

ABG's- Demystifying the blood gas key takeaways!

NORMAL – PH 7.34-7.45 CO₂ 35-45 HCO₃ 22-26

Always measure your PH when in ROME.

Respiratory (process)- if CO₂ is in the opposite direction of PH.

Metabolic (process)- if HCO₃ is in the same direction of PH.

Metabolic acidosis- PH <7.35 and HCO₃ < 22

Respiratory acidosis- PH <7.35 and CO₂ >45

Alkalemia-

Metabolic alkalosis PH >7.45 and HCO₃ >26

Compensation

CO₂ OR HCO₃ should follow the leader.

If respiratory CO₂ goes up or down, HCO₃ should follow.

If metabolic and HCO₃ go up or down, CO₂ should follow.

Metabolic acidosis-

Causes-

Shock, starvation, renal failure, drug, bicarb losses (diarrhea, diuretic, acetazolamide)

Signs and symptoms-

Nausea and vomiting, abdominal pain, tachypnea, Kussmaul breathing, hypotension, confusion, “looks sick”

Interventions (patient-specific)

Obtain vitals, nursing-driven sepsis protocol, administer bicarb, when indicated, dialysis PRN, and antidiarrheal

Metabolic Alkalosis-

Causes- Loss of H⁺-

Vomiting, NG suctioning, diuretics, excessive LR

Signs and Symptoms-

Low respiratory rate, N/V, confusion, perioral paresthesia

Interventions-

Antiemetics, potassium replacement, IV fluid evaluation, Acetazolamide (a medication that causes the kidneys to excrete bicarbonate, which helps increase the blood's acidity)

Respiratory acidosis-

Causes-

Hypoventilation, COPD, pneumonia, fluid overload, medication-induced (opioids, benzos), neuromuscular disorders (Gilliam-Barré, myasthenia gravis), restrictive lung disease, and obesity

Signs and symptoms-

High or low respiratory rate, confusion, stupor, dysrhythmias

Interventions-

Patient needs to speed breathing up. Patient-specific maintaining airway, administration of PRNs, bronchodilators, mucolytics, administration of antibiotics, diuretics, for nausea and vomiting, give anti-nausea medication, intubation for ventilation

Respiratory Alkalosis-

Causes-

Hyperventilation, anxiety, pain, pulmonary embolism, fevers, central nervous system (infection or trauma), excessive ventilation

Signs and symptoms

Tachypnea, dizziness, anxiety, seizure

Interventions-

Patient needs to slow their breathing down. If on a ventilator, adjust settings, administer PRNs