

Sepsis MCQs

Question 1

A 55-year-old man presented with fever and feeling generally unwell. His wife reported he had complained of shortness of breath and coughing up brown sputum the day before. He had no past medical history and was not taking any regular medication. He worked as an engineer.

On examination his vital signs were as follows:

Alert

Temperature 38°C

Respiratory rate 26/min

Heart rate 100/min

Blood pressure 90/60 mmHg

Oxygen saturations on air 94%

NEWS = 7

Based on these observations alone, he had a qSOFA score of 2 (respiratory rate ≥ 22 /min and BP ≤ 100 mmHg).

What is the mortality of a patient with a qSOFA score of ≥ 2 ?

- A Approximately 5%
- B Approximately 10%
- C Approximately 15%
- D Approximately 20%
- E Approximately 25%

Question 2

A 55-year-old man presented with fever and feeling generally unwell. His wife reported he had complained of shortness of breath and coughing up brown sputum the day before. He had no past medical history and was not taking any regular medication. He worked as an engineer.

On examination, his National Early Warning Score (NEWS) was 7.

According to the NEWS protocol, what should happen next?

- A Broad spectrum antibiotics administered within 1 hour
- B Hourly observations
- C ICU Outreach or ICU doctor review
- D Medical review within 30 minutes
- E Strict fluid balance instituted

Question 3

A 55-year-old man presented with fever and feeling generally unwell. His wife reported he had complained of shortness of breath and coughing up brown sputum the day before. He had no past medical history and was not taking any regular medication. He worked as an engineer.

On examination, he had a qSOFA score of 2 (respiratory rate ≥ 22 /min and BP ≤ 100 mmHg).

What does SOFA stand for?

- A San Francisco organ failure assessment
- B sepsis-related organ failure assessment
- C severe organ failure assessment
- D single organ failure assessment
- E serious organ failure assessment

Question 4

A 30-year-old woman was admitted with fever, breathlessness and a productive cough. She had no past medical history and was not taking any regular medication. She was not pregnant. At presentation she had a blood pressure of 80/50 mmHg and was given 2 litres of rapid intravenous saline.

Following this, her vital signs were as follows:

Confused
Temperature 38°C
Respiratory rate 26/min
Heart rate 110/min
Blood pressure 85/50 mmHg
Oxygen saturations on air 92%
NEWS = 9

A venous blood gas showed a lactate of 5 mmol/L (0.5 – 1).

What is the expected mortality in this situation?

- A At least 10%
- B At least 20%
- C At least 30%
- D At least 40%
- E At least 50%

Question 5

A 30-year-old woman was admitted with fever, breathlessness and a productive cough. She had no past medical history and was not taking any regular medication. She was not pregnant. At presentation she had a blood pressure of 80/50 mmHg and was given 2 litres of rapid intravenous saline.

Following this, her vital signs were as follows:

Confused
Temperature 38°C
Respiratory rate 26/min
Heart rate 110/min
Blood pressure 85/50 mmHg
Oxygen saturations on air 92%
NEWS = 9

A venous blood gas showed a lactate of 5 mmol/L (0.5 – 1). She was admitted to the Intensive Care Unit.

After fluid resuscitation, what is the most appropriate intravenous treatment?

- A adrenaline
- B dobutamine
- C dopamine
- D noradrenaline
- E vasopressin

Question 6

A 70-year-old man presented to hospital with community acquired pneumonia. He weighed 70kg. His Hb was 12 g/dL, his SaO₂ was 93% and he was clinically dehydrated with a slightly low blood pressure 95/60 mmHg.

Which of the following will increase oxygen delivery to his tissues by the greatest degree?

- A Antibiotics
- B Fluid challenges
- C Oxygen therapy
- D Sodium bicarbonate
- E Transfusion 1 unit red cells

Question 7

A 50-year-old man was admitted with fever and confusion following typical flu-like symptoms during a peak in incidence in seasonal influenza. On examination, he looked unwell and had a faint purpuric rash on his feet and abdomen. He had no past medical history and was not taking any regular medication.

Investigations:

Haemoglobin	120 g/L (115–165)
MCV	85 fL (80–96)
white cell count	$10.4 \times 10^9/\text{L}$ (4.0–11.0)
platelet count	$90 \times 10^9/\text{L}$ (150–400)
serum sodium	134 mmol/L (137–144)
serum potassium	4.5 mmol/L (3.5–4.9)
serum urea	7.3 mmol/L (2.5–7.0)
serum creatinine	210 $\mu\text{mol/L}$ (60–110)
eGFR	49 mL/min/1.73 m ² (>60)
serum glucose	9.3 mmol/L (3.0–6.0)
serum C-reactive protein	350 mg/L (<0.5)
INR	1.7 (<1.4)
APTT	50 s (30–40)
PT	15 s (11.5–15.5)
Fibrinogen	1.2 g/L (1.8–5.4)
12-lead ECG	sinus tachycardia
Chest X-ray	bilateral patchy consolidation

What is the most likely cause of his purpuric rash?

- A Disseminated intravascular coagulation
- B Meningococcal septicaemia
- C Low platelets
- D Staphylococcal septicaemia
- E Vasculitis

Answers

1. B
2. C
3. B
4. D
5. D
6. B (oxygen delivery equation*)
7. D

*The oxygen delivery equation is an important ICU concept.

In many cases oxygen delivery can be optimised more by giving fluid than by giving oxygen.

Hb is delivered to the tissues by the circulation. Each g/dL of Hb carries 1.3ml of oxygen. Therefore: Hb (g/dL) x oxygen saturation of Hb x 1.3 is the oxygen content of blood.

The amount of oxygen delivered per minute depends on the cardiac output. From this we derive the “oxygen delivery equation”:

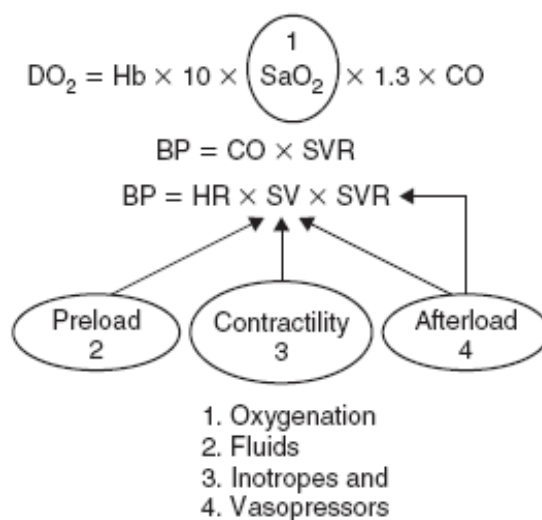


Figure 6.8 Optimising oxygen delivery. DO_2 : oxygen delivery; Hb: haemoglobin; SaO_2 : oxygen saturation; CO: cardiac output; BP: blood pressure; SVR: systemic vascular resistance and SV: stroke volume.