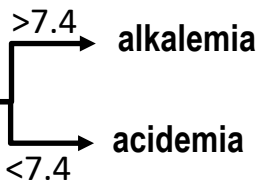


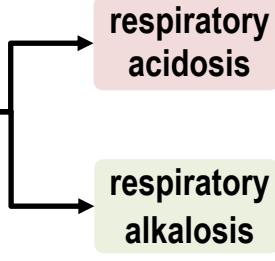
What's the primary disturbance?

1. pH



What's the pCO₂?

2. pCO₂



Acute or chronic?

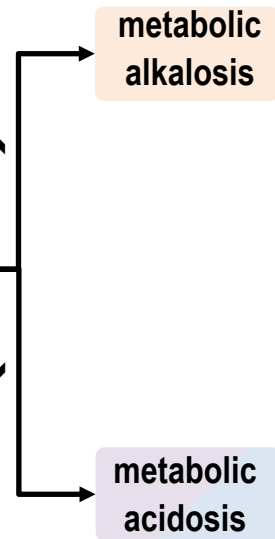
What is the chronicity?
 Look at **metabolic compensation**
 Acute: 10 Δ pCO₂ → 0.08 Δ pH
 Chronic: 10 Δ pCO₂ → 0.03 Δ pH

- Airflow obstruction**
- COPD, asthma
 - ↓ Drive
 - Medications
 - Central
 - ↑ CO₂ production

- ↑ drive
- Hypoxemia
 - Pain/anxiety
 - Hepatic enceph
 - Pregnancy
 - Salicylates

What's the bicarb?

3. HCO₃⁻



Is the **anion gap** increased?
 $AG = [Na] - ([Cl] + [HCO_3])$
 Expected AG = 2.5 x Albumin
 If AG > expected AG, there is an **anion gap present**.
 Rarely AG may be negative: consider increases in unmeasured cations (Ca, Mg, Li), Bromide or Iodine intoxication, or multiple myeloma (unmeasured protein).

- "BLVD PLACE"**
- B - Bartter's
 - L - Laxative
 - V - Vomitting
 - D - Diarrhea/diuretics
 - P - Post-hypercapnea
 - L - Licorice
 - A - Alkali ingestion
 - C - Contraction alkalosis
 - E - Endocrine (Conn's or Cushing's)

Is there compensation?

If there is a **metabolic acidosis** or **alkalosis** present is there appropriate **respiratory compensation**?
 Use one of two rules to find out:
 1. Expected pCO₂ = 1.5 x [HCO₃] + 8 ± 2 (Winter's)
 2. Expected pCO₂ = last two digits of pH
 If the measured pCO₂ does not match the expected value, there is also a respiratory derangement.

non anion gap metabolic acidosis

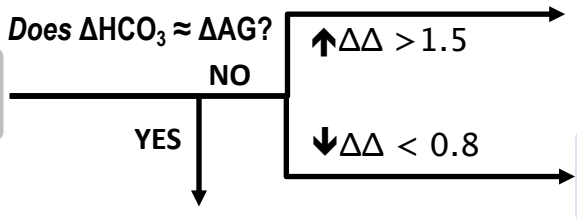
- "RAGES"**
- R - RTA
 - A - Ammonia
 - Acetazolamide
 - HyperAlimentation
 - G - GI losses
 - E - Endocrine
 - S - Saline

anion gap metabolic acidosis

- "GOLDMARKeT"**
- G - Glycols
 - O - Oxoproline
 - L - Lactic acid
 - D - Lactic acid
 - M - Methanol
 - A - Aspirin
 - R - Renal fail, Rhabdo
 - Ke - Ketones
 - T - Toluene

Does the change in AG account for the change in HCO₃?
 Used to determine if there is another derangement.

4. $\frac{\Delta AG}{\Delta HCO_3}$



superimposed metabolic alkalosis

superimposed NAGMA

Salicylate poisoning
 DKA w/ dehydration