

Management of Hyponatraemia in PaedOnc

Hyponatraemia suspected

Always repeat sample, if very low worth running a gas at the same time for a rapid result, ensure adequate line discard, not haemolysis or artefactual.

Consider likely cause of hyponatraemia

Iatrogenic: children on chemotherapy regimens with 0.45% NaCl in fluids may need to change to 0.9% NaCl

Excessive sodium Loss: urinary/renal or gut losses i.e. Excessive diarrhoea, glycosuria, intrinsic renal tubulopathies, diuretics, cerebral salt wasting

Excessive water retention: SIADH, fluid overload

No: Observe

Mild Na 130-135 mmol/L
Moderate 125-129 mmol/L
Profound < 125 mmol/L

Symptoms are more likely if develops rapidly. Include lethargy, muscle cramps, anorexia, nausea, vomiting, agitation, disorientation, altered level of consciousness, hypothermia, seizures.

Define severity Mild/Moderate/Profound

Identify aetiology and check for symptoms and signs. Urgency of correction depends on how low sodium is and how quickly it has fallen

Check	Calculate
Hydration status Paired Serum Na, Cl, HCO₃, Urea, creat, osmolality & Urine Na, creat, osmolality BP (CVP depending on circumstances) Change in weight? (may need to be bd) Is child hypoxic? Exacerbates neurological effect of hyponatraemia	Calculate Fractional excretion Na+ (FeNa) remember plasma creatinine is in umols/L and urinary mmols/L we use: www.mdcalc.com/fractional-excretion-sodium-fena . FeNa <1% is normal, caution results if significant oliguria or frusemide use.

Is this a clinical emergency?

YES: Urgent reversal required

Initial sodium < 125 mmol/L and/or patient is symptomatic (confusion or reduced level of consciousness)

Give 2.7% NaCl 2ml/kg over 10-20 minutes IV (1mmol/kg of NaCl) if no central access use as large vein as possible. If symptoms do not resolve within 30 minutes a second dose can be given. Urgently repeat level. If neurology not improving reassess for other causes contact PICU for advice.



Repeat Na+ if ongoing seizures you may need to increase Na to 130mmol/L, rate 2-4mmol but do so on liaison with PICU/Renal

If no seizures aim to raise Na at rate of 0.5-1 mmol/l per hour (or if seizures are present). Repeat in 3-4 hours.

See SORT website for guideline on making up 3% NaCl if premade 2.7% not available.

No: Reversible cause identified

Likely related to Excessive free water if urine osmol < 100 mOsm/kg

Likely related to Excessive urinary sodium loss if FeNa > 1%

Likely related to inadequate intake

Consider:
 > Suitability for fluid restriction, initial restriction to 50-65% of estimated maintenance reqs.
 > Certain chemotherapy can cause SIADH i.e. Vincristine, cyclophosphamide and fluid restriction may be required after completion of post-chemotherapy hydration

Consider:
 > Changing hydration fluid to 0.9% if 0.45% NaCl
 > May need to increase Na in TPN
 > May require oral supplements
 > Reducing diuretics

If < 130 mmol/L and has fallen quickly or not responded to other measures consider

Correction of asymptomatic hyponatraemia should be gradual: to a maximum change of about 12 mmol/l in 1st 24 hours. Rapid correction of hyponatremia can cause coma, which may be associated with osmotic demyelination syndrome or central pontine myelinolysis caused by rapid fluid shifts into and out of brain tissue.