

SIADH · Syndrome of Inappropriate ADH

A plain-English guide for you and your family

WHAT IS HAPPENING

Normally, when your blood gets too watery or salt runs low, your brain shuts off a hormone called ADH (antidiuretic hormone, the chemical that tells your kidneys to hold water). That way, you pee out extra water and your salt level climbs back to normal. In SIADH, something — a tumor in the lung or brain, a head injury, certain medicines, or lung infections — keeps pumping out ADH even when your blood is already too dilute. Your kidneys obey the signal and hold water they should dump. Water piles up in your blood, diluting the sodium (salt). Low sodium makes brain cells swell because water rushes in trying to balance the salt on both sides of the cell wall. Mild swelling causes headache, nausea, and trouble focusing. Severe swelling triggers confusion, seizures, even coma. Urine stays surprisingly concentrated (high osmolality) because the kidneys are hoarding water, not releasing it. Blood tests show low sodium but normal or low blood volume — you are not dehydrated, you are waterlogged on the inside. Treatment starts with finding and fixing the cause (stop the bad medicine, treat the tumor, let the pneumonia heal). While you work on that, limit water to about two to three cups a day so the kidneys can catch up. Severe cases need slow, careful infusion of concentrated (3%) salt water in the ICU, because raising sodium too fast can permanently damage the brainstem. The key idea: SIADH is not about losing salt — it is about keeping too much water because ADH is stuck in the ON position.

What you might feel

- Low sodium in the blood (hyponatremia)
- Nausea and vomiting
- Headache
- Confusion or trouble thinking clearly
- Muscle cramps or weakness
- Seizures
- Lethargy or extreme sleepiness
- Concentrated urine (dark or strong-smelling) despite drinking enough water

Call the doctor right away if...

- Seizure (sudden shaking or loss of awareness)
- Severe confusion or not responding when you speak to the person
- Sodium level below 120 mEq/L or dropping very fast (more than 10 points in 24 hours)
- Trouble breathing or very slow breathing
- Coma (cannot be woken up)

What the care team will do

- Check mental status every 2 to 4 hours using the Glasgow Coma Scale and watch for new confusion, sleepiness, or seizure activity
- Measure and record every drop of fluid the patient drinks and every milliliter of urine output on a strict intake-and-output flowsheet
- Weigh the patient at the same time every morning on the same scale wearing the same clothes
- Check serum sodium blood levels every 6 to 12 hours during the first 24 hours of treatment
- If giving 3% saline IV for severe symptoms, use a central line or large peripheral IV and check sodium level after every 100 mL bolus
- Teach the patient which fluids count toward their daily limit, including ice chips, Jello, soup, and IV fluids
- Place fall precautions including bed alarm, non-skid socks, and call bell within reach if sodium is below 125 mEq/L
- Work with the pharmacy to review the medication list and flag any ADH-triggering drugs for the provider to consider stopping

Medicines you may be given — and why

Fluid restriction

Limiting how much someone drinks each day (usually 800–1000 mL, about 3–4 cups) stops the kidneys from diluting the blood any further. Because ADH (the hormone that tells kidneys to hold onto water) is stuck 'on' in SIADH, the body keeps grabbing water from urine and pouring it back into the bloodstream. Drinking less means less water comes in, so over a few days the kidneys can slowly let go of the extra water already trapped inside, and sodium climbs back toward normal.

Sodium chloride tablets (salt tabs)

Giving extra salt by mouth raises the amount of sodium in the blood directly. Each salt tablet delivers sodium chloride, which dissolves in the gut and is absorbed into the bloodstream. This adds 'fuel' to push serum sodium up, especially when combined with fluid restriction. Salt tabs are most helpful when sodium is mildly low (125–134 mEq/L) and the person is not having seizures or other emergencies.

Tolvaptan

Tolvaptan blocks the V₂ receptor on the collecting-duct cells in the kidney—the very dock where ADH normally lands to trigger water reabsorption. With the receptor blocked, ADH floats past without being able to give its 'hold onto water' command. The kidney then lets water leave in the urine (making a large volume of dilute urine), while sodium and other electrolytes stay in the blood. Serum sodium climbs because water is removed without losing salt—this is called a 'pure water diuresis' or aquaresis.

3% hypertonic saline (intravenous)

A 3% saline solution is three times saltier than normal blood. Giving it directly into a vein rapidly raises the sodium concentration of the blood. Water shifts out of swollen brain cells (which have taken on extra water because the blood was too dilute) back into the bloodstream, shrinking the cells and relieving pressure inside the skull. This reverses life-threatening symptoms—seizures, coma, difficulty breathing—caused by cerebral swelling (edema) (brain swelling). The goal is to raise sodium just enough and just fast enough to stop the emergency, not to correct it all at once.

Urea (oral powder or tablet)

Urea is a natural waste product made when the body breaks down protein; the kidneys filter it out in urine. Giving extra urea by mouth raises the amount in the blood and the kidney tubules. Because urea pulls water along with it (osmotic effect), more water leaves the body in the urine without taking extra sodium or potassium. This gently raises serum sodium over days to weeks. Urea is inexpensive and works even when ADH is high, but it tastes bitter and is hard to find in many countries.

Demeclocycline

Demeclocycline is an old antibiotic that, as a side effect, makes the kidney collecting ducts resistant to ADH. It interferes with the kidney cells' ability to respond to the ADH signal, so even though ADH is high, the kidney does not concentrate urine as much. More water leaves in the urine, and serum sodium slowly rises. Because it takes 3–5 days to start working and carries risks (kidney damage, sun sensitivity), it is now rarely used—tolvaptan and fluid restriction have mostly replaced it.

Where this information comes from

- NEJM 2015 review on SIADH
- Endocrine Society Clinical Practice Guideline on Hyponatremia (2014)
- American Kidney Fund
- UpToDate (Wolters Kluwer clinical decision support)

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