My patient’s serum [Na+] is abnormal and/or they seem to be “dehydrated”.

**Assessing and managing Na/H2O disorders is complicated and requires a systematic approach.**

### Intracellular fluid (ICF)
- Mostly in muscle cells
- Intracellular osmolality must be maintained for cells to function. Plasma osmolality will be sacrificed in either case to maintain ICF osmolality.

### Extracellular fluid (ECF)
- Mostly in vascular space
- Maintains osmolality of body through exchange with ICF.

### Hypovolemia/contracted ECF
- Causes:送往*)
  - SIADH: Plasma osmolality <280 mOsm/kg, urine osmolality >1000 mOsm/kg, urine volume changes with changes in total body water.
  - Urinary tract obstruction, TPN infusion.
  - Other: cidofovir, acyclovir.
- Hypovolemic hyponatremia
  - Causes: arterial hypovolemia, hypotension, primary polydipsia.
- Euvolemic hyponatremia
  - Causes: adrenal (pseudohypoaldosteronism) or SIADH

### Hypervolemia/expanded ECF
- Causes: primary polydipsia, SIADH

### Mechanisms of ECF volumes
- Primary polydipsia
- SIADH
- Thiazides
- Intravascular water restriction
- Lack of access to H2O, NPO, altered awareness of thirst.
- Oral restrictions, lack of access to H2O, NPO, altered awareness of thirst.
- Oral intake of hypotonic fluids, intravascular water restriction.
- Other: hyperglycemia, lipemia, severe diarrhea.

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### Hypervolemia/expanded ECF
- Causes: primary polydipsia, SIADH

### Management of SIADH/SIHAD
- Treat the underlying cause.
- Treat the symptoms.
- Hyponatremia will resolve usually resolves when culprit is removed.

### Management of ECF volumes
- Primary polydipsia
  - Identify & remove cause
  - Restrict Na intake (to 135-145 mEq/L)
  - Hyponatremia will resolve usually resolves when culprit is removed.
- SIADH
  - Treat the underlying cause.
  - Treat the symptoms.
  - Hyponatremia will resolve usually resolves when culprit is removed.

### ADH (arginine vasopressin, AVP)
- ADH (arginine vasopressin, AVP):
  - ADH's purpose is to (1) help maintain blood pressure by reducing urinary water loss and increasing blood volume (positive feedback mechanism) and (2) to couple osmoregulation with intercellular water balance.
  - Similar effect to exogenous antidiuretic hormone administration (i.e., can result in hypovolemia if stopped). ADH does not make you thirsty (only) plasma osmolality makes you thirsty.

### Sodium & Water Assessment & Therapeutics
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