

Acid-Base, Fluids, Lytes Pocketcard Set

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	Normal range		Simple acid-base disorders			
	Arterial	Venous	Met acid	Resp acid	Met alk	Resp alk
pH	7.35-7.45	7.31-7.43	↓	↓	↑	↑
pCO ₂	35-45 mmHg	35-48 mmHg	↓	↑	↓	↓
HCO ₃ ⁻	21-27 mEq/L	22-28 mEq/L	↓	↑	↑	↓
pO ₂	75-100 mmHg	72-87 mmHg				
O ₂ sat	95%	85%-92%				
BE	-2 to 2					

Examples: ↑/↓ = Primary change; ↑/↓ = Predicted compensatory change

- Diarrhea, COPD, Vomiting, Hypertension
- CHF, Resp distress, Starvation, ↓ P_i

Algorithm for Determining Acid-Base Status

The flowchart starts with a box: "Normal range pH = 7.35-7.45, PaCO₂ = 35-45 mmHg, HCO₃⁻ = 21-27 mEq/L (arterial), 22-28 mEq/L (venous), BE = -2 to 2".

It branches into three pH categories:

- pH < 7.35 (Acidemia)**
 - Arterial PaCO₂ < 35 mmHg → Metabolic Acidosis → Compensation: HCO₃⁻ ↓ 1 mEq/L for every 10 mEq/L fall in HCO₃⁻ → Calculate Anion Gap (AG)
 - Arterial PaCO₂ ≥ 35 mmHg → Respiratory Acidosis → Compensation: HCO₃⁻ ↑ 1 mEq/L for every 10 mmHg ↑ PaCO₂
- pH 7.35-7.45 (Normal)**
 - Normal OR Mixed acid-base disorder → Respiratory Acidosis → Compensation: HCO₃⁻ ↑ 1 mEq/L for every 10 mmHg ↑ PaCO₂
 - Arterial PaCO₂ < 35 mmHg → Respiratory Alkalosis → Compensation: HCO₃⁻ ↓ 2 to 4 mEq/L for every 10 mmHg ↓ PaCO₂
 - Arterial PaCO₂ ≥ 35 mmHg → Metabolic Alkalosis → Compensation: HCO₃⁻ ↑ 2 to 4 mEq/L for every 10 mEq/L rise in HCO₃⁻
- pH > 7.45 (Alkalemia)**
 - Arterial PaCO₂ < 35 mmHg → Respiratory Alkalosis → Compensation: HCO₃⁻ ↓ 2 to 4 mEq/L for every 10 mmHg ↓ PaCO₂
 - Arterial PaCO₂ ≥ 35 mmHg → Metabolic Alkalosis → Compensation: HCO₃⁻ ↑ 2 to 4 mEq/L for every 10 mEq/L rise in HCO₃⁻

Causes of metabolic acidosis are categorized into:

- DA (DAPRAS) (High anion gap metabolic)**
 - D - Diarrhea (↓ loss of HCO₃⁻) (except low anion gap)
 - A - Anion gap metabolic acidosis (AGMA)
 - P - Drugs, paracetamol or aspirin (↑ serum HCO₃⁻, ↑ anion gap, ↑ lactate or ↑ ketones)
 - R - Renal tubular acidosis
 - A - Alkalemia
 - S - Starvation
 - P - Poisoning (ethylene glycol, propylene glycol, salicylates, and/or isoniazid, acetaminophen, salicylic acid, the common cation)
 - A - Lactic acid
 - S - Ethylene glycol, ethanol, methanol
 - P - Poisoning (hydroxylation)
- DA (MAPLES) (Normal anion gap metabolic)**
 - D - Diarrhea, ketoacidosis
 - A - Anion gap
 - M - Methanol
 - A - Aspirin
 - P - Pyruvate, propylene glycol, salicylates, and/or isoniazid, acetaminophen, salicylic acid, the common cation
 - L - Lactic acid
 - E - Ethylene glycol, ethanol, methanol
 - S - Starvation, hydroxylation

Normal values: pH = 7.35-7.45, PaCO₂ = 35-45 mmHg, HCO₃⁻ = 21-27 mEq/L (arterial), 22-28 mEq/L (venous), BE = -2 to 2.

↑/↓ = Primary change; ↑/↓ = Predicted compensatory change.

Diarrhea, COPD, Vomiting, Hypertension, CHF, Resp distress, Starvation, ↓ P_i.

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