

Arterial Blood Gases (ABGs) Cheat Sheet

Hey there, friend!

Have you ever wondered what the heck all of those ABG lab values mean?

PaCO₂.....HCO₃.....pH.....say what now?

Let's be honest...nursing school kind of drowns you in lab values, and it can be hard to remember what it all means.

So in this cheat sheet, I'll walk you through how to interpret arterial blood gas panels (ABG panels) quickly and easily!

Here's what's included:

1. Normal ABG values
2. How to interpret ABGs (in 3 easy steps)
3. Example problems
4. Answer key

[And if you want more help with ABGs, be sure to check out our ABG playlist on YouTube here.](#)

All my best,
Christina

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NORMAL ABG VALUES:

- pH: 7.35-7.45
- PaCO₂: 35-45 mmHg
- HCO₃: 22-26 mEq/L
- PaO₂: 80-100 mmHg

HOW TO INTERPRET ABGs (IN 3 EASY STEPS!):

We always like to think of ABGs as one big PARTY! Follow these steps to interpret ABGs right:

1. Where is the party located?

Look at the pH level and determine if the party is in a creepy warehouse somewhere (an ACID party), or if it's in a fancy-pants nightclub (a BASE party).

If the pH is less than 7.4, it's an ACID party. If the pH is greater than 7.4, it's a BASE party.

2. Who is the party pooper?

There are 2 choices: either the LUNGS are the party poopers, or the KIDNEYS are the party poopers.

The first value you need to look at is the PaCO₂, which represents the lungs. The PaCO₂ value changes faster than the HCO₃ value, so look at the PaCO₂ value to see if the lungs are the party poopers first.

If the PaCO₂ value is abnormal, you should initially think that the lungs are the party poopers. Then, look at the HCO₃ value, and see if the HCO₃ value supports that. If it does, then you know the problem is RESPIRATORY. If it doesn't, then you know the problem is METABOLIC.

3. Is the "Life of the Party" helping to make the party better?

Is the value of the "Life of the Party," meaning the non-party pooper, changing to compensate? If it isn't, it is UNCOMPENSATED. If it is, and the pH is still abnormal, it is PARTIALLY COMPENSATED. If it is, and the pH is within normal range, it is FULLY COMPENSATED.

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EXAMPLE PROBLEMS:

Problem #1: pH: 7.33 PaCO₂: 55 mmHg HCO₃: 26 mEq/L

1. Where is the party located?
The pH is LESS than 7.4, so this is an ACID party at a creepy warehouse.
2. Who is the party pooper?
Look at the PaCO₂ value first. The PaCO₂ value is 55, which is higher than normal, so we will think that the problem is respiratory first. The HCO₃ value is 26, which is within normal range. An HCO₃ value of 26 would not make the pH acidic like that, so we can confirm that the problem is RESPIRATORY.
3. Is the "Life of the Party" helping to make the party better?
The "Life of the Party," in this case, are the KIDNEYS. The HCO₃ value is still within normal range, so they are not trying to make the party better. So, this makes it UNCOMPENSATED.

Problem #2: pH: 7.49 PaCO₂: 46 HCO₃: 36

1. Where is the party located?
The pH is GREATER than 7.4, so this is a BASE party at a fancy nightclub.
2. Who is the party pooper?
Look at the PaCO₂ value first. The PaCO₂ value is 46, which is acidic. But the pH is BASIC, so we know that the lungs are not the party poopers and, therefore, it is not a respiratory problem. The HCO₃ value is 36, which is higher than normal, so the KIDNEYS are the party poopers.
3. Is the "Life of the Party" helping to make the party better?
The "Life of the Party," in this case, are the LUNGS. The PaCO₂ value is 46, which is slightly higher than normal. So the lungs have noticed that the kidneys are the party poopers, but the pH is still abnormal. So this is PARTIALLY COMPENSATED.

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ANSWER KEY:

Problem #1

Uncompensated Respiratory Acidosis

Problem #2

Partially Compensated Metabolic Alkalosis

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