**January 17, 2023   
AHD Objectives**

**Hyperkalemia – Dr. Nimri**

1. Describe the laboratory evaluation that must be obtained to work up the hyperkalemic patient. (Comment on pseudohyperkalemia, EKG findings and sensitivity, and the required urine studies.)
2. Describe the acute management of the hyperkalemic patient including steps to stabilize the myocardial membrane, shift potassium into the cells, and lower the total body potassium. Know the appropriate doses, methods of delivery, and contraindications to calcium gluconate, insulin and glucose, beta-agonists, and kayexalate.
3. Know when to hospitalize and when to treat hyperkalemia.

**Hyponatremia – Dr. Schinker**

1. Define hyponatremia (mild, moderate, and severe), and specifically the time frame of acute versus chronic hyponatremia.
2. Describe the signs and symptoms of hyponatremia from subtle to severe.
3. Describe the initial management of a patient with severe, symptomatic hyponatremia.
4. Give the differential diagnosis for the following:
   1. Hypertonic hyponatremia
   2. Isotonic hyponatremia
   3. Hypotonic hyponatremia (What is the serum osmolality threshold for this?)
5. What is the first step in determining the etiology of a HYPOTONIC hyponatremia?
6. Describe the urine studies and lab findings (urine osmolality and/or urine sodium) that can help distinguish between the different causes of HYPOTONIC hyponatremia. Know the management of each of these diagnoses.
7. Describe how to determine the free water deficit in a patient with hypernatremia and how to manage the patient to avoid osmotic demyelination.

**Proteinuria – Dr. Barney**

1. Know how much proteinuria and albuminuria is considered within normal limits in a 24-hour urine collection (or on spot testing).
2. Know the three mechanisms of excessive protein excretion in the urine.
3. Know the approach to the patient with a positive dipstick test for proteinuria and its limitations to detecting proteinuria compared to other quantification techniques.
4. Understand the indications for 24-hour urine protein quantification, spot urine sampling for protein/creatinine ratio and albumin/creatinine ratio, and urine protein electrophoresis.
5. Describe the appropriate work up to evaluate a patient with proteinuria.