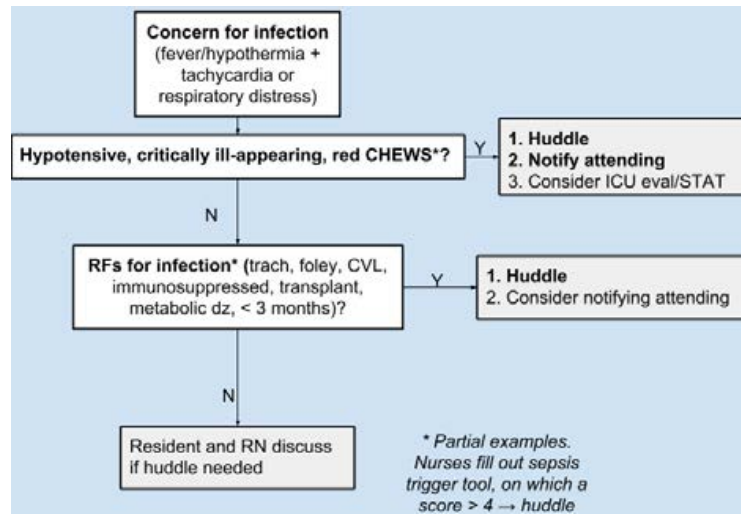


Sepsis Huddle



ABGs/VBGs

- Presented as **pH/PCO₂/PO₂/HCO₃⁻**
- **Venous pH + 0.035 = Arterial pH**
- Look at past VBGs for baseline pCO₂ (e.g., chronically elevated in ex-preemies w/CLD)
- VBGs sufficient to assess acid-base status & clinical response to treatments (in general). **ABG preferred over VBG:**
 - a. to accurately determine **PaCO₂ in severe shock**
 - b. to accurately determine PaCO₂ if hypercapnic (i.e. PaCO₂ >45 mmHg)

Stepwise Approach:

1. **Compare pH to normal range**
2. Identify the **primary process** that led to the change in pH (using PCO₂/HCO₃)
3. Calculate the **serum anion gap (SAG)**
 - a. **SAG = Na⁺ - (Cl⁻ + HCO₃⁻)**. If >12, there is a primary AG metabolic acidosis
4. Identify the **compensatory process** (if one is present)
5. Identify if any other disorders are present or there is a **mixed acid-base process** using **delta/delta = (AG - 12) / (24 - Bicarb)**
 - a. < 0.4 → pure Non-AG Metabolic Acidosis (NAGMA)
 - b. 0.4 - 0.8 → mixed NAGMA + High-AG Metabolic Acidosis (HAGMA)
 - c. 0.8 - 2.0 → a pure HAGMA
 - d. >2.0 → mixed HAGMA + metabolic alkalosis

Normal Blood Gas Values

	Arterial	Venous
pH	7.35 - 7.45	7.31 - 7.41
pCO ₂ (mmHg)	35 - 45	40 - 50
pO ₂ (mmHg)	75 - 100	36 - 42
HCO ₃ (meQ/L)	22-26	Same
BE	-2 to + 2	Same
Oxygen Saturation	> 95%	60 - 80%

Rapid Reference

ABGs/VBGs

Compensation

Disorder	Defect	Compensatory Response*
Respiratory Acidosis	\uparrow pCO ₂	\uparrow HCO ₃ ⁻ <u>Acute</u> = +1 MeQ/L HCO ₃ ⁻ for +10 mm Hg PaCO ₂ <u>Chronic</u> = +4 MeQ/L HCO ₃ ⁻ for +10 mm Hg PaCO ₂
Respiratory Alkalosis	\downarrow pCO ₂	\downarrow HCO ₃ ⁻ <u>Acute</u> = -2 MeQ/L HCO ₃ ⁻ for -10 mm Hg PaCO ₂ <u>Chronic</u> = -5 MeQ/L HCO ₃ ⁻ for -10 mm Hg PaCO ₂
Metabolic Acidosis	\downarrow HCO ₃	\downarrow pCO ₂ PCO ₂ = $1.5 \times \text{HCO}_3 + 8 \pm 2$ (Winter's Formula)
Metabolic Alkalosis	\uparrow HCO ₃	\uparrow pCO ₂ pCO ₂ + 0.6 for + 1.0 mEq/L HCO ₃

* HCO₃ = kidneys (days); CO₂ = lungs (minutes)

Limits of compensation: HCO₃ = 15 - 38. CO₂ = 10

