Adrenal insufficiency

A plain-English guide for you and your family

WHAT IS HAPPENING

Your adrenal glands sit on top of your kidneys like two small caps, and they make two life-saving hormones every day: cortisol and aldosterone. Cortisol is your stress hormone—it keeps your blood pressure steady when you stand up, tells your liver to make sugar so your brain has fuel, and stops your immune system from overreacting. Aldosterone is your salt-and-water keeper—it tells your kidneys to hold onto sodium and water so your blood does not run too thin, and it gets rid of extra potassium. When the adrenal glands stop working—usually because your own immune system attacks and destroys them (called Addison disease), or because tuberculosis or bleeding wipes them out—you lose both hormones. You feel tired all the time, even after sleeping. You lose weight without trying. You crave salty foods like pickles or potato chips because your body senses it is running low on salt. In primary adrenal failure (when the glands themselves die), your skin may turn darker—bronze or tan patches show up on your elbows, knuckles, old scars, and inside your mouth along your gums and cheeks. That happens because your pituitary gland (a pea-sized control center at the base of your brain) keeps pumping out a signal hormone called ACTH, trying desperately to wake up the dead glands, and ACTH accidentally tells skin cells to make extra pigment as a side effect. The real danger is adrenal crisis. If you get sick with the flu, have surgery, twist your ankle badly, or even vomit from food poisoning, your body needs a flood of extra cortisol to handle that stress. But dead adrenal glands cannot deliver it. Your blood pressure can crash (fall below 90 over 60), your blood sugar can drop so low you pass out, and without emergency treatment—an injection of hydrocortisone and bags of salt water into your vein—you can die within hours. That is why anyone with adrenal insufficiency must carry an emergency injection kit everywhere, wear a medical alert bracelet or necklace, and teach their family exactly what to do if they collapse.

What you might feel

- Fatigue and generalized weakness
- Weight loss and loss of appetite

- Hyperpigmentation (darkened skin on elbows, knuckles, palms, scars, gums, and inside the cheeks)
- Salt craving
- Orthostatic low blood pressure (hypotension) (blood pressure drops when you stand) and dizziness
- Nausea, vomiting, and belly pain
- Low sodium (Hyponatremia) (serum sodium below 135 mEq/L) and high potassium (hyperkalemia) (serum potassium above 5.0 mEq/L)
- Low blood sugar (Hypoglycemia) (blood sugar below 70 mg/dL)
- Refractory low blood pressure (hypotension) (blood pressure below 90 mmHg systolic that does not respond to intravenous fluids alone)
- Altered mental status, confusion, or loss of consciousness

Call the doctor right away if...

- Refractory low blood pressure (hypotension) (blood pressure below 90 mmHg systolic despite intravenous fluids) or shock—adrenal crisis requires immediate intravenous hydrocortisone 100 mg bolus and aggressive fluid resuscitation
- Altered mental status, confusion, or loss of consciousness—sign of severe low blood sugar, not enough blood reaching the brain, or severe low sodium; check fingerstick glucose and give dextrose if needed
- Severe low sodium (hyponatremia) (serum sodium below 120 mEq/L) with confusion or seizures—requires cautious saline infusion and stress-dose hydrocortisone, not rapid correction alone
- High potassium (Hyperkalemia) above 6.5 mEq/L with EKG changes (peaked T waves, widened QRS)—life-threatening heart rhythm risk; treat high potassium emergently while replacing cortisol and aldosterone
- Recent stop of chronic steroid therapy (prednisone, dexamethasone) in a patient with low blood pressure or low blood sugar—secondary adrenal insufficiency from HPA axis suppression (the body's own cortisol system shut down); restart steroids immediately

What the care team will do

- Check blood pressure lying down and standing every 15 minutes if patient is unstable, and immediately notify the provider if systolic blood pressure is below 90 mmHg or drops more than 20 mmHg when standing.
- Establish large-bore IV access and prepare to give normal saline 1 to 2 liters rapidly in the first hour if adrenal crisis is suspected, while waiting for hydrocortisone order.

- Check fingerstick blood glucose immediately and every 1 to 2 hours in unstable patients, and give dextrose 50 percent (D50) IV per protocol if glucose is below 70 mg/dL.
- Administer IV hydrocortisone exactly on time every 6 to 8 hours as ordered, and never delay or skip a dose even if patient is eating or seems stable.
- Monitor serum sodium and potassium levels at least daily, watching for low sodium (hyponatremia) (sodium below 135 mEq/L) and high potassium (hyperkalemia) (potassium above 5.0 mEq/L).
- Assess for nausea, vomiting, or abdominal pain every 4 hours, give antiemetics as ordered, and keep patient NPO (nothing by mouth) if vomiting until IV hydrocortisone stabilizes the gut.
- Teach the patient and family to recognize sick-day rules: double or triple the home steroid dose during fever, infection, vomiting, or diarrhea, and go to the emergency room if unable to keep pills down.
- Ensure the patient wears a medical alert bracelet stating adrenal insufficiency and carries an emergency injection kit of hydrocortisone 100 mg (Solu-Cortef Act-O-Vial) before discharge.

Medicines you may be given — and why

Hydrocortisone

Hydrocortisone is a man-made copy of cortisol, the stress hormone your adrenal glands normally make. When you take it, it acts like the missing cortisol in your body. It tells your liver to make glucose (sugar that fuels your brain and muscles), tells your blood vessels to tighten when needed (to keep blood pressure up), and calms down the immune system so it doesn't overreact. Without it, your body can't handle stress, your blood sugar drops dangerously low, and your blood pressure crashes.

Prednisone

Prednisone is another man-made form of cortisol. Your liver turns prednisone into prednisolone, which then works exactly like cortisol: it raises blood sugar, keeps blood pressure steady, and controls the immune system. It lasts longer in your body than hydrocortisone, so you can take it once a day instead of splitting doses. It replaces the cortisol your adrenal glands cannot make.

Fludrocortisone

Fludrocortisone replaces aldosterone, the hormone that tells your kidneys to hold onto sodium (salt) and water and get rid of potassium. When you take it, it travels to the kidney's collecting duct—the final tube where urine is fine-tuned before leaving your body. There it tells the cells

lining the tube to pull sodium out of the urine and back into your blood. Water follows the sodium by osmosis (water always follows salt), so your blood volume goes up. Higher blood volume raises your blood pressure and keeps you from getting dizzy when you stand up. At the same time, it pushes potassium into the urine so your potassium level stays normal.

Where this information comes from

- Endocrine Society Clinical Practice Guideline on Diagnosis and Treatment of Primary Adrenal Insufficiency (2016)
- UpToDate Clinical Overview: Adrenal Insufficiency in Adults (2024)
- National Institute for Health and Care Excellence (NICE) guideline on Addison Disease (2024)
- Cochrane systematic review on Glucocorticoid Replacement for Adrenal Insufficiency (2022)

Last reviewed: 2026-07-07