

Basic ABG analysis

Normal ABG Values

pH 7.35-7.45

PCO₂ 35-45 mmHg

Bicarb 22-26 mEq/L

pO₂ 80-100

1. Is the pH normal? Yes - compensated No- uncompensated
 - a. If the pH is above normal range it is alkalosis
 - b. If the Ph is below the normal range it is acidosis
(way I remember c in acidosis lower in alphabet than l in alkalosis)
2. Is the Co₂ normal? If not is a respiratory issue
3. Is the bicarb normal? If not is a metabolic issue
4. Is the pO_s normal? If it is low it is hypoxemia

During the exam 1st thing you ask is the patient ventilating? If they are not ventilating, ventilation must be addressed first.

If the patient is ventilating you see if the patient is oxygenating, if they aren't (they have hypoxemia Po₂ less than 80).

Is the pH Normal? Yes/ No

If the pH abnormal is it high or low?

Is the Co₂ normal? Yes/ No

Is bicarb normal? Yes/No

Is the Po₂ low? Yes/ No

Example one

pH 7.13

pCo₂ 38

HCo₃ 16

Po₂ 84

Is the pH Normal? Yes/ No

If the pH abnormal is it high or low?

Is the Co₂ normal? Yes/ No

Is bicarb normal? Yes/No

Is the Po₂ low? Yes/ No

Example 2

pH 7.38

Co₂ 63

HCO₃ 31

Po₂ 67

Is the pH Normal? Yes/ No

If the pH abnormal is it high or low?

Is the Co₂ normal? Yes/ No

Is bicarb normal? Yes/No

Is the Po₂ low? Yes/ No

Example 3

pH 7.23

Co₂ 82

HCO₃ 23

Po₂ 81

Is the pH Normal? Yes/ No

If the pH abnormal is it high or low?

Is the Co₂ normal? Yes/ No

Is bicarb normal? Yes/No

Is the Po₂ low? Yes/ No

Example 4

pH 7.15

pCo₂ 89

HCo₃ 24

Po₂ 61

Is the pH Normal? Yes/ No

If the pH abnormal is it high or low?

Is the Co₂ normal? Yes/ No

Is bicarb normal? Yes/No

Is the Po₂ low? Yes/ No

Example 5

pH 7.37

pCo₂ 76

HCo₃ 24

Po₂ 59

Is the pH Normal? Yes/ No

If the pH abnormal is it high or low?

Is the Co₂ normal? Yes/ No

Is bicarb normal? Yes/No

Is the Po₂ low? Yes/ No

Example 6

Ph 7.49

pCo₂ 31

Tco₂ 23

Po₂ 73

Example 4

pH 7.15

pCo₂ 89

HCo₃ 24

Po₂ 61

Is the pH Normal? Yes/ No

If the pH abnormal is it high or low?

Is the Co₂ normal? Yes/ No

Is bicarb normal? Yes/No

Is the Po₂ low? Yes/ No

Example 1 answer

Uncompensated metabolic acidosis

Is the pH Normal? abnormal

If the pH abnormal is it high or low? Low so acidosis

Is the Co₂ normal? Yes

Is bicarb normal? No so it is metabolic

Is the Po₂ low? No

Example 2 answer

Compensated respiratory acidosis with mild hypoxemia

Is the pH Normal? Normal so compensated

If the pH abnormal is it high or low? n/a

Is the Co₂ normal? No

Is bicarb normal? No

Is the Po₂ low? Yes so hypoxemia

Example 3 answer

Uncompensated respiratory acidosis

Is the pH Normal? No so uncompensated

If the pH abnormal is it high or low? Low so acidosis

Is the Co₂ normal? No respiratory issue

Is bicarb normal? Yes

Is the Po₂ low? No

Example 4 answer

Uncompensated respiratory acidosis with hypoxemia

Is the pH Normal? No so uncompensated

If the pH abnormal is it low or high? It is low so acidosis

Is the Co₂ normal? No so respiratory issue

Is bicarb normal? Yes

Is the Po₂ low? Yes so hypoxemia

Example 5 answer

Uncompensated respiratory acidosis with hypoxemia

pH 7.37

pCo₂ 76

HCo₃ 26

Po₂ 59

Is the pH Normal? Yes

If the pH abnormal is it high or low? n/a

Is the Co₂ normal? No so respiratory issue

Is bicarb normal? Yes

Is the Po₂ low? Yes so hypoxia

Example 6 answer

Uncompensated respiratory acidosis with hypoxemia

Is the pH normal? No, it is uncompensated

Is the pH above or below normal range? It is above so we have alkalosis

Is the Co₂ normal? No, it is a respiratory issue

Is the bicarb within range? Yes

Is the Po₂ normal? No, hypoxemia is present

The final analysis uncompensated respiratory acidosis with hypoxemia

For the test you always ask the following:

Is the patient ventilating? Yes the patient is over ventilating

Is the patient oxygenating? No, adjustments should be made