

Adrenal Insufficiency

What is Adrenal Insufficiency?

Adrenal insufficiency is when the adrenal glands do not make enough hormones. The adrenal glands make cortisol, aldosterone, and androgen hormones.

- Cortisol is a steroid hormone that is important for managing blood pressure, blood sugar, and energy. In times of illness it is a life-saving hormone.
- Aldosterone is a hormone that helps manage the body's blood pressure by keeping the body's salt and water in a normal range. Without aldosterone, the kidney loses too much salt and water, and holds on to too much potassium; this causes low blood pressure and high potassium levels in the blood.
- Androgens are male sex hormones that are important in growth and puberty and are not impacted in adrenal insufficiency.

What Causes Adrenal Insufficiency?

Adrenal insufficiency can be “primary”, which lowers the amount of the hormones, cortisol and aldosterone, or “secondary”, which lowers the amount of the hormone cortisol. Primary adrenal insufficiency is caused by damage to the adrenal gland, most often from an autoimmune disorder called Addison's Disease. An autoimmune disorder is when the body's infection fighting proteins accidentally fight and kill its own cells – in this case, adrenal cells. Other causes are infection, cancer, and bleeding in the adrenal glands. Primary adrenal insufficiency most often lessens the amount of cortisol and aldosterone.

Secondary adrenal insufficiency is caused by a problem with the pituitary gland. The pituitary is a small gland in the brain. It makes a hormone called adrenocorticotropic hormone (ACTH), which tells the adrenal gland to make the cortisol hormone. If the pituitary is not working, the adrenal glands will not make cortisol. This can be caused if the pituitary did not grow normally, or because of a brain injury, infection, or cancer.

A special form of secondary adrenal insufficiency can happen when a person takes steroid medicines for a long time as a treatment for some other disorder like asthma or arthritis. Because the pituitary senses that there is right amount of cortisol hormone in the body, it does not tell the adrenal glands to make cortisol. After a time, the adrenal gland will become smaller and less able to make cortisol. If the steroid treatments are stopped all of a sudden, the adrenal glands don't have enough time to rebound and make cortisol. Without cortisol, the body can become sick. This type of secondary adrenal insufficiency can be treated by slowly reducing the steroid medicine.

What are the symptoms/signs of adrenal insufficiency?

- Feeling very tired or irritability
- Weakness
- Darkening of the skin
- Low blood pressure
- Dizziness
- Salt cravings
- Low blood sugars
- Nausea, vomiting (throwing up), diarrhea (loose bowel movements), or stomach pain
- Mood changes
- Sodium (salt) and potassium problems

How is Adrenal Insufficiency Found?

Blood tests to measure hormone levels (ACTH, cortisol, and aldosterone) and sodium, potassium, and blood sugar levels may be done. Blood tests for causes of adrenal insufficiency, such as Addison's Disease, may also be done.

A test called an ACTH stimulation test may be done to see how well the adrenal glands are working. In this test, the pituitary hormone ACTH is given through an IV. If the adrenal glands are working, they will make cortisol. Blood will be taken to measure how well the adrenal glands react to the ACTH.

Pictures (like an MRI) of the pituitary or adrenal glands may also be needed to make the diagnosis.

How is Adrenal Insufficiency Treated?

The treatment of adrenal insufficiency depends on which hormones the body is not making. Some medicines used to treat adrenal insufficiency are:

- **Steroids:** these steroids replace the cortisol that your body is not making. The most common drug treatment is hydrocortisone, which is taken 2-3 times a day by mouth. Other drug choices are prednisone or dexamethasone.
- **Steroid shots:** An injection (shot) of steroid may be needed when there is vomiting, or if medicines cannot be taken by mouth.
- **Fludrocortisone:** This steroid helps manage the salt balance in the body.
- **Salt replacement:** Salt tablets may be needed to keep the salt balance normal.

Call Your Doctor:

- **If a steroid injection is needed**
- **In times of severe sickness, before surgery, and before anesthesia**
- **If the medicines are not tolerated**
- **If there are any concerns**