

Beebe Healthcare
Margaret H. Rollins School of Nursing
Nursing 101 – Foundations of Nursing
Electrolytes

SODIUM

- Major electrolyte found in ECF and present in most body fluids
 - Essential for maintenance of acid-base and fluid balance, generation and transmission of nerve impulses, muscle contractility
 - Signs/symptoms of imbalance
 - hyponatremia – irritability, apprehension, confusion, dizziness, personality changes, seizures, coma
 - hypernatremia – restlessness, agitation, intense thirst, lethargy, weakness, muscle cramps
 - Normal range: 136-145 mEq/L

POTASSIUM

- Major cation in ICF
- Plays a vital role in cell metabolism; transmission of nerve impulses; Functioning of cardiac, lung, and muscle tissue
- Acid-base balance
- Moves in opposite direction of sodium
- Signs/symptoms of imbalance
 - hypokalemia – cardiac dysrhythmias, muscle weakness, leg cramps, nausea, vomiting, hyperglycemia
 - hyperkalemia – cardiac dysrhythmias, confusion, diarrhea, muscle weakness/cramps, irritability
- Normal range: 3.5-5.0 mEq/L

CALCIUM

- Found in body's cells, bones, and teeth
- Important for blood clotting and in bone/teeth formation
- Essential for proper functioning of cardiovascular, neuromuscular, and endocrine systems
- Signs/symptoms of imbalance
 - hypocalcemia – numbness, tingling, hyperreflexia, tetany, seizures
 - hypercalcemia – anorexia, nausea, vomiting weakness, lethargy, decreased reflexes, confusion, bone pain, fractures, polyuria
- normal range: 9 – 10.5 mg/dL

MAGNESIUM

- Mostly found in the bones; some also in body cells
- Neurologic function, muscle contraction & relaxation
- Transmits nerve impulses
- Necessary for sodium-potassium pump
- Signs/symptoms of imbalance
 - hypomagnesemia – cardiac dysrhythmias, tachycardia, hypertension, tremors, increased deep tendon reflexes, confusion, seizures, muscle cramps, vertigo
 - hypermagnesemia – lethargy, muscle weakness, nausea, vomiting, bradycardia, hypotension, decreased deep tendon reflexes, flushed skin, urinary retention
- normal range: 1.3-2.1 mEq/L

Note: This is not all inclusive

References:

Harding, M., Kwong, J., Roberts, D., Hagler, D., Reinisch, C. (2020). Lewis's Medical-surgical nursing: Assessment and management of clinical problems (11th ed.). Elsevier. Chapter 16.