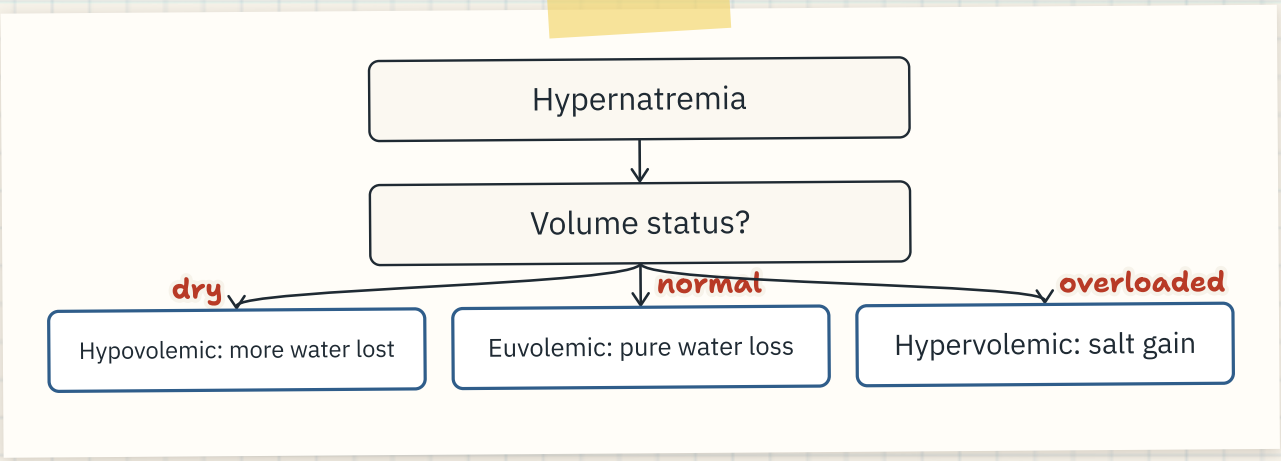
Hypernatremia: classify, then replace

Volume status, free water deficit, correction rate



Step by step

1. Shock: isotonic saline first
2. Stop the loss, treat the cause
3. Replace water by mouth, tube or 5% dextrose
4. Chronic: ≤ 0.5 mmol/L per hour
5. Recheck sodium often

Status	Mechanism
Hypovolemic	More water than sodium lost
Euvolemic	Pure water loss (DI, fever)
Hypervolemic	Salt gain

Hypernatremia by volume status

FREE WATER DEFICIT

$$TBW \times (Na^+ / 140 - 1)$$

TBW about 0.6 × weight in men, 0.5 in women, lower in the elderly; add ongoing losses

Rule of thumb

Desmopressin: central > 50% rise, complete nephrogenic < 15%

70 kg, Na^+ 154: 42 × 0.1 = 4.2 L

Fall of 14 mmol/L over 48 h = 7 mmol/L per day

Exam traps

- Shock first: isotonic saline, even with a high sodium.
- The formula gives only the existing deficit; add ongoing losses.
- Too fast risks brain swelling; too slow is linked with higher mortality.

Hypernatremia explained: free water deficit and correction rate

Video, written lesson, practice question and sources: medservatory.com/usmle-step-2-ck/nephrology-electrolytes/hypernatremia-volume-status-free-water-deficit

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