### Hyponautraemia without Severe Symptoms

#### Mechanisms

<table>
<thead>
<tr>
<th>Suppressed Vasopressin</th>
<th>Non-osmotic Vasopressin Action</th>
<th>SIADH</th>
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<tr>
<td>Excessive water input</td>
<td>Na⁺ retention and reduced effective circulating volume</td>
<td>Self-limiting vasopressin release</td>
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<tr>
<td>Low solute intake</td>
<td>Na⁺ loss and reduced effective circulating volume</td>
<td>Persistent vasopressin action</td>
</tr>
<tr>
<td>Reduced GFR</td>
<td>Extra renal Na⁺ loss</td>
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<td></td>
<td>Renal Na⁺ loss</td>
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</tr>
</tbody>
</table>

#### History

- Polydipsia, Hypotonic fluid infusions, surgery with irrigation
- Alcoholism, cancer, anorexia nervosa, severe chronic disease
- CHF, hepatic cirrhosis, nephrotic syndrome, sepsis
- Old age, drugs, kidney disease
- Stigmata, oedema, ascites, weight gain
- Weight gain, positive accumulated fluid balance
- Signs of malnutrition

#### Clinical

- Weight gain, positive accumulated fluid balance
- Signs of malnutrition
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#### Laboratory/Spot Urine

- U-Na⁺<sub>Gastrointestinal loss, exercise, burns, sweating</sub>
- U-Osm < P-Osm<sub>Random</sub>
- U-Na⁺<sup>↑</sup> or P-Na⁺<sup>↑</sup> (if <sup>c</sup>)
- U-Na⁺<sup>↑</sup> or P-Na⁺<sup>↑</sup> (if <sup>g</sup>)
- U-Na⁺<sup>↑</sup> or P-Na⁺<sup>↑</sup> (if <sup>d</sup>)
- U-Na⁺<sup>↑</sup> or P-Na⁺<sup>↑</sup> (if <sup>e</sup>)

#### Treatment

- Reduce water input, re-feeding
- Optimize effective circulating volume
- Restore effective circulating volume
- Avoid hypotonic fluids, drug evaluation, hypertonic NaCl in neurointensive patient
- Fluid restriction, solute: NaCl/urea, Loop diuretics, Vasopressin, V₂-receptor antagonists

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- **Response to 1-2 l 0.9% NaCl**
  - Reduce water input, re-feeding
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  - Avoid hypotonic fluids, drug evaluation, hypertonic NaCl in neurointensive patient
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- **a)** Multiple combined mechanisms are common
- **b)** Spot urine for U-Osm and U-Na⁺ should be sampled before treatment if possible.
- **c)** U-Na⁺ can be high (>30 mmol/l) with diuretics, metabolic alkalosis (vomiting), mineralocorticoid insufficiency.
- **d)** Random P-[cortisol]>700 nmol/l in stress excludes insufficiency (if inconclusive: low-dose (1μg) ACTH stimulation should increase cortisol>700 nmol/l or more than 250 nmol/l from baseline 30 min after administration).
- **e)** Infused in excess of ongoing losses to expand ECV 1-2 l.
- **f)** Central nervous system disorders, pulmonary disorders or to other causes (general anaesthesia, postoperative nausea, pain and stress)
- **g)** U-Na⁺ can be low if Na⁺-intake is low (seldom in the hospitalized critical ill)