

## ABG practice questions

### Question 1

A 70 yo male smoker presents to ED with acute dyspnoea. This is his ABG on room air:

pH 7.30  
pCO<sub>2</sub> 60  
PO<sub>2</sub> 60  
Na 135  
Cl 100  
HCO<sub>3</sub> 30

- a. What is the primary disturbance?
- b. Is this acute or chronic?

### Question 2

A 22 yo female presents with acroparaesthesiae. This is her ABG on room air:

pH 7.48  
pCO<sub>2</sub> 30  
PO<sub>2</sub> 90  
Na 140  
Cl 110  
HCO<sub>3</sub> 22

- a. What is the primary disturbance?
- b. What is the likely cause?

### Question 3

A 32 yo male alcoholic presents obtunded. This is his ABG on room air:

pH 6.9  
pCO<sub>2</sub> 29  
PO<sub>2</sub> 100  
Na 140  
Cl 101  
HCO<sub>3</sub> 5

- a. Interpret this blood gas.
- b. What is the likely cause of this abnormal gas?

### Question 4

A 68 yo male presents with a 3 day history of diarrhoea. His blood gas shows:

pH 7.34  
pCO<sub>2</sub> 34  
PO<sub>2</sub> 80  
Na 135  
Cl 108  
HCO<sub>3</sub> 18

- a. What is the primary disturbance?

- b. What is the likely cause?

#### Question 5

A 20 yo female presents GCS 9/15 after binge drinking this evening. Her blood gas shows:

pH 7.5  
pCO<sub>2</sub> 44  
PO<sub>2</sub> 100  
Na 139  
Cl 100  
HCO<sub>3</sub> 30

- What is the primary disturbance?
- Give three causes of this abnormality.
- Is another concurrent process present?

#### Question 6

A 38 yo type 1 diabetic presents with three days of diarrhoea and coughing. This is his ABG on room air:

pH 7.31  
pCO<sub>2</sub> 10  
Na 123  
Cl 99  
HCO<sub>3</sub> 5

- Describe this blood gas.
- What is the likely cause of the primary abnormality?
- How many processes are going on?
- Given the most likely cause of each process on this gas.

#### Question 7

A 55 yo female presents with five day history of vomiting. This is her ABG on room air:

pH 7.23  
pCO<sub>2</sub> 22  
Na 140  
Cl 77  
HCO<sub>3</sub> 9

- Describe this blood gas.
- Is compensation as expected?
- Is another process going on?

#### Question 8

A 39 yo male alcoholic presents with vomiting. His blood gas shows:

pH 7.20  
pCO<sub>2</sub> 25  
Na 130  
Cl 80

HCO<sub>3</sub> 10

- a. Describe this blood gas.
- b. What is the likely cause of this?

#### Question 9

A Crohn's patient presents with 3 days of vomiting and diarrhoea. A blood gas shows:

pH 7.36  
pCO<sub>2</sub> 22  
Na 147  
Cl 121  
HCO<sub>3</sub> 14

- a. Describe this blood gas.
- b. Is another process going on?
- c. Give a possible cause for each of the three abnormalities/processes.

#### Question 10

A diabetic alcoholic with known cirrhosis presents with malaise. Blood gas shows:

pH 7.46  
pCO<sub>2</sub> 17  
Na 133  
Cl 84  
HCO<sub>3</sub> 15

- a. Describe this blood gas.
- b. Give a likely cause for each of the three processes evident on this gas.

#### Question 11

A 35 yo female presents with pneumonia. This is her ABG on room air:

pH 7.52  
pCO<sub>2</sub> 30  
PO<sub>2</sub> 60  
Na 145  
Cl 98  
HCO<sub>3</sub> 21

- a. What three processes are evident on this gas?
- b. Give a reasonable cause for each process.

#### Question 12

A 50 yo male type 1 diabetic presents with 3 days of lethargy. He is on a "fluid pill" but cannot recall its name.

pH 7.41  
pCO<sub>2</sub> 32  
Na 130  
K 2.7

Cl 79  
HCO<sub>3</sub> 19  
Glu 45

- a. Describe this blood gas.
- b. Is there compensation? If so, what?
- c. Is a third process present?

Question 13

A 60 yo homeless person is BIBA after two days of nausea, vomiting, and anorexia. This is his ABG on room air:

pH 7.3  
pCO<sub>2</sub> 29  
Albumin 10  
Na 132  
K 5.0  
Cl 104  
HCO<sub>3</sub> 16  
Glu 4

- a. Describe this blood gas.
- b. Is there compensation? If so, what?

Question 14

A 56 yo female presents with fever of unknown origin. Her blood gas shows:

pH 7.18  
pCO<sub>2</sub> 32  
Na 138  
Cl 98  
HCO<sub>3</sub> 18

- a. Describe this blood gas.
- b. Is compensation present, and if so, is it adequate?
- c. Is another process present, and if so, what?

Question 15

A 72 yo male with a history of COPD presents with alcoholic ketosis. This is his ABG on room air:

pH 7.2  
pCO<sub>2</sub> 60  
Na 136  
K 5.1  
Cl 85  
HCO<sub>3</sub> 25

- a. What was his HCO<sub>3</sub> *prior* to the onset of ketosis? Assume only one process is present.

Question 16

An 87 yo female with a history of asthma presents with dyspnoea. This is her ABG on 40% oxygen:

pH 7.4  
pCO<sub>2</sub> 46  
PO<sub>2</sub> 100  
HCO<sub>3</sub> 28

- a. What is her Aa gradient?
- b. What two processes are evident on the gas?

#### Question 17

A 78 yo male presents with acute dyspnoea. His ABG on 40% oxygen is shown:

pH 7.48  
pCO<sub>2</sub> 42.1  
PO<sub>2</sub> 142  
Na 143  
K 3.6  
Cl 105  
HCO<sub>3</sub> 31.3

- a. Describe this blood gas.
- b. What is the Aa gradient?

#### Question 18

An 86 yo female with a history of smoking presents with acute dyspnoea and fever. This is her ABG on 44% oxygen:

pH 7.36  
pCO<sub>2</sub> 50  
PO<sub>2</sub> 69  
HCO<sub>3</sub> 28

- a. Describe this blood gas.
- b. Is compensation acute or chronic?
- c. What is the Aa gradient?

#### Question 19

A 57 yo male presents with dyspnoea for 2 days. This is his ABG on 60% oxygen:

pH 7.11  
pCO<sub>2</sub> 91  
PO<sub>2</sub> 105  
Na 144  
K 4.2  
Cl 106  
HCO<sub>3</sub> 28

- a. Describe this blood gas.
- b. What is the Aa gradient?

Question 20

An 86 yo female from a HLCNH presents with fever and malaise for three days. This is her ABG on room air:

pH 7.26  
pCO<sub>2</sub> 40  
PO<sub>2</sub> 88  
Na 135  
K 4  
Cl 107  
HCO<sub>3</sub> 21

- a. Describe this blood gas.
- b. Give three causes of this abnormality.

Question 21

A 78 yo female presents with malaise. Her ABG on 36% oxygen is as follows:

pH 7.46  
pCO<sub>2</sub> 57  
PO<sub>2</sub> 27 (no, this is NOT a typo!)  
Na 140  
K 3.1  
Cl 88  
HCO<sub>3</sub> 41

- a. Describe this blood gas.
- b. Is there evidence of another process?
- c. What is the Aa gradient?
- d. Why was this lady able to talk full sentences?

Question 22

An ABG is taken from a 57 yo male alcoholic smoker on 60% oxygen. The ABG shows:

pH 7.11  
pCO<sub>2</sub> 91  
PO<sub>2</sub> 105  
Na 144  
K 4.2  
Cl 106  
HCO<sub>3</sub> 28  
Glu 16.1  
Lac 1.3  
BE -1.2

- a. Describe this blood gas.
- b. What is the Aa gradient?
- c. Give three combinations of processes that may explain this blood gas.

Question 23

The following bloods were taken from a 30 yo male cricketer:

Bili 169  
GGT 381  
ALP 96  
ALT 4149  
AST 5017  
Lipase 92  
CK 107

- a. What is the main abnormality on this blood panel?
- b. Give a likely cause of this, given the brief history.