

TABLE 12A**Approach to Fluid Therapy in Hyponatremic Patients**

1. Is hyponatremia acute or chronic?	
ACUTE	CHRONIC
<p>A. Raise the serum sodium concentration as quickly as possible.</p> <p>B. Administer isotonic crystalloids with a sodium concentration greater than the patient's serum sodium concentration.</p> <p>C. Recheck serum sodium concentrations 2–4 hr after starting therapy to assess therapeutic response, then recheck them every 6–8 hr afterward.</p>	<p>A. It takes 24–48 hr for the brain to compensate for hyponatremia.</p> <p>B. Correct chronic hyponatremia slowly to prevent osmotic demyelination syndrome.</p> <p>C. Increase the serum sodium concentration by no more than 0.5 mEq/L/hr for a maximum total correction of 10–12 mEq/L/day.</p>
2. Does the patient have clinical signs of hyponatremia?	
<p>A. Clinical signs include vomiting, disorientation, and seizures secondary to cerebral edema.</p> <p>B. If symptomatic, treat with 3, 5, or 7.5% hypertonic saline at a recommended dose of 2–6 mL/kg given over 10–15 min.¹</p> <p>C. In human patients, serum sodium concentration increases of 4–6 mEq/L are often enough to alleviate clinical signs.¹</p>	
3. Is the patient hypovolemic?	
<p>A. Perform fluid resuscitation: 5-10 mL/kg (cats) or 15-20 mL/kg (dogs) given rapidly over 15–30 min with a buffered isotonic solution capable of expanding the intravascular space (Table 12c).¹</p> <p>B. Repeat as needed until perfusion parameters are restored.</p> <p>Maintenance or hypotonic fluids (0.45% NaCl, 5% dextrose in water) have low sodium concentrations and are not indicated to treat hypovolemia.¹</p>	
4. Does the patient have chronic hyponatremia without neurologic signs?	
<p>A. Slowly correct the sodium concentration at a maximum rate of 0.5 mEq/L/hr or 10-12 mEq/L/day.</p> <p>B. Treat asymptomatic patients with mild water restriction and monitor their serum sodium concentrations.</p> <p>C. Use the Adrogué-Madias formula below to calculate the expected change in sodium concentration when 1 L of a specific fluid type is administered (see Table 12c).²</p> <p style="text-align: center;">Expected change in serum sodium concentration with 1 L of fluid = Fluid sodium concentration – serum sodium concentration / (total body water + 1) Where total body water = body weight in kg × 0.6</p>	

1. Adrogué HJ, Tucker BM, Madias NE. Diagnosis and management of hyponatremia: a review. *JAMA*. 2022;328(3):280-91.

2. Heinz J, Cook A. Evaluation and management of the hyponatremia patient. *Today's Veterinary Practice*. 2022;12(2). February 10, 2022. Available at <https://todaysveterinarypractice.com/internal-medicine/evaluation-and-management-of-the-hyponatremic-patient/>. Accessed January 4, 2024.

The 2024 Fluid Therapy Guidelines for Dogs and Cats are available at aaha.org/fluid-therapy.

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