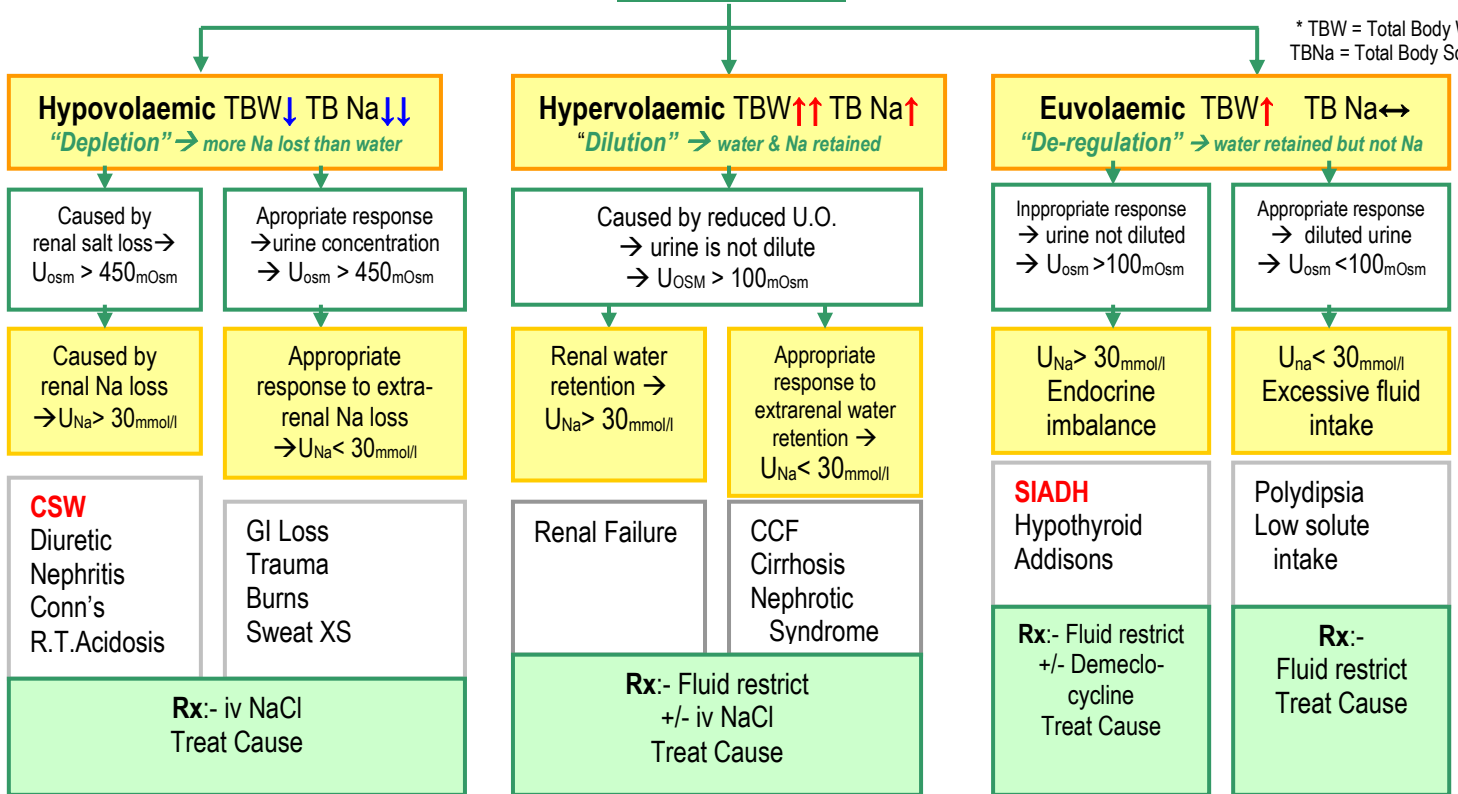


SODIUM BALANCE IN NEUROLOGICAL REHABILITATION

HYPONATRAEMIA

* TBW = Total Body Water
TBNa = Total Body Sodium



Drugs associated with SIADH

- | | | |
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| <ul style="list-style-type: none"> • Analgesics <ul style="list-style-type: none"> – Opiates – NSAID incl Aspirin • Anticonvulsants <ul style="list-style-type: none"> – Carbamazepine/Oxcarbazepine – Barbiturates – Sodium valproate • Antidepressants <ul style="list-style-type: none"> – TCA – MAOI; – SSRI • Antipsychotics <ul style="list-style-type: none"> – Phenothiazines – Haloperidol | <ul style="list-style-type: none"> • Hypoglycemic agents <ul style="list-style-type: none"> – Metformin / Phenformin – Tolbutamide / Chlorpropamide • Other endocrine <ul style="list-style-type: none"> – Oxytocin – Triiodothyronine – Vasopressin • Antineoplastic agents <ul style="list-style-type: none"> – Arabinoside – Cyclophosphamide / Ifosfamide – Vincristine / Vinblastine – Cisplatin – Melphalan – Imatinib | <ul style="list-style-type: none"> • Bromocriptine • Carbachol • Ciprofloxacin • Clofibrate • Ecstasy • Griseofulvin • Methotrexate • Nicotine • Nitrous oxide • Phenoxybenzamine • Theophylline • Thiopental |
|---|---|---|

HYPERNATRAEMIA - CAUSES

| Hypovolemic | Euvolemic - Diabetes Insipidus | |
|---|--|---|
| <p style="text-align: center; color: #8e9498; margin: 0;">Inadequate water intake</p> <ul style="list-style-type: none"> • Behavioural • Hypothalamic thirst centre injury <p style="text-align: center; color: #8e9498; margin: 0;">Excessive renal water loss</p> <ul style="list-style-type: none"> • Osmotic incl. Glycosuria • Diuretic medication • Postobstructive diuresis • Intrinsic renal disease <p style="text-align: center; color: #8e9498; margin: 0;">Excessive extra-renal water loss</p> <ul style="list-style-type: none"> • Extreme sweating • GI - diarrhea; vomiting; fistulas • Significant burns | <p style="text-align: center; color: #8e9498; margin: 0;">Nephrogenic DI</p> <ul style="list-style-type: none"> • Advanced renal disease • Renal tubular disorders • Electrolyte imbalance : <ul style="list-style-type: none"> – ↓K+ ; ↑Ca++ • Sickle cell disease • Inflammatory <ul style="list-style-type: none"> – Sjögren syndrome; amyloidosis; sarcoidosis • Dietary <ul style="list-style-type: none"> – ↑ water intake; ↓ salt or protein intake • Drugs <ul style="list-style-type: none"> – Lithium; demeclocycline; colchicine; vinblastine; amphotericin; gentamicin; furosemide; angiographic dyes • Postobstructive or osmotic diuresis | <p style="text-align: center; color: #8e9498; margin: 0;">Cranial DI</p> <ul style="list-style-type: none"> • Trauma • Suprasellar / intrasellar tumors • Granulomas <ul style="list-style-type: none"> – Sarcoid; Wegener's; TB; syphilis; histiocytosis • Infectious <ul style="list-style-type: none"> – Encephalitis; meningitis; Guillain-Barré • Vascular <ul style="list-style-type: none"> – Aneurysm; infarct; haemorrhage; Sheehan syn • Transient DI of pregnancy |
| <p style="text-align: center; margin: 0;">Hypervolaemic</p> | | |
| <p style="text-align: center; color: #8e9498; margin: 0;">Excess solute intake / infusion</p> <ul style="list-style-type: none"> • Hypertonic fluid / salt / bicarbonate <p style="text-align: center; color: #8e9498; margin: 0;">Excessive sodium retention</p> <ul style="list-style-type: none"> • Hyperaldosteronism | | |

DIABETES INSIPIDIS

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| <p>Criteria</p> <p>Passage of</p> <ul style="list-style-type: none"> – large volumes (>3 L/24 hr) – of dilute urine (< 300 mOsm/kg) <p>Clinically</p> <p>Polyuria / polydipsia</p> <p>Patterns</p> <p><u>Cranial / Neurogenic DI</u> decreased secretion ADH / AVP (arginine vasopressin)</p> <p><u>Nephrogenic DI</u> resistance to ADH / AVP action</p> | <p>Diagnosis</p> <p><u>Baseline</u></p> <ul style="list-style-type: none"> – 24-hour urine volume – Uosm <200 mOsm/kg – Serum Na ↑ – Serum Glucose (to exclude DM) – Posm > 287 mOsm/kg <p><u>Confirmatory</u></p> <ul style="list-style-type: none"> – Serum ADH – Water deprivation test +/- administration of Vasopressin/ ADH <p style="text-align: center;">If U_{osm}</p> <ul style="list-style-type: none"> >800_{mOsm/kg} without ADH ⇒ not DI > 800_{mOsm/kg} after ADH ⇒ Cranial DI <300_{mOsm/kg} after ADH ⇒ Nephrogenic <p><u>If Cranial DI</u></p> <ul style="list-style-type: none"> – Pituitary MRI – Pituitary hormone screen | <p>Initial Rx</p> <p>Increase oral intake</p> <ul style="list-style-type: none"> – Dextrose and water <p>Hypoosmolar IV fluid (Dextrose)</p> <ul style="list-style-type: none"> – Administer at < 500-750 mL/hr <p>Aim to reduce P_{Na} by approx 0.5mmol/L/hr</p> <p>Maintenance Rx</p> <p><u>Cranial</u></p> <ul style="list-style-type: none"> – Desmopressin <p><u>Nephrogenic</u> – in order of choice</p> <ul style="list-style-type: none"> – Chlorpropamide – Carbamazepine – Clofibrate – Thiazides – NSAIDs such as indomethacin |
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