

SCE 1

Initial investigations include an arterial blood gas on room air:

pH	7.25 mmHg	(7.35-7.45)
pCO₂	23 mmHg	(35-45)
pO₂	99 mmHg	(75-100)
HCO₃⁻	10 mmol/l	(22.0-33.0)
Lactate	5 mmol/l	(0.7-2.5)
Glucose	10 mmol/l	(3.0-7.8)
Base Excess	-16 mmol/l	(-3-+3)

1. Lead examiner

Candidate No:

2. Co-examiner

Final Mark:

SCENARIO

A 22 year-old man who was using intravenous amphetamines has been brought to the ED by police. He is handcuffed and in an agitated state. Vital signs: HR 140 bpm, BP 200/110 mmHg, RR 22, temperature 38.1°C, SpO₂ 98% on room air. GCS 14- confused

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Question 1: Describe and interpret the arterial blood gases.**1 minute**

Expected Response	Details & Comments	
Moderate acidaemia; metabolic acidosis with resp compensation; Likely toxin induced. Sympathomimetic toxicity with concordant abnormal vital signs.		
Metabolic	Metabolic acidosis	
Respiratory	Respiratory compensation as expected Expected pCO ₂ = 1.5 x 8 + 8 = ; or pCO ₂ approximates last 2 digits pH	
Oxygenation	Good Oxygenation. Aa gradient normal.	
	Glc-stress	
Interpret	Potential causes: prolonged agitation, pronounced activity, dehydration, renal impairment secondary to drug use. Consistent with Sympathomimetic toxidrome . Multiple factors are possible.	

Question 2: Outline your approach to this patient's agitation.**2 minutes**

Expected Response	Details & Comments	
Issues	Patient is unwell and can be treated without consent "in his best interest" Maintain physical restraint until safety established considering best time for removal of handcuffs.	
Difficult to manage due to agitation	Team approach, assume leadership, delegate roles. Careful approach, verbal assurances, maintain handcuffs, retain help of police. Safety staff, patient and others in ED.	
High risk of deterioration	Resus room with cardioresp monitoring. Initial physical then chemical restraint, Must remove restraints when safe to do so . The patient will need sedation (+/- intubation and ventilation) to control the situation. Manage rest of ED.	
Sedation	Appropriate drug, dose and route of administration, end point of sedation Candidates should justify choice of sedating agents. Safe monitoring of patient throughout.	
Other	Consolidate Hx from collateral sources: police, kin, old records.	

Question 3: The patient is now sedated. His serum CK is 80,000 IU/L. He develops a broad complex bradycardia with a HR of 30bpm. His BP is 70 systolic.

Describe your management.

2-3minutes

Expected Response	Details & Comments	
Severe hyperkalaemia	- Rapid infusion/resus of IV N Saline. - Cardioprotection: Calcium: CaCl or gluconate, appropriate dose, end points - Shift K into cells: NaHCO₃, Insulin& dextrose, Salbutamol End points clinical improvement- CVS improvement, narrowing of QRS, improvement in BP. Repeat blood gases and serum K analyses. Monitor urine output, glucose. - May need dialysis if not responsive to initial Rx	
Rhabdomyolysis	Bicarbonate to alkalinise urine. Aim pH 7.5 IV crystalloids: aim for high UO, viz 100mls/hr. Urinary catheter Consider mannitol. Frusemide contraindicated, as it acidifies urine which can lead to more myoglobin to ferrihaemate(toxin). Consider compartment pressure –careful examination of limbs- fasciotomy if indicated. May need dialysis	
Disposition	ICU; consult toxicology service	

Question 4: During the restraint, a security guard sustained a needlestick injury. Describe the management of the security guard.

1 minute

Expected Response	Details & Comments	
Issues	Risk assessment; risks: benefit ratio for HBV, HIV. Consider also tetanus. Serology testing. Require pre and post-test counselling. Medicolegal issues in testing unconscious patient No PEP available for HCV. Follow up Documentation. Hospital notification/riskman. Work cover.	
Recipient	Hep B immunisation status. Determine Hx of HBV vaccination; ? previously known results, esp antiHBs Ab His concerns, fears and expectations should also be addressed	
Source	High risk patient IVDU Known patient HIV status? Check documentation, lab results, chart	
Mechanism of injury	Depth of injection, amount of blood, hollow (more likely!) or solid needle	
Consent for testing?	Patient sedated and unable to give consent for testing	
Medicolegal issues/admin	Legality of testing without consent versus commencing PEP whilst awaiting test result from patient Documentation. Hospital notification/riskman. Work cover.	
PEP	If indicated, based on risk assessment, expert advice and recipient wishes: - Tetanus: - HBV: active and passive immunisation - HIV: protocolised regimen	

Comments: (if you fail the candidate, please state why)

If the candidate fails the exam overall, what feedback would you suggest CIC provide for this SCE?

SCENARIO

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