical history. They check blood levels of cortisol, other hormones, sodium, potassium, and glucose to detect AI and help find the cause. They also look at the adrenal glands or the pituitary gland with imaging tests, such as x-rays, ultrasound, and CT or MRI scans.

## WHAT IS THE TREATMENT FOR AI?

The goal of treatment is to ensure proper hormone levels day-to-day. You may need daily replacement of hormones for life. You will take glucocorticoids to replace the cortisol your body no longer makes. You may also need mineralocorticoids if your body does not make aldosterone.

Extra glucocorticoids may be needed during times of stress, such as serious illness or surgery. Your doctor will provide personalized advice on adjusting medicines for stress.

Understanding your disease and knowing when and how to adjust your medications can help you live a long and healthy life with AI.




## KNOW THE SIGNS OF ADRENAL CRISIS

Physical stress caused by illness, infection, surgery, or an accident can suddenly make symptoms of AI much worse, an emergency illness called an adrenal crisis. If untreated, adrenal crisis can cause death. Adrenal crisis occurs mainly in people with primary AI.

People in adrenal crisis need an injection (shot) of glucocorticoids (medicines that replace cortisol) right away. Then they need to go to the hospital for more treatment.

If you have AI, you should know the warning signs of adrenal crisis. They include

- Sudden pain in the back, abdomen, or legs
- Severe nausea and vomiting
- Diarrhea
- Dehydration and confusion
- Low blood pressure and fainting

You also should tell family and friends what to do if a crisis occurs. Always wear a medical alert bracelet or tag.

## Questions to ask your doctor

- **What type of AI do I have?**
- **Is my AI temporary or permanent?**
- **Will I need hormone replacement?**
- **If I am in adrenal crisis, how do I give myself a glucocorticoid shot?**
- **Should I see an endocrinologist?**

## RESOURCES

- Find-an-Endocrinologist: *www.hormone.org* or call *1-800-HORMONE (1-800-467-6663)*
- Hormone Health Network information about adrenal glands and their disorders: *www.hormone.org* (search for adrenal)
- Information about AI and Addison's disease from the National Institutes of Health: *www.endocrine.niddk.nih.gov/pubs/addison/addison.htm*
- Information about AI from the UpToDate website: *www.uptodate.com/patients* (search for adrenal insufficiency)
- NIH Clinical Center (National Institutes of Health): *www.cc.nih.gov/ccc/patient_education/pepubs/mngadrins.pdf*

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The Hormone Health Network offers free, online resources based on the most advanced clinical and scientific knowledge from The Endocrine Society (*www.endo-society.org*). The Network's goal is to move patients from educated to engaged, from informed to active partners in their health care. This fact sheet is also available in Spanish at *www.hormone.org/Spanish*.

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