Acidosis / Alkalosis

**Acidosis**

- \( \uparrow H^+ = \uparrow CO_2 = \uparrow HCO_3^- \)

**Expected Compensations**

- Increased breathing rate

**Failures to Compensate**

- If breathing is slow = increased CO2 = Respiratory Acidosis
- If HCO3^- is low = Metabolic Acidosis

**Alkalosis**

- \( \downarrow H^+ = \downarrow CO_2 = \downarrow HCO_3^- \)

**Expected Compensations**

- Decreased breathing rate

**Failures to Compensate**

- If breathing is rapid = decreased CO2 = Respiratory Alkalosis
- If HCO3^- is high = Metabolic Alkalosis

**Arterial blood pH**

- pH < 7.35
- pH > 7.45

**Acidosis**

- \( CO_2 > 45 \text{ mmHg} \)
- \( HCO_3^- < 20 \text{ mmol/L} \)
- Patient would breathe rapidly

**Alkalosis**

- \( CO_2 < 35 \text{ mmHg} \)
- \( HCO_3^- > 27 \text{ mmol/L} \)
- Patient would breathe slowly