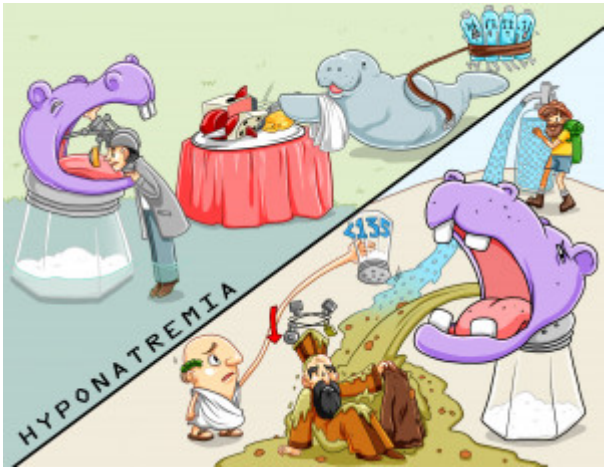
Hyponatremia

Hyponatremia is a low serum sodium level less than 135 mEq/L. This causes a shift of fluid volume from the extracellular fluid to the intracellular fluid resulting in cellular swelling and reduced excitable depolarization of cells. Many things cause may precipitate hyponatremia including actual sodium deficits or relative sodium deficits. Some relative causes include water intoxication (water excess) which results in a hypoosmolar imbalance. An additional assessment is done to determine if the patient has hyponatremia related to fluid overload or a fluid deficit, as these conditions manifest slightly differently.



PLAY PICMONIC

Assessment

< 135 mEq Na+
Less-than 135 Salt-shaker
Less than 135mEq/L is considered low in a normal adult patient. The normal range is generally 135-145 mEq/L.

Nausea and Vomiting
Vomiting
Cerebral edema and increased intracranial pressure in brain tissue stimulate receptors in the brain, causing nausea and vomiting.

Decreased LOC
Down-arrow Lock-halo
Early signs of hyponatremia include decreased level of consciousness, with the severity of symptoms increasing as hyponatremia progresses.

Confusion / Lethargy
Confucius with Leather-jacket
Confusion and lethargy are often associated with a decreased level of consciousness attributed to decreased excitability of CNS tissues due to decreased sodium levels. Always assess the patient's history to establish a baseline normal level of functioning. Check for a medical alert bracelet on the patient for the possibility of diabetes.

Seizures
Caesar
Both hyponatremia and hypernatremia may result in seizures and eventually coma as neuromuscular synapses are unable to fire appropriately. A severe manifestation results in coma.

Priority Interventions

Assess Airway
Assess-man Opening Airway
Decreased muscle strength often manifests as decreased or absent deep tendon reflexes. Any patient with muscle weakness should have their airway status monitored. Patients with decreased LOC also are at risk for aspiration.

Reduce Diuretic Dosage
Reducing Die-rocket Amount
Loop and thiazide diuretics can precipitate hyponatremia as well as low levels of other body electrolytes. A healthcare provider may reduce their dosages.

Fluid Excess Hyponatremia

Mannitol (Osmitrol)

Manatee

Patients with fluid excess, especially exhibiting signs of increased intracranial pressure, are given Mannitol (Osmitrol), an osmotic diuretic that causes excretion of only free water. This medication decreases fluid volume and results in increased osmolarity of the plasma.

Fluid Restriction

Fluids with Restrictive-belts

Patients presenting in a non-acute (<48 hours) asymptomatic presentation with findings of hypervolemic hyponatremia may be placed on a fluid restriction and need their underlying condition addressed. Patients with psychogenic polydipsia are often given this treatment.
Acutely hyponatremic patients with serum sodium <130 mEq/L who are asymptomatic are usually treated with a 50 mL bolus of 3 percent saline (i.e., hypertonic saline) to prevent the serum sodium from falling further. However, do not give hypertonic saline if the hyponatremia is already autocorrecting due to a water diuresis. Autocorrection can be suspected if the cause of hyponatremia has been reversed, urine output has increased, and urine is dilute.

Fluid Deficit Hyponatremia

Hypertonic Solution (3% or 5% NaCl)

Hiker-tonic

Patients with fluid deficit hyponatremia will often be given a small volume of hypertonic solution, such as 3% IV saline. These solutions increase the osmolarity of the plasma and shift fluid from the ICF to the ECF.