**Acid-Base Teaching Script:**

1. 5 step process
   1. Acidemic or alkalemic?
      1. i.e. pH > or < 7.4
   2. Respiratory or Metabolic
      1. If ph and CO2 in same direction = metabolic
      2. If pH and CO2 opposite directions = respiratory
   3. Compensated?
      1. pH changes 0.08 for every 10 in PaCO2 (opposite direction)
      2. If (and ONLY if) metabolic, calculate Winter’s equation
      3. Winters: (1.5) x bicarb +8 +/-2 and compare to expected pCO2. If =, then respiratory compensation
   4. Calculate anion gap
      1. (Na) – (HCO3 + Cl)
   5. Calculate delta gap to determine if mixed process
      1. Calculated AG – normal AG (12) + measured bicarb. Does that equal normal bicarb?
      2. If higher, metabolic alkalosis
      3. If lower, (NAGMA) Hyperchloremic acidosis
2. Types of disorders
   1. HAGMA: “MUDPILES”
      1. **M**ethanol, **U**remia, **D**KA, **P**ropylene glycol (BZD, Esmolol), **I**NH, **L**actic acidosis (Metformin), **E**thylene Glycol (antifreeze), A**S**A.
   2. NAGMA
      1. GI loss (diarrhea)
      2. RTA (no PCT reabsorption of bicarb)
      3. Dilutional
      4. Carbonic anhydrase inhibitors (Acetazolamide)
      5. Addison’s disease
   3. Metabolic alkalosis
      1. Emesis, Cushings
      2. Monitor Urine Chloride
         1. If elevated, consider overdiuresis or NG suction
         2. If decreased, renal
   4. Respiratory acidosis
      1. Acute: COPD exacerbation, drugs (narcotics)
      2. Chronic: Compensated COPD (will see increased bicarb)
   5. Respiratory alkalosis
      1. Acute: Anxiety/Hyperventilation, early asthma exacerbation
      2. Chronic: Pregnancy
3. General FYI
   1. As pH drops, potassium increases and vice versa, called “internal potassium balance” (H and K work opposite of each other)