

# Hemodynamics and ABGs

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## Basic Hemodynamics – Cardiac Output

For the body to function properly, the heart needs to pump blood at a sufficient rate to maintain an adequate and continuous supply of oxygen and other nutrients to the brain and other vital organs.

**Cardiac output** is the amount of blood your heart pumps each minute.

**Cardiac output = stroke volume x heart rate**

- Stroke volume = amount of blood your heart pumps each time it beats
- Heart rate = number of times your heart beats per minute

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## Basic Hemodynamics – Blood Pressure

**BP = CO x SVR**

**Systemic Vascular Resistance** = resistance to the flow of blood through the body's blood vessels. It increases as vessels constrict (norepinephrine) and decreases when vessels dilate (sepsis).

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## Invasive Monitoring: Arterial Blood Gas

- Measures the effectiveness of the "Blood Movement"
- Tests for the lungs, heart and kidneys
- Measures oxygen and carbon dioxide in your blood

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### ABG Worksheet

Normal Values	Acidosis	Alkalosis	R	R
pH: PaCO2: HCO3: PaO2:			O M E	O M E
Respiratory Component				
Metabolic Component				

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### ABG Worksheet

Normal Values	Acidosis	Alkalosis	R	R
pH: 7.35 – 7.45 PaCO2: HCO3: PaO2:			O M E	O M E
Respiratory Component				
Metabolic Component				

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ABG Worksheet

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : PaO <sub>2</sub> :	Acidosis	Alkalosis	R O M E	R O M E
<b>Respiratory Component</b>				
<b>Metabolic Component</b>				

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ABG Worksheet

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> :	Acidosis	Alkalosis	R O M E	R O M E
<b>Respiratory Component</b>				
<b>Metabolic Component</b>				

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ABG Worksheet

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	Acidosis	Alkalosis	R O M E	R O M E
<b>Respiratory Component</b>				
<b>Metabolic Component</b>				

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ABG Worksheet

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	Acidosis	Alkalosis	R O M E	R O M E
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis				
<b>Metabolic Component</b>				

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ABG Worksheet

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	Acidosis	Alkalosis	R O M E	R O M E
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis  Changes quickly				
<b>Metabolic Component</b>				

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ABG Worksheet

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	Acidosis	Alkalosis	R O M E	R O M E
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis  Changes quickly				
<b>Metabolic Component</b> HCO <sub>3</sub> ↑ Alkalosis ↓ Acidosis				

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**ABG Worksheet**

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	Acidosis	Alkalosis	R O M E	R O M E
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis Changes quickly				
<b>Metabolic Component</b> HCO <sub>3</sub> ↑ Alkalosis ↓ Acidosis Changes slower				

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**ABG Worksheet**

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	Acidosis ↓ pH < 7.35	Alkalosis	R O M E	R O M E
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis Changes quickly				
<b>Metabolic Component</b> HCO <sub>3</sub> ↑ Alkalosis ↓ Acidosis Changes slower				

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**ABG Worksheet**

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	Acidosis ↓ pH < 7.35 ↑ PaCO <sub>2</sub> > 45	Alkalosis	R O M E	R O M E
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis Changes quickly				
<b>Metabolic Component</b> HCO <sub>3</sub> ↑ Alkalosis ↓ Acidosis Changes slower				

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**ABG Worksheet**

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	Acidosis ↓ pH < 7.35 ↑ PaCO <sub>2</sub> > 45 ↓ HCO <sub>3</sub> < 22	Alkalosis	R O M E	R O M E
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis Changes quickly				
<b>Metabolic Component</b> HCO <sub>3</sub> ↑ Alkalosis ↓ Acidosis Changes slower				

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**ABG Worksheet**

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	Acidosis ↓ pH < 7.35 ↑ PaCO <sub>2</sub> > 45 ↓ HCO <sub>3</sub> < 22	Alkalosis ↑ pH > 7.45	R O M E	R O M E
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis Changes quickly				
<b>Metabolic Component</b> HCO <sub>3</sub> ↑ Alkalosis ↓ Acidosis Changes slower				

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<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	Acidosis ↓ pH < 7.35 ↑ PaCO <sub>2</sub> > 45 ↓ HCO <sub>3</sub> < 22	Alkalosis ↑ pH > 7.45 ↓ PaCO <sub>2</sub> < 35	R O M E	R O M E
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis Changes quickly				
<b>Metabolic Component</b> HCO <sub>3</sub> ↑ Alkalosis ↓ Acidosis Changes slower				

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<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	<b>Acidosis</b> ↓ pH < 7.35 ↑ PaCO <sub>2</sub> > 45 ↓ HCO <sub>3</sub> < 22	<b>Alkalosis</b> ↑ pH > 7.45 ↓ PaCO <sub>2</sub> < 35 ↑ HCO <sub>3</sub> > 26	R	
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis Changes quickly			O	
<b>Metabolic Component</b> HCO <sub>3</sub> ↑ Alkalosis ↓ Acidosis Changes slower			M	
			E	

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### ABG Worksheet

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	<b>Acidosis</b> ↓ pH < 7.35 ↑ PaCO <sub>2</sub> > 45 ↓ HCO <sub>3</sub> < 22	<b>Alkalosis</b> ↑ pH > 7.45 ↓ PaCO <sub>2</sub> < 35 ↑ HCO <sub>3</sub> > 26	Respiratory	
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis Changes quickly			Opposite	
<b>Metabolic Component</b> HCO <sub>3</sub> ↑ Alkalosis ↓ Acidosis Changes slower			Metabolic	
			Equal	

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### ABG Worksheet

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	<b>Acidosis</b> ↓ pH < 7.35 ↑ PaCO <sub>2</sub> > 45 ↓ HCO <sub>3</sub> < 22	<b>Alkalosis</b> ↑ pH > 7.45 ↓ PaCO <sub>2</sub> < 35 ↑ HCO <sub>3</sub> > 26	Respiratory	
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis Changes quickly			Opposite	
<b>Metabolic Component</b> HCO <sub>3</sub> ↑ Alkalosis ↓ Acidosis Changes slower			Metabolic	
			Equal	

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### ABG Worksheet

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	<b>Acidosis</b> ↓ pH < 7.35 ↑ PaCO <sub>2</sub> > 45 ↓ HCO <sub>3</sub> < 22	<b>Alkalosis</b> ↑ pH > 7.45 ↓ PaCO <sub>2</sub> < 35 ↑ HCO <sub>3</sub> > 26	Respiratory	
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis Changes quickly			Opposite	
<b>Metabolic Component</b> HCO <sub>3</sub> ↑ Alkalosis ↓ Acidosis Changes slower			Metabolic	
			Equal	

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### ABG Worksheet

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	<b>Acidosis</b> ↓ pH < 7.35 ↑ PaCO <sub>2</sub> > 45 ↓ HCO <sub>3</sub> < 22	<b>Alkalosis</b> ↑ pH > 7.45 ↓ PaCO <sub>2</sub> < 35 ↑ HCO <sub>3</sub> > 26	Respiratory	pH 7.21
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis Changes quickly			Opposite	PaCO <sub>2</sub> 37
<b>Metabolic Component</b> HCO <sub>3</sub> ↑ Alkalosis ↓ Acidosis Changes slower			Metabolic	HCO <sub>3</sub> 18
			Equal	

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### ABG Worksheet

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	<b>Acidosis</b> ↓ pH < 7.35 ↑ PaCO <sub>2</sub> > 45 ↓ HCO <sub>3</sub> < 22	<b>Alkalosis</b> ↑ pH > 7.45 ↓ PaCO <sub>2</sub> < 35 ↑ HCO <sub>3</sub> > 26	Respiratory	pH 7.21 ↓
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis Changes quickly			Opposite	PaCO <sub>2</sub> 37
<b>Metabolic Component</b> HCO <sub>3</sub> ↑ Alkalosis ↓ Acidosis Changes slower			Metabolic	HCO <sub>3</sub> 18
			Equal	

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### ABG Worksheet

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	<b>Acidosis</b> ↓ pH < 7.35 ↑ PaCO <sub>2</sub> > 45 ↓ HCO <sub>3</sub> < 22	<b>Alkalosis</b> ↑ pH > 7.45 ↓ PaCO <sub>2</sub> < 35 ↑ HCO <sub>3</sub> > 26	<b>Respiratory</b> Opposite Metabolic Equal	pH 7.21 ↓ PaCO <sub>2</sub> 37 Normal HCO <sub>3</sub> 18
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis Changes quickly				
<b>Metabolic Component</b> HCO <sub>3</sub> ↑ Alkalosis ↓ Acidosis Changes slower				

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<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	<b>Acidosis</b> ↓ pH < 7.35 ↑ PaCO <sub>2</sub> > 45 ↓ HCO <sub>3</sub> < 22	<b>Alkalosis</b> ↑ pH > 7.45 ↓ PaCO <sub>2</sub> < 35 ↑ HCO <sub>3</sub> > 26	<b>Respiratory</b> Opposite Metabolic Equal	pH 7.21 ↓ PaCO <sub>2</sub> 37 Normal HCO <sub>3</sub> 18 ↓
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis Changes quickly				
<b>Metabolic Component</b> HCO <sub>3</sub> ↑ Alkalosis ↓ Acidosis Changes slower				

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<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	<b>Acidosis</b> ↓ pH < 7.35 ↑ PaCO <sub>2</sub> > 45 ↓ HCO <sub>3</sub> < 22	<b>Alkalosis</b> ↑ pH > 7.45 ↓ PaCO <sub>2</sub> < 35 ↑ HCO <sub>3</sub> > 26	<b>Respiratory</b> Opposite Metabolic Equal	pH 7.21 ↓ PaCO <sub>2</sub> 37 Normal HCO <sub>3</sub> 18 ↓ Metabolic Acidosis
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis Changes quickly				
<b>Metabolic Component</b> HCO <sub>3</sub> ↑ Alkalosis ↓ Acidosis Changes slower				

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<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	<b>Acidosis</b> ↓ pH < 7.35 ↑ PaCO <sub>2</sub> > 45 ↓ HCO <sub>3</sub> < 22	<b>Alkalosis</b> ↑ pH > 7.45 ↓ PaCO <sub>2</sub> < 35 ↑ HCO <sub>3</sub> > 26	<b>Respiratory</b> Opposite Metabolic Equal	pH 7.28 PaCO <sub>2</sub> 60 HCO <sub>3</sub> 24
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis Changes quickly				
<b>Metabolic Component</b> HCO <sub>3</sub> ↑ Alkalosis ↓ Acidosis Changes slower				

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### ABG Worksheet

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	<b>Acidosis</b> ↓ pH < 7.35 ↑ PaCO <sub>2</sub> > 45 ↓ HCO <sub>3</sub> < 22	<b>Alkalosis</b> ↑ pH > 7.45 ↓ PaCO <sub>2</sub> < 35 ↑ HCO <sub>3</sub> > 26	<b>Respiratory</b> Opposite Metabolic Equal	pH 7.28 ↓ PaCO <sub>2</sub> 60 HCO <sub>3</sub> 24
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis Changes quickly				
<b>Metabolic Component</b> HCO <sub>3</sub> ↑ Alkalosis ↓ Acidosis Changes slower				

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### ABG Worksheet

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	<b>Acidosis</b> ↓ pH < 7.35 ↑ PaCO <sub>2</sub> > 45 ↓ HCO <sub>3</sub> < 22	<b>Alkalosis</b> ↑ pH > 7.45 ↓ PaCO <sub>2</sub> < 35 ↑ HCO <sub>3</sub> > 26	<b>Respiratory</b> Opposite Metabolic Equal	pH 7.28 ↓ PaCO <sub>2</sub> 60 ↑ HCO <sub>3</sub> 24
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis Changes quickly				
<b>Metabolic Component</b> HCO <sub>3</sub> ↑ Alkalosis ↓ Acidosis Changes slower				

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### ABG Worksheet

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	<b>Acidosis</b> ↓ pH < 7.35 ↑ PaCO <sub>2</sub> > 45 ↓ HCO <sub>3</sub> < 22	<b>Alkalosis</b> ↑ pH > 7.45 ↓ PaCO <sub>2</sub> < 35 ↑ HCO <sub>3</sub> > 26	<b>Respiratory</b> Opposite Metabolic Equal	pH 7.28 ↓ PaCO <sub>2</sub> 60 ↑ HCO <sub>3</sub> 24 Normal
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis Changes quickly				
<b>Metabolic Component</b> HCO <sub>3</sub> ↑ Alkalosis ↓ Acidosis Changes slower				

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### ABG Worksheet

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	<b>Acidosis</b> ↓ pH < 7.35 ↑ PaCO <sub>2</sub> > 45 ↓ HCO <sub>3</sub> < 22	<b>Alkalosis</b> ↑ pH > 7.45 ↓ PaCO <sub>2</sub> < 35 ↑ HCO <sub>3</sub> > 26	<b>Respiratory</b> Opposite Metabolic Equal	pH 7.28 ↓ PaCO <sub>2</sub> 60 ↑ HCO <sub>3</sub> 24 Normal Respiratory Acidosis
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis Changes quickly				
<b>Metabolic Component</b> HCO <sub>3</sub> ↑ Alkalosis ↓ Acidosis Changes slower				

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### ABG Worksheet

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	<b>Acidosis</b> ↓ pH < 7.35 ↑ PaCO <sub>2</sub> > 45 ↓ HCO <sub>3</sub> < 22	<b>Alkalosis</b> ↑ pH > 7.45 ↓ PaCO <sub>2</sub> < 35 ↑ HCO <sub>3</sub> > 26	<b>Respiratory</b> Opposite Metabolic Equal	pH 7.49 PaCO <sub>2</sub> 45 HCO <sub>3</sub> 28
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis Changes quickly				
<b>Metabolic Component</b> HCO <sub>3</sub> ↑ Alkalosis ↓ Acidosis Changes slower				

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### ABG Worksheet

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	<b>Acidosis</b> ↓ pH < 7.35 ↑ PaCO <sub>2</sub> > 45 ↓ HCO <sub>3</sub> < 22	<b>Alkalosis</b> ↑ pH > 7.45 ↓ PaCO <sub>2</sub> < 35 ↑ HCO <sub>3</sub> > 26	<b>Respiratory</b> Opposite Metabolic Equal	pH 7.49 ↑ PaCO <sub>2</sub> 45 HCO <sub>3</sub> 28
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis Changes quickly				
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### ABG Worksheet

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	<b>Acidosis</b> ↓ pH < 7.35 ↑ PaCO <sub>2</sub> > 45 ↓ HCO <sub>3</sub> < 22	<b>Alkalosis</b> ↑ pH > 7.45 ↓ PaCO <sub>2</sub> < 35 ↑ HCO <sub>3</sub> > 26	<b>Respiratory</b> Opposite Metabolic Equal	pH 7.49 ↑ PaCO <sub>2</sub> 45 Normal HCO <sub>3</sub> 28
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis Changes quickly				
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### ABG Worksheet

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	<b>Acidosis</b> ↓ pH < 7.35 ↑ PaCO <sub>2</sub> > 45 ↓ HCO <sub>3</sub> < 22	<b>Alkalosis</b> ↑ pH > 7.45 ↓ PaCO <sub>2</sub> < 35 ↑ HCO <sub>3</sub> > 26	<b>Respiratory</b> Opposite Metabolic Equal	pH 7.49 ↑ PaCO <sub>2</sub> 45 Normal HCO <sub>3</sub> 28 ↑
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis Changes quickly				
<b>Metabolic Component</b> HCO <sub>3</sub> ↑ Alkalosis ↓ Acidosis Changes slower				

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### ABG Worksheet

<b>Normal Values</b> pH: 7.35 – 7.45 PaCO <sub>2</sub> : 35 – 45 HCO <sub>3</sub> : 22 – 26 PaO <sub>2</sub> : 80 – 100	<b>Acidosis</b> ↓ pH < 7.35 ↑ PaCO <sub>2</sub> > 45 ↓ HCO <sub>3</sub> < 22	<b>Alkalosis</b> ↑ pH > 7.45 ↓ PaCO <sub>2</sub> < 35 ↑ HCO <sub>3</sub> > 26	<b>Respiratory</b> Opposite Metabolic Equal	pH 7.49 ↑ PaCO <sub>2</sub> 45 Normal HCO <sub>3</sub> 28 ↑ Metabolic Alkalosis
<b>Respiratory Component</b> PaCO <sub>2</sub> ↑ Acidosis ↓ Alkalosis Changes quickly				
<b>Metabolic Component</b> HCO <sub>3</sub> ↑ Alkalosis ↓ Acidosis Changes slower				