

## Risk of Overcorrection in Rapid Intermittent Bolus vs Slow Continuous Infusion Therapies of Hypertonic Saline for Patients With Symptomatic Hyponatremia The SALSA Randomized Clinical Trial

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### Background:

Symptomatic hyponatremia requires careful treatment as both under and over-correction are detrimental. Hypertonic saline (3%NaCl) is administered either as a rapid intermittent bolus (RIB) or slow continuous infusion (SCI) for its treatment.

### Methods:

Prospective open-label, randomized clinical trial enrolled patients > 18 years with moderately severe to severe hyponatremia and glucose-corrected serum sodium levels of 125 mmol/L or less. Patients were randomised to receive rapid intermittent bolus (RIB) or slow continuous infusion (SCI) of hypertonic saline. Serum sodium level was measured every 6 hours for 2 days. Primary outcome was overcorrection at any given period i.e. Sodium rise of more than 12 or 18 mmol/L within 24 or 48 hours. Secondary and post hoc outcomes included efficacy and safety of the treatment.

# ACADEMIC P.E.A.R.L.S

Pediatric Evidence And Research Learning Snippet



## Rapid Intermittent Bolus vs Slow continuous infusion of 3% saline.

Which is better for symptomatic hyponatremia?

### SALSA Trial

### Results:

- 178 patients were enrolled: mean [SD] serum sodium (sNa) concentrations, 118.2 [5.0] mmol/L) were randomly assigned to the RIB group (n = 87) or the SCI group (n = 91).
- Overcorrection occurred in 15 of 87 (17.2%) and 22 of 91 (24.2%) patients in the RIB and SCI groups, respectively (absolute risk difference, -6.9% [95% CI, -18.8% to 4.9%]; P = .26).
- **The RIB group showed lower incidence of relowering treatment than the SCI group** (36 of 87 [41.4%] vs 52 of 91 [57.1%] patients, respectively; absolute risk difference, -15.8% [95% CI, -30.3% to -1.3%]; P = .04)
- **Groups did not differ in terms of efficacy in increasing sNa concentrations nor in improving symptoms**
- **RIB, when compared with SCI, showed better efficacy in achieving target correction rate within 1 hour** (intention-to-treat analysis: 28 of 87 (32.2%) vs 16 of 91 (17.6%) patients, respectively; absolute risk difference, 14.6% [95% CI, 2%-27.2%]; P = .02)

**Conclusion:** Both RIB and SIC therapies of hypertonic saline for treating hyponatremia were effective and safe, with no difference in the overcorrection risk. However, RIB had a lower incidence of therapeutic re-lowering treatment and tended to have a better efficacy in achieving serum Na target within 1 hour than SCI.

**Key Message:** Rapid intermittent bolus of hypertonic saline 3% as 2- 4 ml/kg over 20-40 min could be suggested as the preferred treatment for symptomatic hyponatremia.

## EXPERT COMMENT

Overly rapid correction of sodium can lead to osmotic demyelination syndrome. Hence careful sodium correction is warranted in symptomatic hyponatremia. Use of rapid intermittent hypertonic saline therapy along with regular sodium monitoring has been shown to be advantageous in adults; the same can be applied to pediatric patients, until we have more specific pediatric evidence

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### Reference

Baek SH, Jo YH, Ahn S, et al. Risk of Overcorrection in Rapid Intermittent Bolus vs Slow Continuous Infusion Therapies of Hypertonic Saline for Patients With Symptomatic Hyponatremia: The SALSA Randomized Clinical Trial. JAMA Intern Med. Published online October 26, 2020. doi:10.1001/jamainternmed.2020.5519