

1. Lead examiner

Candidate Number:

2. Co-examiner

Final Mark:

A 64 year-old man presents to your Emergency Department with dyspnoea and palpitations. His past history includes COPD, chronic renal failure, obesity, IHD and hypertension. Vital signs on presentation:

HR 156/min; BP 88/60 mmHg; O₂ sats 88% on RA; Temp 36⁸ deg C; GCS 15.

His nurse shows you his ECG. (ECG and Q1 included in the stem)

Question 1: Describe and interpret the ECG (1.minute).

Expected Response	Details & Comments	
Describe	Broad complex tachycardia , rate 156, regular Consistent with ventricular tachycardia Relevant positives: Very broad, AVR grossly positive (bizarre axis) Relevant negatives: not concordance, no fusion or capture beats Other: peaked t waves, ST changes (interpretation difficult)	
Interpretation	Probable VT, with haemodynamic and respiratory compromise Potential causes: hyperkalaemia (Prompt: renal impairment), drug toxicity, Ischaemia or atrial tachycardia with aberrant conduction Needs urgent identification and reversal of cause(s) or contributing factors	

Question 2: A venous blood gas is taken. Describe and interpret this finding:

pH 6.9, pCO₂ 60, pO₂ 28, bicarb 10, BE -10, K⁺ 8.6 (2 minute)

Expected Response	Details & Comments	
pH 6.9, CO ₂ 60, bic 10	Profound acidaemia Mixed metabolic respiratory acidosis. Predominantly metabolic related to renal failure. High morbidity/mortality.	
CO ₂ 60	Hypercapnoea indicates respiratory failure (Type 2). Other causes include Overload (CRF, IHD), meds such as narcotics, Pickwickian syndrome from morbid obesity. Combinations of causes are likely in this patient.	
K ⁺ 8.6	Severe life-threatening hyperkalaemia– may account for VT Current K elevated by low pH. Predicted K of 6.1 if pH normalised to 7.4. VT more likely to revert if K corrected. Therefore needs urgent correction of K.	

Question 3: Outline your treatment of this patient. (2 minute)

Expected Response	Details & Comments	
Needs urgent correct K ⁺ before further Mx consideration (Prompt: if cardioverts first: is there anything you would like to do before that?)		
General	Full cardiac monitoring. Team approach, assume leadership, assign roles. Equipment, medications. Explanation to patient +/- NOK.	
Hyperkalaemia	Cardiac stabilisation: Ca gluconate 10ml 10% repeat as needed (can use CaCl) K shift: Salbutamol neb 5 mg; Bicarbonate 8.4% 100 ml IV; Insulin 10 IU + 50 mls 50% glucose Consider enhanced elimination: rectal resonium. Consider dialysis	

Question 4: When would you consider cardioversion and what are the issues in this patient? (2 minute)

When	If treat high K and still WCT likely required. VF, Loses output. Synchronised cardioversion at 50-100 J biphasic. Follow safety protocol.	
Issues	Candidate should acknowledge risks of sedation/ induction / ventilation (viz Cardiovascular / Resp compromise / Airway/ Renal/ Obesity/ IHD/ Consent), and demonstrate expertise in this procedure.	
Candidate must competently discuss to pass	RSI with airway protection Vs prepare for this . However, suxamethonium should be avoided! Safe dose and choice procedural sedation.	

Question 5 (Additional if time): The patient reverted to sinus rhythm but remains hypotensive. List potential causes for his persisting hypotension and how you would assess for each.

Expected Response	Details & Comments	
AMI/ACS	ECG: tachycardia, arrhythmia, STEMI.	
PE	ECG RV strain, Echo- dilated RV,	
Septic shock	Presence of fever, likely source, urine FWT, CXR	
Medications	Drug history/interactions Anaphylaxis: airway oedema, rash, tachycardia	
Hypovolaemia	Clinical examination	
Other	Pericardial tamponade (?uraemic pericarditis): Beck's triad; echo confirmation Spurious result: recheck reading, assess equipment If intubated and ventilated, consider tension PTx: clinical signs and confirmatory CXR	

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

A 64 year-old man presents to your Emergency Department with dyspnoea and palpitations. His past history includes COPD, chronic renal failure, obesity, IHD and hypertension.

Vital signs on presentation:

- HR 156 /min
- BP 88/60 mmHg
- O₂ sats 88 % on RA
- Temp 36⁸ deg C
- GCS 15

His nurse shows you his ECG. (ECG included in the stem - PTO)

Question 1: *Describe and interpret the ECG.*

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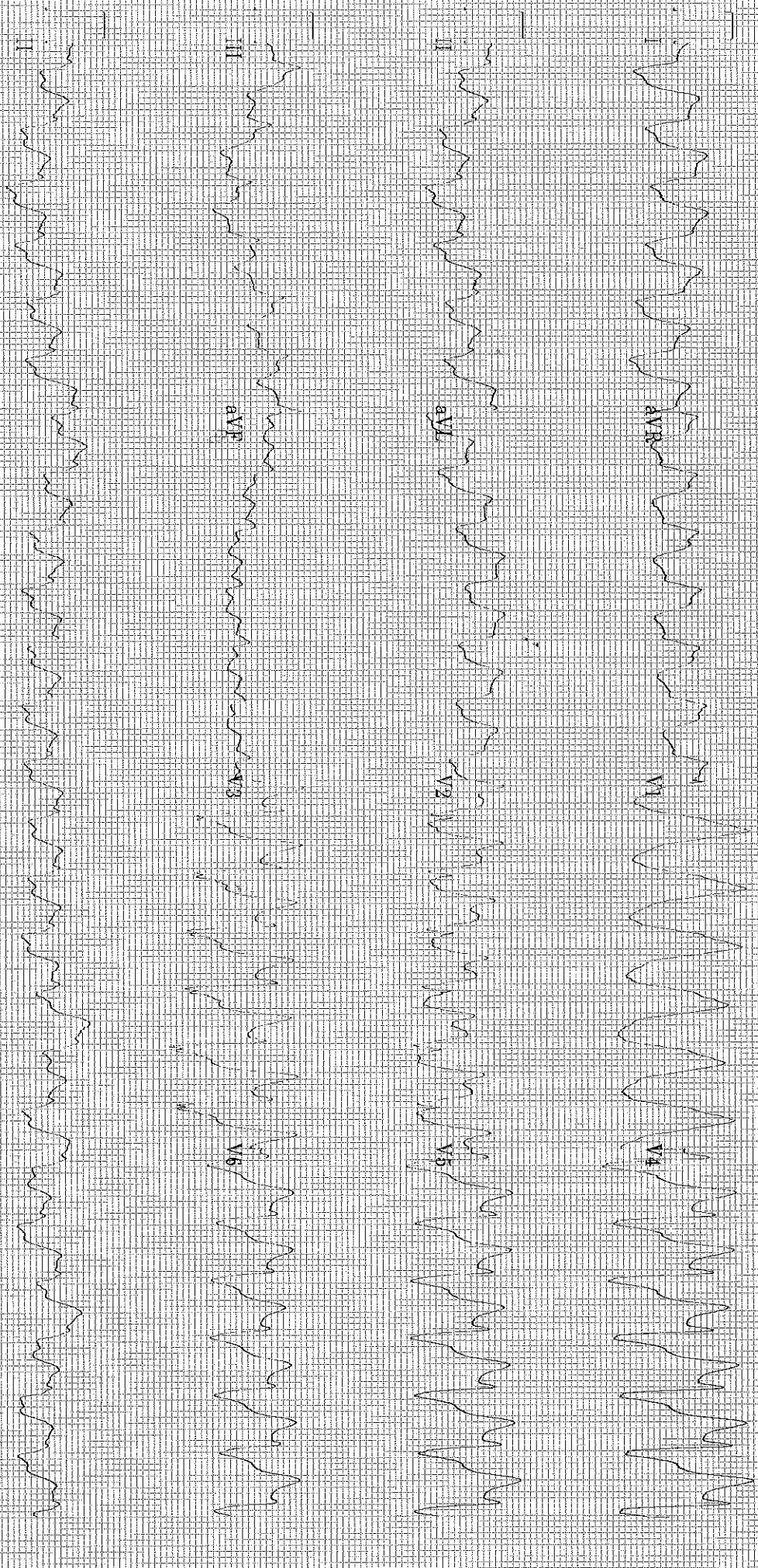
TOWNSVILLE HOSPITAL

Vent. rate 153 bpm
PR interval 112 ms
QRS duration 142 ms
QT/QTc 326/520 ms
P-R-T axes * 178 254

Technician:

*** Suspect arm lead reversal, interpretation assumes no reversal
Sinus tachycardia
Nonspecific intraventricular block
Right ventricular hypertrophy
Cannot rule out Septal infarct, age undetermined
Inferior injury pattern
*** ACUTE MI ***
Abnormal ECG

Unconfirmed



100 Hz 25.0 mm/s 10.0 mm/mV

4 by 2.5s + 1 rhythm id

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Question 2: A venous blood gas is taken.

Describe and interpret this finding:

pH	6.9		(7.35 – 7.45)
pCO₂	60	mmHg	(35 – 45)
pO₂	28	mmHg	
HCO₃	10	mmol/L	(22 – 33)
Base Excess	-10		(-3 – +3)
K⁺	8.6	mmol/L	(3.5 – 5.5)

1. Lead examiner

Candidate Number:

2. Co-examiner

Total Mark:

A 10 year-old boy is carried into your rural Emergency Department by his father. They were camping in outback Northern Australia when the boy stepped on a snake. He has a small bloody wound on his right leg. A bandage was applied by the father. They arrived in your ED by private car after a 50-minute drive. The patient is in a resuscitation bay.

Question 1: Outline the key features in your assessment of this patient.

(2 minutes)

Expected Response	Details & Comments	Bold To Pass
Key Issues	Establishing whether a bite happened or not. Looking for evidence of systemic envenomation	
History	Exact details of bite – location, time 1 st aid measures applied (pressure immobilisation bandage), amount of movement by boy post bite Symptoms of possible envenomation (headache, vomiting, dizziness due to hypotension, abdominal pain) Neurological complaints (diplopia, dysarthria, muscle weakness, respiratory fatigue) Coagulopathy – bleeding from wound sites/venepunctures, haematemeses/haematuria Rhabdomyolysis – red or brown urine, reduced urine output, muscle pain Tetanus status Other AMPLE history	Bold To Pass
Examination	General inspection – vital signs (HR/BP/sats/RR/temp/ GCS) looking for signs of shock and respiratory failure, check adequacy of pressure immobilisation. Neurological exam – Eye signs -ptosis, diplopia, ophthalmoplegia, peripheral muscle weakness ,paralysis. Skin –look for signs of bleeding. Muscles – muscle pain Bite site – Cut window in bandage to view site	Bold To Pass
Investigations	Bedside - BSL,ECG, U/A(Hb =haemolysis / myoglobin = rhabdomyolysis) Lab - Group and Hold /Crossmatch FBC – anaemia. Leucocytosis, thrombocytopenia Coags – PT/APTT/INR (all elevated in snakebites causing coagulopathy), Fibrinogen low, D-dimer positive, whole blood clotting time if coags not available UEC's / CK – looking for renal impairment and rhabdo VBG – looking at acid base status and CO2(can get respiratory failure and metabolic acidosis) VDK -now or later in the SCE.	Bold To Pass

Question 2: The child is asymptomatic, and examination is normal, other than a persistently oozing wound. The following blood test results are received. Describe and interpret the results.

Hb	135 g/L	130-170
Platelets	207	150- 400
APTT	90 secs	25-36
INR	>9.0	
D-Dimer	Positive	
Fibrinogen	< 60 mg/L	180-440
CK	1500 u/L	150-499

(2 minutes)

Expected Response	Details & Comments	
Evidence of venom-induced consumptive coagulopathy (VICC) indicates systemic envenoming and is an indication for antivenom		Bold To Pass
Hb normal	No features of thrombotic microangiopathy causing microangiopathic hemolytic anemia (MAHA). Platelets and WCC should be sought too.	
Immeasurably high INR, APTT, positive D-dimer and unmeasurable fibrinogen	Not a black snake as fibrinogen would be normal Death Adder doesn't cause coagulopathy Likely Brown or Taipan	
Elevated CK	Rhabdomyolysis could be due to myotoxicity May cause renal impairment, given findings, esp if Brown, Tiger, Taipan	
Interpretation	Presence of VICC limits the possible snakes causing clinical scenario to Brown snakes, Taipan and Tiger snake.	Brown + 1

Question 3: Outline your management of this child.**(2 minutes)**

Expected Response	Details & Comments	
Key Issues	Systemic envenomation. Potentially critically unwell. Estimated weight 30kg. Mainstay of Rx are supportive care and antivenom. Latter guided by VDK result. Role of blood product therapy is guided more by active bleeding than coag profiles.	Bold To Pass
First Aid	Leave pressure immobilisation in situ until antivenom commenced/completed and pt stable	
Respiratory support	Currently no evidence of paralysis but needs careful monitoring	
IV Fluids	Anticipate renal impairment and possible cardiovascular compromise 0.9% N/Saline 10-20ml/kg boluses, aim HR <100, normotension Monitor fluid balance closely	
Choice of Antivenom	Venom Detection Kit. Ideally from bite site through window in bandage. Urine - less reliable. Blood unreliable. Results guide which antivenom to administer. Monovalent is preferred. Polyvalent if results indeterminate or insufficient monovalent. (Prompt) Liaise with local toxicology/toxinology experts Usually 1-2 ampoules of antivenom sufficient to neutralize venom Premedication: not indicated. No proven benefit <i>Candidates should justify if using premed.</i> Observe for anaphylactic reaction: adrenaline available. (caution re hypertension)	
Ongoing management	Key features to monitor: - Bleeding: haemodynamic status, bleeding sites, serum Hb - Neurotoxicity: diplopia, focal weakness, flaccid paralysis, respiratory depression - Myotoxicity: urine output, serum CK, serum K, renal function - Other: vomiting NB: Coagulation and serum CK should be assayed every 6-8 hours Coagulation assays alone are poorer indicators, as they reflect hepatic replacement of clotting proteins more than effects of venom.	3/3
Specific Mx of VICC	<i>Candidates may answer in this section. Else, use Q4 below as prompt.</i> <i>See answers below.</i>	
Disposition	Disposition to critical care area. Transfer to tertiary Paeds service if appropriate.	

Question 4: Outline your approach to ongoing bleeding in this patient.

(1 minute)

Expected Response	Details & Comments	
Preamble	High-level evidence lacking. Current evidence largely based on data for Brown snake envenoming. Depends on desired outcome. If actively bleeding, esp if haemodynamic compromise then must make every effort to reverse coagulopathy	
Antivenom	Antivenom: Inactivates venom, prevents worsening, but does not itself reverse coagulopathy. In absence of active bleeding coagulopathy will reverse as liver replaces clotting factors	
Blood products	Probably not needed if no active bleeding but if active bleeding, may be of benefit Platelets, FFP, cryoprecipitate, prothrombin complex concentrate (PCC)	
	Provide discussion to support their approach for use of anti venom and blood products.	

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

A 10 year-old boy is carried into your rural Emergency Department by his father. They were camping in outback Northern Australia when the boy stepped on a snake. He has a small bloody wound on his right leg. A bandage was applied by the father. They arrived in your ED by private car after a 50-minute drive. The patient is in a resuscitation bay.

Question 1: *Outline the key features in your assessment of this patient.*

SCE 2

Hb	135 g/L	130 - 170
Platelets	207	150- 400
APTT	90 seconds	25 - 36
INR	>9.0	0.9 - 1.2
D-Dimer	Positive	
Fibrinogen	< 60 mg/L	180 - 440
CK	1,540 U/L	150 - 499

1. Lead examiner

Candidate number:

2. Co-examiner

Final Mark:

A 26 year-old man is brought to the ED by ambulance after a suspected deliberate self-poisoning. He had been depressed after losing his job last week, and was agitated at the scene.

En route to ED, he suffered a brief seizure which self-terminated. Initial findings: HR 130/min, BP 90/60.

Question 1: List the possible causes of his seizure. (1min)

Prompt if no mention of non-tox causes: "Are there any other possible causes of seizure?"

Expected Response	Details & Comments	Pass criteria
Drug related Seizure:		
Agent itself being proconvulsant	Antidepressants eg TCA , Venlafaxine, Bupropion Antipsychotics eg phenothiazines, butyrophenones, quetiapine Analgesics eg Tramadol, pethidine Salicylates Stimulants/Sympathomimetics eg amphetamine, cocaine Anticonvulsants eg CBZ, tiagabine Others- Antiarrhythmics, Antihistamines, Theophylline, caffeine, Isoniazid, Antimalarials, organophosphates	Antidepressants & drugs from 3 other classes
Hypoxia	2° to decreased LOC	
↓ BSL 2° to agent	Oral hypoglycaemics eg sulphonylureas, insulin	
Drug withdrawal	EtOH, BZD	
2° to ICH	Trauma Stimulants causing HT and ICH	
Seizures not drug related	Epilepsy, metabolic (incl hypoglycaemia), ICH, trauma, etc	Two non-tox causes (Prompt)

Question 2: You are the leader of the resuscitation team. As he is being transferred, he begins to seize. Outline your management priorities. (2mins)

Expected Response	Details & Comments	
Resuscitation & patient stabilisation Rx Seizure (& causes) Drug toxicity (risk assessment) CNS toxicity & likely CVS toxicity Rx Haemodynamic instability	Immediate Rx priorities: Most drug induced seizures are self limited- wait and see? If seizure is prolonged then active treatment of seizure is required: 1. O ₂ , monitor, IV access, check Glucose 2. Stop the seizure (IV benzodiazepines, repeat doses as needed) – progress rapidly to RSI if status seizure or unconscious or CVS collapse to protect airway 3. IVF Crystalloid /pressors for hypotension 4. Seek & treat the cause – likely drug toxicity (check and Rx hypoglycaemia), ECG to exclude arrhythmia/TCA as cause, consider NaHCO ₃ 5. Consider decontamination once intubated, 6. Consider complications eg ICH or recurrent seizures	Bold 4/4 with prompt
Subsequent Rx priorities:	Corroborative Hx – to identify drug/s Inform NOK / relatives Document	
Consults, when stable and awake	Toxicology - toxicology consult Psychiatry Psychiatric assessment – will be delayed	
Disposition	ICU	

Question 3: The patient's seizure terminates with midazolam. His girlfriend arrives and reports that he has taken 100 tablets of amitriptyline 25mg. These are his vital signs (hand over sheet: P=140 BP=80/60 RR=8 GCS 3)

Describe your specific treatment of this poisoning. (2 mins)

Expected Response	Details & Comments	Pass
Secure airway & hyperventilate	Resuscitation – Early RSI / definitive airway Modify drug doses - Caution with induction drug doses in view of vitals Fluid bolus preload Maintaining ventilation during intubation Hyperventilate postintubation <i>Prompt: "How would you modify your RSI technique in this patient?"</i>	Bold
Bicarbonate	1-2 mmol/kg NaHCO₃ IV bolus then titrate to QRS & pH Aim pH >7.5 (pCO ₂ 35) Consider before induction	Bold
Mx haemodynamic instability	Anticipate postinduction hypotension Early ECG to assess QRS, QT Otherwise IV crystalloid/pressors for hypotension	
Ongoing sedation	eg propofol infusion (avoid further paralysis which may mask seizures)	
Decontamination	Only after airway protected with ETT NGT/OGT – aspirate gastric contents Charcoal 50g if BS present and airway protected with ETT (already significant poisoning –may be helpful in view of large ingested dose – and anticholinergic effects)	

Question 4: Shortly after intubation he becomes increasingly hypoxic and hypotensive. Outline your actions. (2mins)

Expected Response	Details & Comments	Pass
Complications of intubation	Check tube position, check ventilator Manual ventilation Exclude/treat tension pneumothorax Seek & treat Anaphylaxis or malignant hyperthermia to induction drugs	At least 2
Ongoing toxicity	Further dose of bicarb 1mmol/kg NaHCO ₃ IV bolus if BCT causing hypotension (may repeat dose if QRS remains broad) Seek & treat arrhythmia eg VT/VF – DC cardioversion Correct any metabolic & respiratory acidosis (aim pCO ₂ 35mmHg)	Bicarb
Ensure adequate preload & haemodynamics	IV fluids (bolus IV crystalloid 20ml/kg & reassess) Check IV sedation (agent/dose/rate) – turn down sedation until stabilised Pressor support if volume adequate – eg metaraminol / Norad Ix further eg troponin, eFAST/ECHO Invasive monitoring - Art line, IDC	At least 2
Additional	Seek further toxicological advice Notify ICU	

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

A 26 year-old man is brought to the ED by ambulance after a suspected deliberate self-poisoning. He had been depressed after losing his job last week, and was agitated at the scene.

***En route* to ED, he suffered a brief seizure which self-terminated**

Initial findings on arrival in ED:

- HR 130 /min**
- BP 90/60 mmHg**

Your first question will be:

“List the possible causes of his seizure.”

Question 3

Patient vital signs

- HR 140/min
- BP 80/60 mmHg
- RR 8/min
- GCS 3

1. Lead examiner

Candidate:

2. Co-examiner

Final Mark:

SCENARIO: End of Life Discussion

This is Julie. Please proceed with the consultation.	Not Met	Partly Met	Fully Met
Rapport, Reassurance, Trust and Ethical Therapeutic Relationships Convey relevant information and explanations Develop a common understanding of issues, problems and plans Convey effective oral information Appropriate non verbal communication Appropriate use of demeanour, language and words Identify and explore issues, including reasons for refusal / preferences Problem-solve Implement an effective plan in collaboration with the daughter			

ACTOR feedback:

Not Comfortable	Partially Comfortable	Fully Comfortable
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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

It is 1200hrs on a weekday in your tertiary ED. Edward Smith, an 80 year-old man with chronic obstructive airway disease (COAD), was brought to your ED for the third time in the last four months. On this presentation he's suffered three days of increasing dyspnoea. He is severely unwell in your resuscitation bay, with the following vital signs:

- GCS 9
- PR 130 bpm
- RR 30 /min
- O₂ sats 87 % on 6L/min O₂
- Temp 38.9 degrees C

Arterial blood gases reveal a pCO₂ of 125 mmHg. CXR shows multi-lobe pneumonia. Last admission, while fully competent, Mr Smith requested that he receive only comfort measures should his condition deteriorate. He also expressed a desire to die at the nursing home, where he resides. He has a valid, current advance care directive stating that he does not wish to be intubated.

Nursing staff inform you that the patient's only daughter, Julie, has arrived. She's declared that she "wants everything done" for her father. Julie waits for you in the relatives' room.

- You will ROLE PLAY a consultation with Julie, who will be played by an ACTOR.
- The examiners will NOT be asking any questions and do NOT expect you to interact with them.

Background Information for Actor

Important Note

The ACEM Fellowship Exam involves examiners and candidates from all Australian states and New Zealand. To optimise fairness for all candidates, all character and scenario features will NOT have demographic details.

In interactions with candidates, please do NOT refer to demographic specifics. For example, you work in the city, you live in the inner suburbs instead of Richmond.

The Character

Mrs Julie Morris is a 52 year-old single woman. She works as an accounts clerk for a fashion retailer in the city. She has no medical knowledge beyond that of an average lay-person. Julie is in good physical health, although smokes heavily. She has no children, and lives alone in an inner city suburb.

Julie is the only offspring of Edward. The latter has lived in a nursing home since his wife (Julie's mother) died 4 years ago, from bowel cancer. He has chronic obstructive airway disease (COAD) from many years of smoking, and suffers poor health from it. Julie visits Edward once per fortnight at the nursing home. She has never been too close to him, being more so with her mother. Edward worked long hours as a labourer when Julie was a child. Despite the slight distance between them, Julie has always enjoyed a positive relationship with her father. She enjoys her fortnightly visits, although feels she should spend more time with him, especially with his ill health.

Julie has no detailed knowledge of Edward's health and healthcare, beyond awareness of his advanced smoking-induced COAD, and recent hospital admissions. She is not aware of Edward's advanced care directives, including his recent request for palliative care only.

The Scene

It is now noon on a weekday.

45 minutes ago, while at work, you were called by staff at Edward's nursing home, who advised you of his illness. They reported 3 days of worsening breathlessness, likely an infective complication of his COAD. Asked if you'd like Edward transported to hospital for treatment, you indicated he should. In fact, you were mildly surprised that they asked at all, being certain that hospital care was what your father needed. Having made arrangements at work, you left soon after, arriving by private car to the ED 10 minutes ago. You are familiar with this hospital, having visited Edward here during his previous admissions.

The triage nurse advised that your father is currently being assessed in the ED. She stated he is very unwell. While not surprised at such an event, you are understandably concerned. You queried the nursing home's hesitation in calling an ambulance today, and the nurse indicated some notion of limitation of medical treatment for your father. Surprised by such a notion, which has never been raised before, you replied that you wanted all medical intervention for your sick father.

You were ushered into a private room, and told that a senior doctor will speak to you shortly. At this stage, apart from concern about your father's health, you are worried medical staff may be inappropriately withholding medical care from him. Your emotions are a mix of concern, fear, anger and guilt.

FACTS:

Edward has a very severe acute illness, with a grave prognosis. He faces a very high chance of dying from this illness. Even with no limitations in medical intervention, the mortality rate remains high. Moreover, his quality of life (QOL) is expected to be worse if he survives. Medical intervention comprises a suite of conservative / non-invasive measures such as antibiotics and breathing-assistance masks. It may also include invasive measures such as advanced life support, artificial ventilation and intensive care unit (ICU) admission. The former may be reasonable. The latter are considered futile in Edward, as they may not prolong his life, and will only worsen his QOL if they do.

Edward's expressed wish to receive only palliative care (ie no invasive measures) is based on awareness of the above. Made recently when in a competent state, such a wish has significant bearing on the reckonings of his treating healthcare personnel. It is also a reasonable wish that is likely aligned with consensus medical opinion. In sum, it is unreasonable to render treatment when such treatment will only worsen one's quality of life. In this scenario, the arbiter on limits of medical treatment is the treating doctor. There is no equivocation in his/her decision-making. His/her challenge lies in communicating the issues to Julie.

The treating doctor (examination candidate) will discuss with you the case, and should cover the stated issues. He/she is a specialist in Emergency Medicine. Each interaction lasts only 7 minutes. Several will be done in quick succession, with 3-minute intervals between each candidate.

YOUR OBJECTIVES:

- Understand your father's illness, including diagnosis, management and prognosis
- Obtain answers to your concerns outlined above
- Initially convey your wish that every medical intervention be provided for your father
- Understand the reasons for limiting medical intervention in your father. **Do not accept any explanations until you are completely satisfied that you have been listened to, with respect and understanding. If the candidate fails to demonstrate this, show anger or other appropriate emotions.**
- (Assuage your own guilt about feeling you could have been more involved in your father's healthcare)
- (Allay some deep fears that you may face this situation yourself, as a patient)
- Prompted conversation at 5mins as necessary; father's wishes and the law, ethics/autonomy and the futility of care.

Your reactions, emotions and opinions should be that of Julie (considering her characteristics) when faced with this scenario. React to individual candidates as Julie would. Please **maintain consistency** with Julie's character nuances, events and tendencies.

1. Lead examiner

Candidate Number:

2. Co-examiner

Total Mark:

A 35 year-old woman driver was involved in a motor vehicle accident near your urban district hospital ED at 2100 hours. She arrives by ambulance in a semi-rigid (stiff-neck) collar. Her sole complaint is neck pain and she is haemodynamically stable.

Question 1: Outline your approach to clearing the C-spine in this patient.

Expected Response	Details & Comments	2 minutes
Introduction	From stem this 35 year old patient needs further assessment to determine the need for C-spine imaging vs clinical clearance <i>If mention decision rule then ask them to outline how they would apply it.</i>	
Assess need for imaging	Imaging as indicated by assessment and applying NEXUS or Canadian C-spine rules – plain x-ray vs CT If imaging not indicated, or performed and unremarkable then assess ROM to clear clinically (when conscious state permits)	
History <i>Prompt: Is there any past medical history that would be important?</i>	The following features on history in the presence of neck pain would indicate a need for further imaging Mechanism: Hi speed, concerning mechanism (rollover, head on, impact with stationary object at > 60kph), death of other occupant, axial load Neurological symptoms - Altered sensation, paraesthesia, weakness Past history of neck problem which increases risk - prior neck injury/surgery/spinal disease (ankylosing spondylitis, rheumatoid arthritis) (Mobilising post injury is a low-risk feature) Pain – Present immediately after accident Pregnancy	To pass: 2 mechanisms & 2 examples of past history
Examination	The following would indicate a need for imaging Altered conscious state making clinical assessment unreliable –(GCS, confusion, intoxication) Neurological deficit Midline C-spine tenderness Associated injuries: Head injury / distracting injury	
Clinical clearance (ROM) <i>Prompt: If there is no indication for imaging, how will you clear the c-spine?</i>	Remove immobilisation, assess active range of movement of neck and to stop if develops pain/ neurological symptoms. If unable then imaging indicated, if able then neck clinically cleared. Analgesia and mobilise, reassess before discharge.	

Question 2: The patient has marked midline C-spine tenderness. Discuss the imaging options.

Expected Response	Details & Comments	2 minutes
Imaging is required. General considerations: Sensitivity, specificity, radiation and availability.		
Plain X-ray (3 views) Prompt: What views are required?	Pros: Identifies most major abnormalities , radiographer available, Inexpensive. Can be done in trauma bay. Low radiation. Can be used in combination with clinical examination to safely clear C-spine. Likely to get adequate images in young patient. Cons: May miss subtle injuries. Films may be inadequate. Images may be difficult to interpret If films normal but inadequate ROM then CT required (or MRI if acute neurological deficit)	

CT scan Prompt: What acute injuries may CT miss?	Pros: More sensitive for bony injury + accurate than plain x-ray. May also image other structures in neck. Radiation equivalence to C-spine series if low dose protocol used. Indicated if x-ray is indeterminate, inadequate, difficult body habitus, pre-existing C-spine pathology. Cons: Does not exclude certain pathology e.g. ligamentous injury, disc pathology, epidural haematoma, or cord contusion. Potential additional radiation depending on CT protocol. Transfer issues. Cost.	2 examples
MRI Prompt: Are there other imaging modalities which may have a role?	Pros: Accurately identifies acute spinal cord pathology requiring intervention - disc lesion/ epidural haematoma + other pathology e.g. cord contusion, ligamentous injury. No radiation. Cons: Less sensitive at delineating bony injuries. Time (duration / availability). Cost. Patient factors. E.g. Claustrophobia. Contraindications related to metal FB etc.	

Question 3: Plain x ray of the cervical spine is performed. Please comment on the lateral C spine XR.

Expected Response	Details and comments	1 minute
Lateral C spine, Inadequate view	Inadequate film (unable to visualize C7-T1) and otherwise normal. Needs further imaging (allow comment about C6 spinous process)	

Question 4: Plain films are inadequate and you request a C-spine CT which the Radiology registrar declines to do overnight. Outline your options.

Expected Response	Details & Comments	2 minutes
Key Issue	Not acceptable to remain in hard collar overnight Evidence that hard collar leads to complications such as - Pain/ Pressure areas, Intolerance, Increased need for analgesia/ sedation, difficulty administering oral medications, food and fluids, aspiration risk	Give 2 examples
Options	Proceed with CT scan vs Philadelphia/soft collar while awaiting CT	
Proceed with CT scan	Ideal situation. Depends on local protocols and resources Professional discussion of rationale with radiology registrar. Escalate to on-call Radiologist if needed. CT will expedite patient's disposition allowing further management decisions or discharge → may be adequate reason for recall (e.g. ED overloaded) Negotiate timing of scan (e.g. when doing other emergent scan)	
Continued C-spine Immobilisation / Philadelphia collar + bed rest until CT in am	Reasonable option - safe and likely to be reasonably tolerated. More tolerable for patient Less complications than hard collar Occupies bed + staff until am. Not able to mobilise. Delays disposition.	

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

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

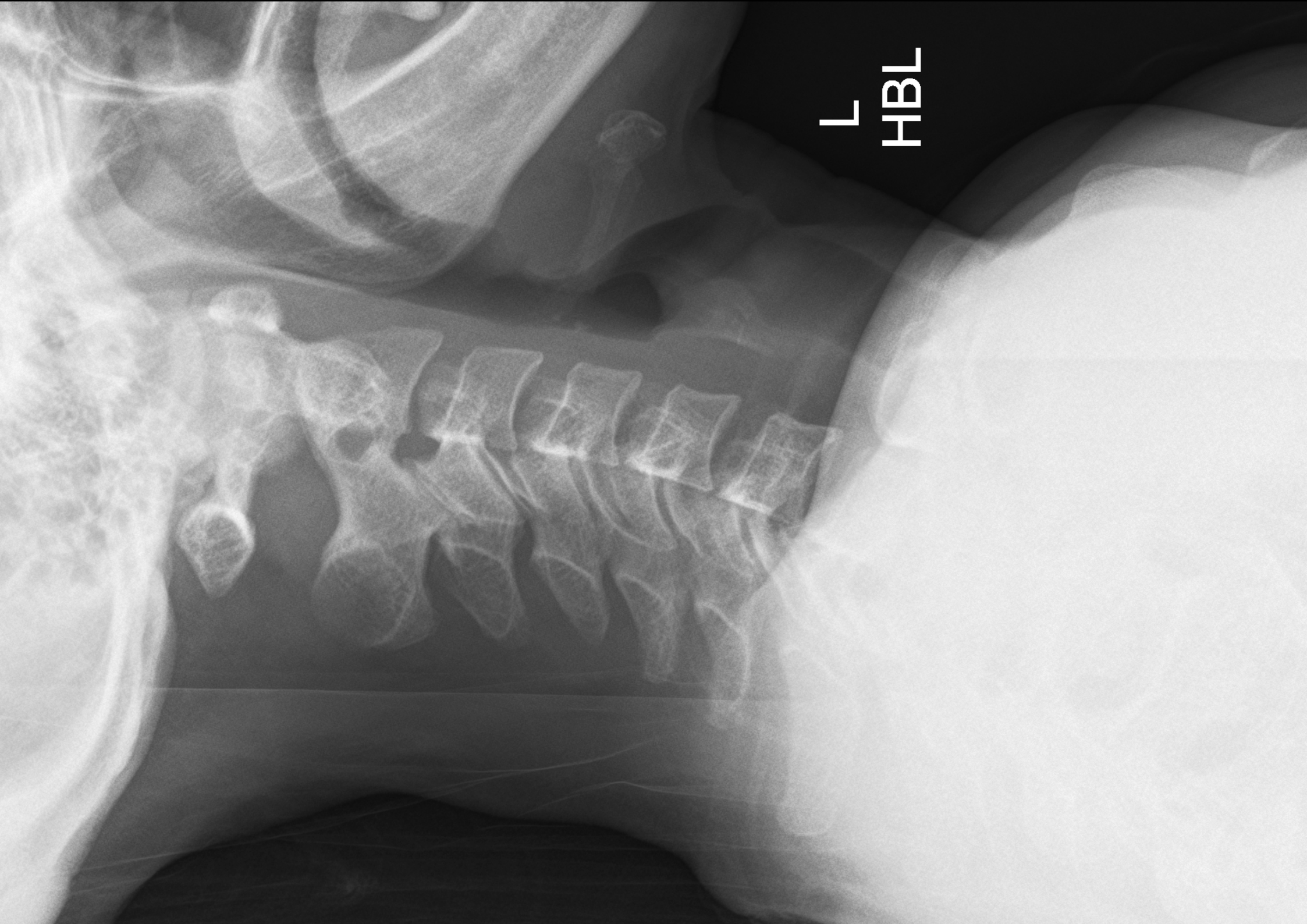
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SCENARIO

A 35 year-old woman driver was involved in a motor vehicle accident near your urban district hospital ED at 2100 hours. She arrives by ambulance in a semi-rigid (stiff-neck) collar. Her sole complaint is neck pain and she is haemodynamically stable.

Question 1: Outline your approach to clearing the C-spine in this patient.



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HBL

1. Lead examiner

Candidate Number:

2. Co-examiner

Final Mark:

A 45 year-old man presents to your ED with a 36-hour history of sore throat. This progressively worsened, and is now associated with dysphagia and dysphonia. On examination he has a temperature of 38.5 degC, RR of 28, SpO2 98% on high flow oxygen, HR 120 and BP 125/75. You note a soft stridor. He is drooling. The referring GP had ordered a lateral neck x-ray, which accompanies the patient.

Question 1: Describe and interpret the x ray. (Xray and question given outside the room)

Expected Response	Details & Comments	
Describe Lateral soft tissue x-ray	Features of epiglottitis/ Para-epiglottitis Swelling of epiglottis with a thumb print sign Airway appears narrowed but patent at this stage No obvious prevertebral swelling No air or air fluid levels No FB No fracture Some degenerative bony change	
Interpretation	Findings consistent with clinical picture. Critically unwell patient. Airway at risk. May need to be secured promptly. Abx indicated. Anticipate very difficult intubation , prepare for surgical airway	

Question 2: The patient's oxygen saturation and conscious state begin to deteriorate. Outline your approach to this situation.

Expected Response	Details & Comments	
Difficult airway emergency	Team approach , allocate roles, allocate procedures, Resuscitation area	
Call for assistance	Most experienced airway practitioners: anaesthetics, ENT if immediately available	
Attempt ventilation BVM	Prompt: what is your approach to obtaining a definitive airway	
	Can't intubate but can ventilate Vs can't intubate can't ventilate	
Can ventilate - Try to intubate after bagging up	Optimise position pillow, sniffing position Optimise intubating conditions Prepare difficult intubation equipment, intranasal oxygen Including preparation for surgical airway if intubation is unsuccessful Safe use of paralysing agent (suxamethonium) if able to ventilate with bag valve mask. Remember more unsuccessful attempts may cause greater swelling – most experience person to intubate Laryngoscope: large blade, straight blade Equipment: small tube, long bougie, Cooks catheter, laryngeal Mask (may be helpful as temporising measure if intubation fails) Direct vision instruments –Glide scope, endoscope if available	
Can't ventilate, can't intubate Therefore surgical airway	Patient needs immediate oxygenation. Candidate must give a suitable option for oxygenation: Needle cricothyroidotomy with jet insufflation – oxygenation surgical cricothyroidotomy-much quicker and easier than a tracheostomy One of various proprietary seldinger tracheostomy kits Emergency tracheostomy (IF ENT surgeon immediately available)	

Question 3: You decide to perform a surgical airway. Please demonstrate how you would do this. Equipment and props provided.

Candidate is to perform surgical airway by manner of their choosing, on mannequin.

Method chosen		
Performed satisfactorily		
Comments and Rating		

Question 4: (optional question if candidates finish early)

Please describe your ongoing management of this patient

Continue with sedation, paralysis	Don't want the patient to pull out the tracheal tube	
IV antibiotics	Likely Haemophilis, Strep pyogenes, Staph aureus, other causes Penicillin, fluclo, ceftriaxone,	
Supportive care	Analgesia, IV fluids, urinary catheter	
Admit to ICU		

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

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

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SCENARIO

A 45 year-old man presents to your ED with a 36-hour history of sore throat. This progressively worsened, and is now associated with dysphagia and dysphonia. On examination:

- Temp 38⁵ degC
- RR 28 /min
- SpO2 98 % on high flow oxygen
- HR 120 bpm
- BP 125/75 mmHg
- You note a soft stridor. He is drooling.

The referring GP had ordered a lateral neck x-ray, which accompanies the patient. PTO to view x-ray.

Question 1: *Describe and interpret the x ray.*

