

# Case 6

## Question 1 (written by Rehaan Khokar)

Doctors use special test to measure the respiratory physiology of a patient, in order to aid with clinical reasoning, diagnosis and treatment.

- c) Describe **one** way **how** we can measure respiratory physiology in patients.

[2]

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One parameter we can measure is **vital (lung) capacity**.

- d) List **two** factors that might affect the vital capacity of a patient.

[2]

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An important way to differentiate between obstructive and restrictive lung diseases is via calculation of the ratio of **Forced Expiratory Volume in 1 second (FEV<sub>1</sub>)** and **Forced Vital Capacity (FVC)**.

- e) Contrast between the FEV<sub>1</sub> : FVC ratios in patients with obstructive lung diseases and restrictive lung diseases.

[2]

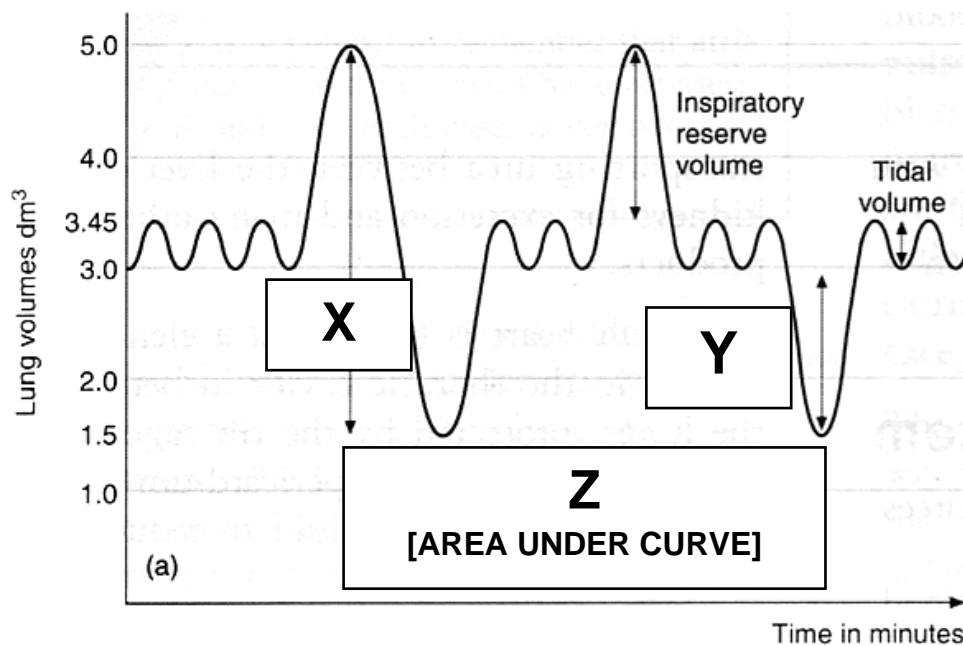
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**FIGURE 1** shows a typical lung volume curve.



**FIGURE 1**

f) Identify the missing stages indicated in **FIGURE 1**. [3]

• [X]:

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• [Y]:

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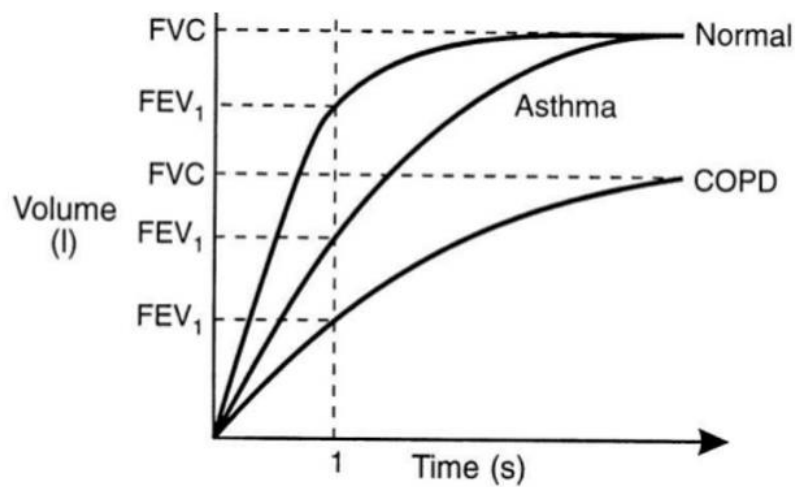
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• [Z]:

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**FIGURE 2** shows typical spirometry testing results.



**FIGURE 2**

- g) **ON FIGURE 2** draw the typical graph you would expect to see in a patient with alveolar fibrosis. [1]

During clinical reasoning, doctors also use 'PPV' values. This is especially important for referrals, such as lung cancer.

- h) Apply your knowledge of PPV values to suggest **two** symptoms that are likely to have high PPV values for lung cancer. [2]

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## Medical Education Society: A100 Year 1 Practice SAP Questions

### Question 2 (written by Rehaan Khokar)

Public health campaigns are very important primary measures in order to promote a culture of 'preventative medicine'.

- a) Explain the ways in which public health campaigns promote a culture of 'preventative medicine'.

In your answer, state **two** examples of such public health campaigns. You should explore the meaning of the term 'preventative medicine'. [4]

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- b) Suggest and explain **one** reason why public health campaigns may **not** be as effective as intended.

**Ignore** references to cost or finance.

[2]

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## Medical Education Society: A100 Year 1 Practice SAP Questions

### Question 3 (written by Rehaan Khokar)

This question is about respiratory disease.

- a) List **two** signs and **two** symptoms of respiratory disease.

[4]

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A 62-year old man with known left ventricular failure visits his GP with increased shortness of breath, persistent cough with purulent mucus and a 2-day history of a fever.

- b) State **one** further question the Doctor should ask about the patients presenting complaint.

[1]

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The patient also reports a smoking history of >15 pack years. He does not drink. When asked about family history, he says his mother died of breast cancer 'a while ago'.

- c) Considering **all** the above information, suggest the **three** most likely differential diagnoses for this patient.

[3]

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d) Suggest the **most** appropriate next step for this patient's treatment and care.

[1]

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## Medical Education Society: A100 Year 1 Practice SAP Questions

### Question 4 (written by Joe Edwards)

A patient arrives at the GP practice for a yearly check-up for a lung condition. As part of the appointment, the nurse practitioner discusses the advantages of giving up smoking, and measures some of the patient's lung volumes using spirometry.

- a) State the type of health promotion the nurse practitioner is practising when advising the patient about giving up smoking. [1]

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- b) Explain the advantage of health promotion in proving patients' health and attitudes about health and disease. [3]

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The patient's spirometry readings are shown below:

- FVC = 0.99 L recorded (1.54L predicted)
- FEV1 = 1.02 L recorded (1.38L predicted)

The nurse practitioner realises she has made a mistake when she looks at the results.

- c) Explain how she knows this. [2]

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The nurse practitioner remeasures the results and obtains a value of 0.89L for FEV1.

All of the other values remain unchanged.

- d) Suggest the type of lung pathology the patient is experiencing. Explain your reasoning with a supported calculation.

[3]

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## Medical Education Society: A100 Year 1 Practice SAP Questions

### Question 5 (written by Joe Edwards)

Lung carcinoma is a condition most frequently caused by smoking.

a) List two other causes of lung carcinomas.

[2]

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A student states that one of the clinical features of a lung carcinoma is dysphagia. They are unsure, however, how this feature arises considering the pathology of lung carcinomas.

b) Explain how this feature arises in the cases of lung carcinoma.

[2]

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One of the clinical consequences of some types of lung cancer is haemothorax.

c) What is the effective of a haemothorax on ventilation? Explain your answer by making reference to changes in pressure within the lung.

[3]

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