

What is Hyponatremia and how do I treat it?

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INTRODUCTION: HYPONATREMIA SIGNS AND SYMPTOMS.

Hyponatremia, low blood sodium level, is a relatively common condition. Hyponatremia is the most common electrolyte disturbance to impact patients in clinical settings¹. Most often, Hyponatremia is due to the inability of the body to excrete excess water. This excess water accumulates in the blood, dilutes the sodium level, and leads to low blood sodium levels. The effects of Hyponatremia and low blood sodium levels include:

- Drowsiness
- Falls
- Disturbances in bone health
- Slowness of thought
- Seizures
- Brain swelling
- And even death²

The only way for a Hyponatremia diagnosis is with a blood test. Your doctor may also check urine testing, specifically urine electrolytes and osmolarity (concentration). These tests together with a thorough history, medication review and physical examination will help tease out the cause of the water imbalance.

WHAT CAUSES THE BODY TO HOLD WATER TOO TIGHTLY?

There are many possible Hyponatremia causes. The way I like to explain it is to consider our evolution. When we were living in the stone ages and a saber tooth tiger was chasing us, or we were under a great deal of stress due to difficulty finding clean water sources, our body was programmed to hold

water tightly, to avoid dehydration.

Fast forward to 2020, and we find different 'stressors' that may signal the body to hold water to tightly. These 'stressors' include:

- Lung diseases (COPD, cancer, infection)
- Brain diseases (cancer, strokes, scarring, infections)
- Pain-including arthritis
- And nausea (especially after surgery).

Other potential Hyponatremia etiologies include thyroid disturbances, medications especially thiazide diuretics and anti-seizure, as well as adrenal insufficiency.

The hormone that is secreted in these disease states is called Anti-Diuretic Hormone (ADH). ADH does just what its name implies; it is anti-diuresis (urinate). The urine turns dark and concentrated, and water excretion comes to a near halt.

HYPONATREMIA TREATMENT

For starters, we must be sure there aren't other reasons for the dilution effect. Examples of this include heart failure and liver disease. Both can cause fluid retention due to different mechanisms. These diseases are often treated with a low sodium diet and diuretics (fluid pills). Hyponatremia may also be caused by excessive water intake relative to solid food intake. This is termed primary polydipsia or tea and toast. These diseases are treated with simple fluid restriction and an increase in food intake.

Let's think back to the causes of Hyponatremia. Now that we have talked about the other processes, the term SIADH always gets brought up. This is a syndrome of inappropriate antidiuretic hormone release. A bit confusing, but if you follow the name, it is an improper release of the hormone that does not

allow the kidney to release water. This is what occurs in those examples, as mentioned earlier, the lung disease, brain disease, pain, or nausea scenarios.

SIADH will therefore cause the kidney to hold water inside and not release it, diluting the sodium level in the blood and lead to some of those ominous symptoms.

To treat this SIADH process, we must start with a fluid restriction as a part of a Hyponatremia diet. Usually, this would be about 1 liter (32 oz) or less per day. This does include all liquids and not just water. Often that is not enough, and the patient will require further interventions. In previous days we may have used diuretics and salt tablets for Hyponatremia, however more recent studies have shown this to be somewhat ineffective when compared to fluid restriction alone and have significantly more side effects.³

More recently, Tolvaptan has come to market. Tolvaptan is an oral antagonist (blocker) of the ADH receptor in the kidney. This medication works by blocking the signal and thus allowing the body to expel all that excess water. However, this medication's downsides are high cost at over \$300 a tablet and low but severe liver injury potential. There are also side effects, including overcorrection of the sodium level (which can be quite dangerous), urinating excessively at night, and extreme thirst with Tolvaptan.

Lastly, there is oral Urea for the treatment of SIADH. Urea works by osmosis. It draws water out naturally through the kidney, ridding the body of excess water without the need for salt tablets or extreme fluid restrictions. Urea is a medical food and is thus allowed to be purchased directly by the patient without a prescription. Medical foods like Urea should be taken only under the supervision of a medical practitioner. Urea has minimal if any side effects. It truly is a natural product, medical food, and not a pharmaceutical agent. Urea has a somewhat intense, slightly salty taste and is thus best made palatable by flavorings.

Our company, KidneyAide.com, maker of UreaAide, is an example of this with a natural refreshing mint flavor, dosed in individual packs, and easily purchased online. We will soon be expanding into other flavors and a low-cost plain version that could be mixed with other flavorings at home. This will offer patients lots of options in terms of flavors and lower the cost for everyone.

In closing, Hyponatremia or low sodium is a common disorder that may cause multiple vague symptoms which only a blood test can detect. A thorough investigation is necessary to tease out the reason for the disturbance. There are several ways to treat Hyponatremia. With the example of SIADH fluid restriction, urea products such as [UreaAide](#), Tolvaptan, or salt plus water pills may all be options to help rid the body of excess water and get the sodium level back into the normal range. Thus alleviating the symptoms of low sodium and getting back to feeling great again.

Citations

1. Upadhyay A, Jaber BL, Madias NE. Incidence and prevalence of hyponatremia. *Am J Med.* 2006 Jul;119(7 Suppl 1):S30-5. doi: 10.1016/j.amjmed.2006.05.005. PMID: 16843082.
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Vongsanim S., Pin-on P., Ruengorn C., Noppakun K. (2020) American Journal of Kidney Diseases, 76 (2) , pp. 203-212.