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PRACTICE QUESTIONS

Saudi Commission For Health Specialties (SCFHS)

ICU

Critical Care Medicine

EDITION

Demo

QUESTIONS

9

FORMAT

Limited Edition PDF

Before you begin

What this is

9 practice questions for Saudi Commission For Health Specialties (SCFHS) ICU , each with its answer key and an explanation. Answer a question before you read its key — the explanation is worth more once you have committed.

If something looks wrong

Send us three things and we will check it:

- the exam code, ICU
- the question number
- the email address on your order

Write to **support@mometrix.net**. We reply within one business day.

QUESTION 1

SINGLE CHOICE

A 60-year-old ventilated patient has the following arterial blood gas: pH 7.28, PaCO₂ 60 mmHg, HCO₃⁻ 27 mmol/L, PaO₂ 80 mmHg on FiO₂ 0.5. What is the primary acid-base disturbance?

- ☒ **A** Acute respiratory acidosis
- ☐ **B** Chronic respiratory acidosis
- ☐ **C** Metabolic acidosis with respiratory compensation
- ☐ **D** Acute respiratory acidosis with metabolic compensation
- ☐ **E** Mixed metabolic and respiratory acidosis

ANSWER A

WHY The low pH (7.28) indicates acidemia. The elevated PaCO₂ (60 mmHg) identifies the primary disturbance as respiratory acidosis. HCO₃⁻ is 27 mmol/L, which is essentially normal; for an acute respiratory acidosis, the expected rise in HCO₃⁻ is about 1 mEq/L for every 10 mmHg rise in PaCO₂ (i.e., expected HCO₃⁻ ~ 31 mEq/L here), but a value of 27 with only modest elevation suggests this is an acute rather than chronic process (chronic would show HCO₃⁻ ~ 36). Thus the picture fits acute respiratory acidosis without significant metabolic compensation.

QUESTION 2

SINGLE CHOICE

A 58-year-old presents with inferior STEMI and develops hypotension (BP 80/50 mmHg), clear lung fields, and bradycardia (HR 48/min) with elevated jugular venous pressure. What is the most appropriate immediate intervention?

- ☐ A Intravenous furosemide 40 mg
- ☐ B Nitroglycerin infusion
- ☒ C Intravenous normal saline bolus and atropine
- ☐ D Immediate endotracheal intubation and mechanical ventilation
- ☐ E Dobutamine infusion

ANSWER C

WHY This patient with inferior MI shows signs of right ventricular involvement: hypotension, bradycardia, JVD, and clear lungs. RV infarction is preload-dependent, so nitroglycerin and diuretics are contraindicated. The correct initial management is fluid resuscitation with IV normal saline, along with atropine for symptomatic bradycardia, while preparing for reperfusion (PCI). Dobutamine may be considered if hypotension persists despite fluids.

QUESTION 3

SINGLE CHOICE

Which hemodynamic profile is most consistent with obstructive shock due to cardiac tamponade?

- ☐ A High cardiac output, low systemic vascular resistance, low filling pressures
- ☒ B Low cardiac output, high systemic vascular resistance, equalization of diastolic pressures
- ☐ C Normal cardiac output, normal SVR, elevated pulmonary capillary wedge pressure with prominent v waves
- ☐ D Low cardiac output, low systemic vascular resistance, low filling pressures
- ☐ E High cardiac output, low systemic vascular resistance, elevated filling pressures

ANSWER B

WHY Cardiac tamponade produces obstructive shock characterized by reduced cardiac output and a compensatory increase in SVR, with elevated and equalized diastolic pressures (right atrial, RV diastolic, pulmonary diastolic, and PCWP within approximately 5 mmHg of each other). Prominent v waves indicate mitral regurgitation, not tamponade. Low CO with low SVR and low filling pressures describes distributive (e.g., septic) shock.

QUESTION 4

SINGLE CHOICE

A postoperative ICU patient has a serum potassium of 6.8 mmol/L with peaked T waves on ECG but no hemodynamic instability. Which is the most appropriate FIRST intervention?

- ☒ **A Intravenous calcium gluconate 10% 10 mL over 2-3 minutes**
- ☐ B Insulin with dextrose infusion
- ☐ C Sodium polystyrene sulfonate (Kayexalate) orally
- ☐ D Immediate hemodialysis
- ☐ E Intravenous sodium bicarbonate

ANSWER A

WHY Severe hyperkalemia ($K^+ > 6.5$ mmol/L) with ECG changes requires immediate membrane stabilization with IV calcium gluconate (or calcium chloride) to prevent fatal arrhythmias. Insulin with dextrose shifts potassium intracellularly but takes 15-30 minutes. Sodium bicarbonate and Kayexalate act more slowly. Hemodialysis is reserved for refractory or life-threatening cases unresponsive to medical therapy.

QUESTION 5

SINGLE CHOICE

Which of the following parameters best supports a spontaneous breathing trial (SBT) in a patient recovering from respiratory failure?

- ☐ A PaO_2/FiO_2 ratio of 120 on PEEP 10 cmH₂O
- ☐ B Rapid shallow breathing index (RSBI) of 105 breaths/min/L
- ☒ **C RSBI of 65 breaths/min/L on T-piece**
- ☐ D Minute ventilation of 18 L/min with pH 7.28 on current settings
- ☐ E FiO_2 requirement of 0.7 with PEEP 12 cmH₂O

ANSWER C

WHY An RSBI (f/V_T) < 105 , particularly below 80, is a strong predictor of successful weaning and extubation. RSBI 105 is borderline/unfavorable, RSBI 65 is favorable. PaO_2/FiO_2 of 120 and high FiO_2 /PEEP requirements indicate the patient is not yet ready for weaning. Persistent acidosis (pH 7.28) with high minute ventilation suggests ongoing respiratory failure.

QUESTION 6

SINGLE CHOICE

In a patient with severe traumatic brain injury and intracranial pressure (ICP) of 28 mmHg, which is the most appropriate next step after optimizing head of bed elevation, sedation, and normocapnia?

- ☐ A Immediate decompressive craniectomy
- ☒ B Intravenous mannitol or hypertonic saline
- ☐ C Induce burst-suppression coma with barbiturates
- ☐ D Hyperventilation to PaCO₂ of 30 mmHg
- ☐ E Lumbar puncture to drain CSF

ANSWER B

WHY Tier-one management for elevated ICP includes head elevation, sedation/analgesia, normocapnia (PaCO₂ 35-40 mmHg), and osmotherapy with mannitol or hypertonic saline to reduce cerebral edema. Aggressive hyperventilation causes cerebral vasoconstriction and ischemia and is reserved for short-term rescue. Barbiturate coma and decompressive craniectomy are tier-two/three options if first-tier measures fail. Lumbar puncture is contraindicated with raised ICP due to herniation risk.

QUESTION 7

SINGLE CHOICE

A postoperative patient suddenly develops a heart rate of 160/min with a narrow QRS, regular rhythm, and hypotension (BP 85/55 mmHg). Carotid sinus massage has no effect. What is the most appropriate immediate management?

- ☐ A IV amiodarone 150 mg bolus
- ☒ B Synchronized cardioversion
- ☐ C IV metoprolol 5 mg
- ☐ D IV adenosine 6 mg rapid push
- ☐ E IV diltiazem

ANSWER B

WHY A hemodynamically unstable supraventricular tachycardia (SVT) requires immediate synchronized cardioversion regardless of QRS width. Vagal maneuvers and adenosine are appropriate only in stable patients. Beta-blockers and calcium channel blockers are contraindicated in hypotensive patients. Amiodarone is reserved for stable wide-complex or refractory arrhythmias.

QUESTION 8

SINGLE CHOICE

Which statement best describes current evidence-based guidance on blood glucose management in adult ICU patients?

- ☐ **A** Maintain blood glucose between 80-110 mg/dL using intensive insulin therapy in all ICU patients
- ☒ **B** Maintain blood glucose between 140-180 mg/dL, avoiding both hypoglycemia and severe hyperglycemia
- ☐ **C** Permissive hyperglycemia up to 250 mg/dL is acceptable in septic patients
- ☐ **D** Tight glycemic control (< 110 mg/dL) is mandatory in post-cardiac surgery patients
- ☐ **E** Insulin infusion is only indicated if blood glucose exceeds 300 mg/dL

ANSWER B

WHY Current ICU guidelines (NICE-SUGAR and subsequent recommendations) target blood glucose between approximately 140-180 mg/dL. Intensive control targeting 80-110 mg/dL increases the risk of hypoglycemia without proven mortality benefit and is no longer recommended routinely. Very tight control may still be considered in select post-cardiac surgery populations in some protocols, but a target range of 140-180 mg/dL is the standard, safe approach. Permissive hyperglycemia above 180 mg/dL is associated with worse outcomes.

QUESTION 9

MULTIPLE CHOICE

A 66-year-old man presents 3 hours after onset of crushing retrosternal chest pain. ECG shows ST elevation in leads II, III, and aVF. His blood pressure is 95/60 mmHg, heart rate 52/min, and lung fields are clear. Which of the following are appropriate immediate interventions? (Choose two.)

- ☐ **A** Administer sublingual nitroglycerin
- ☒ **B** Initiate fluid resuscitation with isotonic crystalloid boluses
- ☒ **C** Give atropine for symptomatic bradycardia
- ☐ **D** Administer a beta-blocker orally

ANSWER B - C

WHY In inferior STEMI with right ventricular involvement (hypotension, bradycardia, clear lungs), nitrates and beta-blockers should be avoided because they worsen hypotension and bradycardia. IV fluid boluses are first-line to restore preload to the RV, and atropine is indicated for symptomatic bradycardia.