

Beebe Healthcare
Margaret H. Rollins School of Nursing
Nursing 202 – Advanced Concepts of Nursing
Cardiac Rhythm – Electrolytes
2022

SODIUM

- stimulates reactions within nerve and muscle tissue (includes myocardium)
- important for depolarization
- s/s
 - hyponatremia – headache, anxiety, apprehension; weak, confused, anorexia, nausea, vomiting, tachycardia
 - hypernatremia – dry mucous membranes, fatigue, restlessness, weakness, agitation; convulsions
- normal range:

POTASSIUM

- regulates cardiac electrical activity/impulse transmission
- important for repolarization and stable polarized state
- s/s
 - hypokalemia – ventricular arrhythmias (PVC's), bradycardia, muscle weakness, ST depression, flattened T wave, U wave, leg cramps, anorexia, nausea, vomiting
 - hyperkalemia – confusion, irritability, diarrhea, prolonged PR interval, peaked T wave, blocks, asystole
- normal range:

CALCIUM

- transmits electrical impulses in the heart; maintains cardiac pacemaker (automaticity)
- important for initiation and propagation of electrical impulse for myocardial contraction
- s/s
 - hypocalcemia – V-tach, prolonged Q/T interval, numbness, tingling, tetany, anorexic, nausea, vomiting
 - hypercalcemia – A/V block, ventricular dysrhythmias, weak, confused, abdominal cramps
- normal range:

MAGNESIUM

- transmission of electrical activity in the heart; regulating cardiac function
- a ↓ in Mg will ↑ intracellular K which ↑ cellular membrane excitability
- s/s
 - hypomagnesemia – prolonged Q/T interval, ventricular dysrhythmias (PVC's, V- Fib)
 - hypermagnesemia – tremors, vasodilation, bradycardia, weak, impaired respiration, heart block, arrest
- normal range:

Note: This is not all inclusive

References:

- Berman, A., Snyder, S. & Frandsen, G. (2016): *Kozier & Erb's fundamentals of nursing: Concepts, process, and practice* (10th ed.). Upper Saddle River, NJ: Pearson Education, Inc. Chapter 52.
- Lewis, S.L., Dirksen, S.R., Heitkemper, M.M. & Bucher, L. (2020). *Medical-surgical nursing: Assessment and management of clinical problems* (11th ed.). St. Louis, MO: Mosby. Chapter 16.