TABLE 13A

Approach to Fluid Therapy in Hypernatremic Patients

1. Is hypernatremia acute or chronic?	
ACUTE	**CHRONIC**
• Use hypotonic intravenous fluids to correct. • Can undergo rapid sodium concentration correction without the risk of cerebral edema. • Calculate the free water deficit and administer at an appropriate rate (see #3 below). • Monitor sodium concentrations every 4-6 hours.	• It takes 24–48 hours for the brain to compensate for hypernatremia. • Correct chronic hypernatremia slowly to prevent cerebral edema. • Decrease serum sodium concentration by no more than 0.5 mEq/L/hr for a maximum total correction of 10–12 mEq/L/day (see #3 below).
2. Is the patient hypovolemic?	
• Perform fluid resuscitation with a buffered isotonic solution capable of expanding the intravascular space. • Maintenance or hypotonic fluids (0.45% NaCl, 5% dextrose in water) have low sodium concentrations and are not indicated to treat hypovolemia. • Fluids listed in Table 12c are suitable options to treat hypovolemia (5-10 mL/kg [cat] and 15-20 mL/kg [dog] given over 15–30 minutes and repeated as needed) until perfusion parameters are restored.	
3. Calculations for chronic and acute hypernatremia	
Estimate the amount of water lost (free water deficit). Administer fluids that are relatively dilute compared with plasma. **Free Water Deficit (FWD) in Liters (L) = [(Patient Na/Desired Na) -1] × (0.6 × Weight [kg])**	Modify the calculation of the free water deficit according to whether hypernatremia is acute or chronic, using the subsequent formulas: **FWD replacement time (hr) for acute hypernatremia = Patient Na − Target Na**[1] **FWD replacement time (hr) for chronic hypernatremia = (Patient Na − Target Na) × 2**[1] In general, replace the free water deficit by administering 5% dextrose in water.
4. Is the patient dehydrated?	
• Simultaneously treat by administering a buffered isotonic crystalloid (Table 12c). • Correct dehydration over 12–24 hours to minimize shifts in sodium.[1] • Recheck sodium concentrations every 4–6 hours to prevent dramatic changes. • Limit drinking water until the patient's sodium is close to the target concentration.	

1. Heinz J, Cook A. Evaluation and management of the hyponatremia patient. *Today's Veterinary Practice*. 2022;12(2). February 10, 2022. 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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