

HYPONATRAEMIA ASSESSMENT AND TREATMENT ALGORITHM

Na < 130 mmol/L, Overt Symptoms usually below 120 mmol/L

Evaluate:
Conscious level, drugs, Postural BP, Consider level 2 care if low GCS or seizures

Assess Volume status and Urine Na

Hypovolaemic

Euvolaemic

Hypervolaemic

Urine Na < 20 mmol/L
 o GI- vomiting/ diarrhoea
 o Fluid shifts (e.g. pancreatitis)
Urine Na > 20 mmol/L
 o Diuretics (occ Na < 20 if recently stopped)
 o Salt wasting nephropathy (analgesics, pyelonephritis)
 o Adrenal insufficiency- If 9am cortisol is < 500 nmol/L, proceed with SST.

Measure Serum and Urine Osmolality, Urea, Glucose, Triglycerides, TFT's, 9am Cortisol

Urine Na < 20 mmol/L
 o Acute H₂O overload (usually with preceding dehydration)
Urine Na > 20 mmol/L
 o Chronic H₂O overload (urine osmol < 100 mOsm/kg)
 o Renal failure (CRF)
 o Hypothyroidism
 o Adrenal insufficiency (reduced free water clearance)
 o SIADH[^]

Urine Na < 20 mmol/L
 o Cirrhosis
 o Congestive Heart Failure
 o Nephrotic syndrome

Symptomatic
 Restore volume with fluid challenge (1L saline over 8 hrs)
 Repeat Na and continue fluids if

Asymptomatic
 Restore volume with isotonic saline

Symptomatic
 Treat underlying Cause.
 Stop offending drugs
 Consider:- Water restriction
 Demeclocycline 150mg bd-qds
 Tolvaptan (Only by Consultant Endocrinologist for SIADH)
 Hypertonic saline- (Discuss with Consultant Endocrinologist/Intensivist before initiation)

Asymptomatic
 Water restriction
 Stop offending drugs

Symptomatic/ asymptomatic
 Treat underlying disorder
 Water restriction

MONITORING

Fluid balance, Strict Input and Output chart. **Na should not increase by Greater than 10-12 mmol in 24 hours.**

Urgent Serum U+E/Sodium should be checked every 12 hours.

In marked 'non-acute' hyponatraemia, aim for cautious Na replacement due to risk of demyelination.

During active treatment of severe hyponatraemia serum Na should be reassessed **hourly**. (HDU environment if possible)

Refer to ICCU/ITU URGENTLY If Na < 115 mmol/L or evidence of neurological insult e.g Seizures, declining GCS.

Think of Pseudohyponatraemia- e.g. lipaemic, paraprotein OR Intracellular shift (hyperglycaemia) osmolar gap~

***Drugs** such as diuretics (thiazides, amiloride/ Frumil, spironolactone), carbamazepine, ACE inhibitors and antidepressant SSRIs are notable causes. PPI's have also been implicated.

Symptoms depend critically on rapidity of onset and severity of hyponatraemia **Acute hyponatraemia** can cause cerebral oedema and requires urgent treatment. **Chronic hyponatraemia** if corrected **too rapidly** can cause osmotic demyelination

^SIADH is a diagnosis of exclusion in euvolaemic hyponatraemia with Urine Na > 20 and Ur Osm > 200. If no response to fluid restriction, consult an Endocrinologist for exploring role of Vasopressin receptor antagonist such as Tolvaptan^{^^} (^{^^} Urine Na should be more than 40 mmol/L, Urine Osm > 200 and Urine/plasma electrolyte ratio = /> 1^{**})

[^{**} U/P electrolyte ratio = Urine Na + Urine K / Plasma Na]

Calculated Osmolality = [2x (Na + K)] + Urea + Glu