

# ABG Cheat Sheet

Quick bedside reference for students & clinicians

## 1. pH First

Decide whether the blood is acidic, normal, or alkalotic.

Condition	Range
Acidosis	< 7.35
Normal	7.35 - 7.45
Alkalosis	> 7.45

Use CO<sub>2</sub> for the respiratory side and HCO<sub>3</sub> for the metabolic side.

**Low pH** + high CO<sub>2</sub>

**High pH** + low CO<sub>2</sub>

**Low pH** + low HCO<sub>3</sub>

**High pH** + high HCO<sub>3</sub>

## 3. Compensation Check

**Winter's Formula** (metabolic acidosis):

$$\text{Expected PaCO}_2 = (1.5 \times \text{HCO}_3^-) + 8 \pm 2$$

If measured PaCO<sub>2</sub> is outside the expected range, suspect a mixed disorder

## 4. Respiratory Compensation Rules

Kidneys change HCO<sub>3</sub> over time in respiratory respirators:

<b>Respiratory Acidosis</b>	Acute – -1 HCO <sub>3</sub> per -10 CO <sub>2</sub>
	-3 to +4 HCO <sub>3</sub> per -110
<b>Respiratory Alkalosis</b>	Acute – -2 HCO <sub>3</sub>
	-4 to -5 HCO <sub>3</sub> per -110

## 5. Oxygenation Basics

Do not stop after acid-base status. Always decide whether oxygenation is normal, impaired, or severely impaired.

Check	Purpose
<b>PaO<sub>2</sub></b>	Basic oxygenation snapshot
<b>P/F Ratio</b>	Severity of hypoxemia / ARDS framing
<b>A-a Gradient</b>	Helps narrow the cause of hypoxemia