Fluid, Electrolyte, and Acid Base

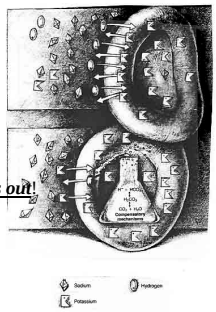
Part 4 Disorders of Potassium Balance

Disorders of Potassium Balance

Hypokalemia

Potassium and Acid Base Balance

- Normally, Na+ is mostly ECF; K+ is ICF
- Acidemia-Inc. H+ ECF, move to ICF to buffer in exchange for K+-renal excretion; ***K moves out***!
- Alkalemia-Decr. H+; ICF buffers generate H+ move ECF; K+ to ICF ; ***K+ moves in!***



Causes of Hypokalemia

- Decreased intake of K^+
- K^+ shift due to alkalosis
- GI loss
- Malnutrition
- Renal loss

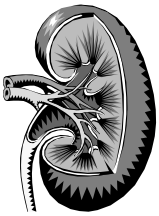
Hypokalemia <3.5 mEq/L

- **Clinical manifestations**
  - **CNS**: early: fatigue, not feeling well; paresthesias, diminished deep tendon reflexes, generalized muscle weakness
  - **Respirator**y: weak respiratory muscles, shallow respirations (advanced)
  - **GI**: decreased bowel motility: A,N,V, ileus
  - **CV**: postural hypotension, dysrhythmias, EKG changes
  - **Renal**: polyuria, nocturia

Disorders of Potassium Balance

Hyperkalemia

Causes of Hyperkalemia



- R/O pseudohyperkalemia
- Inadequate excretion: RF, adrenal insufficiency, K^+ sparing diuretics
- ICF shift of K^+ to ECF
  - metabolic acidosis, massive tissue injury
- Excess intake

Hyperkalemia

- ***Clinical manifestations do not correlate with lab values!***
- EKG changes-Tented T waves with K>6;
  - 6.5-8-prolong QR, wide QRS
  - >8-sine wave, arrest
- Hypocalcemia, hyponatremia, and acidosis can enhance hyperkalemic effects

Hyperkalemia

- ***CHECK FOR ARTIFACT!***
- **Etiology:** inadequate excretion (renal failure), iatrogenic, increased intake, redistribution
- Body can not really store potassium
- ***MEDICAL EMERGENCY***!
- **Manifestations**: Asymptomatic until marked then neuromuscular weakness, EKG changes

Manifestations of Hyperkalemia

- **Neuromuscular**-muscle weakness, paresthesias
- **GI**-N, D
- **Renal**-oliguria progressing to anuria
- **CV**-dysrhythmias, bradycardia, heart block, ventricular fibrillation or cardiac standstill; EKG changes-high peaked T, PR prolonged, wide QRS