

The contents of this clinical practice guideline are to be used as a guide. Healthcare professionals should use sound clinical judgment and individualize patient care. This CPG is not meant to be a replacement for training, experience, CME or studying the latest literature and drug information.

GUIDELINES FOR APPROPRIATE USE OF (3%) HYPERTONIC SALINE FOR SYMPTOMATIC HYPONATREMIA

1. **WARNING:** 3% saline will often lead to very significant overcorrection of the serum sodium. 3% saline is to be utilized only for the patient with severely **symptomatic** hyponatremia (e.g. seizing, severe altered mental status, focal neurological signs as a result of severe hyponatremia). Concomitant fluid restriction, loop diuretic administration, and insensible losses will also reduce the amount of water in a patient's body, independent of hypertonic saline administration, thereby also raising the serum sodium.
2. During hypertonic saline administration, serum sodium levels should be monitored at least every 4 hours to ensure that no more rapid change than 8 to 10 mEq in a 24 hour period is effected. If overcorrection occurs, free water administration (via oral free water or IV D5W) should be administered as calculated by the "water deficit" formula to achieve a change of ≤ 10 mEq at 24 hours.
3. Patients with altered mental status as their sole manifestation of symptomatic hyponatremia who are hypovolemic should be resuscitated with normal saline until euvoletic. Euvoletic patients with altered mental status as their sole manifestation of symptomatic hyponatremia may be given a trial of fluid restriction and close observation.
4. Patients who are symptomatic from their hyponatremia should be observed in a monitored bed in the ICU when 3% saline is being administered. Asymptomatic patients with hyponatremia with a serum sodium level < 115 mEq/L should be admitted to ICU for close observation.
5. The initial rate of hypertonic saline administration is not to exceed 50 ml per hour (25 ml per hour if elderly or deconditioned).
6. Hypertonic saline is to be administered through a central venous catheter. Should a central venous catheter be deemed suboptimal for a particular patient, a trial of 2% saline through a peripheral line is reasonable. Patients receiving 2% saline may be monitored outside of the ICU on a monitor (DOU or 3 North), and should have their serum sodium level monitored at least every 6 hours while receiving the 2% saline infusion.
7. Patients with hyponatremia should be worked up for hypothyroidism and adrenal insufficiency when clinically indicated.

GUIDELINES FOR APPROPRIATE USE OF HYPERTONIC SALINE FOR ELEVATED INTRACRANIAL PRESSURE

1. When hypertonic saline is selected as the treatment of choice for intracranial hypertension, the goal serum sodium is 150 to 155 mEq/L and goal serum osmolality is < 320 mOsm/dL.
2. For patients with elevated intracranial pressure, urine output that exceeds 250 ml per hour should lead to immediate and frequent electrolyte monitoring to rule out diabetes insipidus.
3. Hypertonic saline is to be administered through a central venous catheter. 3% saline may be initiated through a peripheral IV while central venous access is being actively obtained if the patient is impending herniation.
4. The initial rate of hypertonic saline administration is not to exceed 50 ml per hour. Serum sodium and serum osmolality levels should be monitored at least every 6 hours (more frequently at first, but never less frequently) while hypertonic saline is administered.

References:

New England Journal of Medicine. 2000; 342(21): 1581-9. Up to Date 2006.