**Indications for use of 3% NaCl**
- **Cerebral oedema** and raised ICP (e.g. head injury, DKA)
- **Hyponatraemic seizures**

**Mechanism of action**
- Increases plasma sodium
- Creates an osmotic gradient
- Induces a shift of fluid from the intracellular to the extracellular space
- Reduces brain water
- Increases effective circulating volume

**3% NaCl versus Mannitol**
- As effective for the treatment of raised ICP in traumatic brain injury
- Less "rebound" ICP
- No obligatory osmotic diuresis (plasma volume preserved/expanded)
- Mannitol may be nephrotoxic
- 3% NaCl is renoprotective.
- Monitoring osmolality
  - For 3% NaCl one can use plasma Na
  - For mannitol need to infer osmolar gap

**Dose of 3% NaCl (or pre-made 2.7% NaCl when available)**
- Cerebral oedema (TBI or DKA) standard dose is **3-5 mls/kg** (over 10–20 minutes)
- For seizures associated with acute hyponatraemia use aliquots of **1ml/kg** to raise the Na to **>125 mmol/L**
- Use SAME dose even if the pre-made 2.7% NaCl solutions is used
- Repeat as clinically indicated
- 3mls/kg of 3% saline will **increase plasma Na by approximately 2-3 mmol/L**. The increase may be greater if a large diuresis occurs. Check plasma Na if any doubt

**Guideline to make up hypertonic saline (3% NaCl)**

**Preparation of 3% NaCl using 30% NaCl (to make 500mls)**

1. **Remove 36mls 0.9% Saline**
2. **Add 36mls 30% Saline**
3. **500mls 0.9% NaCl**
4. **464mls 0.9% NaCl**
5. **500mls 0.9% NaCl**
6. **500mls 3% NaCl**

**Preparation of 3% NaCl using 30% NaCl (to make 50mls)**

Take 5 ml NaCl 30%
Dilute with 45ml water for injection to give a final volume of 50ml and mix well

**DO NOT CONNECT THE 500ML BAG OF 3% SALINE DIRECTLY TO PATIENT IV LINE (RISK OF SERIOUS SODIUM OVERDOSE IF FULL BAG ACCIDENTALLY INFUSED). ALWAYS WITHDRAW THE PRESCRIBED VOLUME OF 3% SALINE (e.g. 3mls/kg) AND ADMINISTER TO PATIENT SEPARATELY**

**SORT May 2018 Review 2021**

www.sort.nhs.uk