



OSCE 1

Candidate Instructions

This is a **7 minute** Standardised Case-Based Discussion (SCBD) Station.

You will be interacting directly with an examiner who will ask you about your assessment and management of the following clinical situation. Further information will be provided as the case evolves.

Case Information:

It is 0200 hours. You are an emergency consultant on call at a tertiary hospital and have received a phone call at home (15 mins away from hospital) to assist your senior registrar in the resuscitation room.

The registrar tells you the situation is:

- 18 month old child with 5 days of rhinorrhea and cough, and increasing shortness of breath in the past 2 days
- Parents are concerned about poor oral intake and lethargy
- Child looks 'flat' and unwell
- The registrar is worried about the child and has asked you to come in
- The patient's weight is estimated to be 12 kg

Vital signs

Temp	39.2 °C
HR	190 bpm
RR	36 /min
SaO ₂	87 % on room air
CR	6 secs
BP	60/40 mmHg

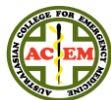


Your tasks are to:

- Provide appropriate phone advice to the registrar prior to your arrival
- Describe your approach to the situation on arriving in the resuscitation room
- Answer further questions from the examiner regarding this evolving case

This OSCE will assess the following domains:

- Medical Expertise – 70%
 - Initial Assessment and Management (40%)
 - Further Assessment and Management (30%)
- Prioritisation and Decision-Making – 30%



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Examiner Instructions

This is a **7 minute** Standardised Case-Based Discussion (SCBD) Station.

Candidates will be asked a series of standardised scripted lead-in questions. All questions and probes must be consistent as per the script so that all candidates have as close to the same 'standardised' experience as possible.

Two examiners will independently mark the station.

- Examiner 1 will interact with the candidate, lead the discussion by asking scripted questions and provide further clinical information as the case evolves.
- Examiner 2 will observe the candidate's performance.

Where a candidate has already raised a topic or an issue, the examiner may provide an unscripted probe to the candidate for further clarification or elaboration on that issue. Probing questions ask a candidate to go into further detail on a topic that they have already initiated or mentioned.

Examples of a probe that may be asked: *"You mentioned fluid management. Can you elaborate on that?"*

Where a candidate has NOT already raised a topic or an issue expected of a competent new FACEM, the examiner must NOT provide an unscripted prompt or ask unscripted further questions. Prompts that suggest there has been a mistake, or an omission must NOT be provided.

Case Information:

The candidate is the on-call emergency consultant. They are called at 0200 hrs (from home) to come in and assist in the care of a child who is peri-arrest from presumed sepsis.

The objective of the station is to assess the candidate's ability to:

- Manage a paediatric patient with respiratory failure and airway obstruction
- Describe how they would secure a paediatric airway in a high-risk situation.
- Outline the key elements of clinical care and further management of PEA arrest in a paediatric patient.

The patient is an 18 month old girl who has had 5 days of runny nose and cough thought to be due to a viral illness. The past 2 days she was noted to be short of breath with poor oral intake. Tonight, she has been brought to the ED by her parents who are concerned.

The registrar has called for assistance. After being given phone advice, as they are having difficulties getting IV access, the registrar has overlooked that the child has an airway problem with snoring and reduced oxygen saturations. The patient's weight is estimated to be 12kg.



Examination candidates are expected to recognise the obstructed airway and impending arrest and pre-emptively initiate resuscitation, beginning with airway manoeuvres, airway adjuncts, and assisted breathing as required. Following this IO for access is required. They then must recognise the need for and describe a safe intubation technique. When the child has a PEA arrest they must provide the correct APLS style management to resuscitate them.

Please see **Candidate Instructions for full case information.*



OSCE 1

Lead Examiner Script

Part 1: (0 – 1 min)

Opening statement:

“What is your advice to the registrar over the phone prior to your arrival?”

- Candidate should recognise that the patient is critically unwell and in severe shock with risk of deterioration/arrest and priorities are:
 - Address hypoxia/optimize oxygenation and breathing (high flow oxygen via reservoir bag, positioning etc)
 - IV/IO access
 - Fluid bolus
 - IV Abx
 - Paeds reg assistance (optional) but cannot be the only response stated).
- If they haven't addressed hypoxia/poor perfusion/fluids etc., say:

“The patient's observations are ...” [\[restate any relevant as per the below\]](#):

Temp	39.2 °C
HR	190 bpm
RR	36 /min
SaO ₂	87 % on room air
CR	6 secs
BP	60/40 mmHg

Part 2 (1 min – 3 mins)

By approx. **1 minute**, state:

“On your arrival in the resuscitation room, the child is now snoring and mottled. They are on 10L/min via a non-rebreather mask with unrecordable saturations. HR and BP are unchanged. The registrar is still trying to establish vascular access..

What would you do now?”

- Airway: Place child in neutral position and place a Guedel airway to relieve obstruction if possible.
- Breathing: Oxygenate with BVM with PEEP valve 100% oxygen and assist breaths as needed.



Additional probes if required:

- If the candidate does not address airway or further detail is needed, ask:
“The patient is making a snoring sound” OR
“You mentioned managing the airway. Can you tell me more about that?”
- If further detail is needed on circulation:
“The registrar still cannot get IV access what will you do now?”
- Probes if required for elaboration:
“You mentioned getting IO access. Can you give me more details?”
“You mentioned fluid resuscitation. Can you tell me more about that?”
“You mentioned giving antibiotics. Can you tell me more about that?”

Place IO in proximal or distal tibia (need to state site to be at standard)

- Describe process and taking of bloods for culture, gas (to be sent to lab), BSL
 - Give bolus of 0.9% NaCl – 20 mls/kg or 240 mls (must say what fluid and how much).
 - Presumed sepsis (likely pneumonia), give antibiotics - Ceftriaxone 50 mg/kg and flucloxacillin 50mg/kg (accept alternate, appropriate broad spectrum antibiotic choices).
 - Recheck BP if not improved, further bolus of 20 mls/kg of 0.9% NaCl (consider commencement of inotropes if still no or poor response)
 - Check BSL and treat accordingly – 10% dextrose 2mls/kg or 24 mls
- If the candidate asks for further history:
“There is no further significant history. Normal full-term baby, vaccinations up to date and no allergies”

Part 3 (3 mins – 5 mins)

By the **3 minute mark**, state:

“You decide to intubate the child. What are the key difficulties you would anticipate and how would you manage them?”

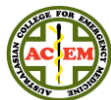
Intubation needed to correct respiratory failure. Very high-risk intubation given hypoxia, cardiovascular and resp compromise.

Further resuscitation, prior to intubation to avoid CVS collapse:

Better candidates will check VBG prior to induction for pH, K⁺ and electrolytes etc.

Circulation: optimise

- Further fluid loading 10 mls/kg up to 40 ml/kg if not given 2 boluses already), then start pressors/inotropes (adrenaline infusion 0.05-0.2 mcg/kg/min). Aim SBP > = 70. Accept other reasonable alternatives to adrenaline in safe doses/dosing rates).



Team

- Most senior paediatric airway operator ensure full team available.
- Optimise oxygenation, non-apnoeic RSI/DSI as acidaemia likely + already hypoxic and limited reserve/desat time..
100% oxygen via BVM with PEEP valve, ensure optimal period of pre-oxygenation saturations are 100% if possible and decent period of pre-oxygenation. Additional nasal high flow oxygenation acceptable/preferable.
- BIPAP remains an option for pre-ox depending on circulatory status/optimization post inotropes although best avoided if hypotension persists.

Drugs – avoid further hypotension so choose cardiac stable induction.

- Ketamine 0.5 -2 mg/kg (or fentanyl 3-5 mc/kg) (3 - 5mg/kg ketamine could be considered unsafe dose for this child)
- Muscle relaxant – Suxamethonium 2mg/kg or rocuronium 1.2 mg/kg (should check K⁺ first if sux) (better candidates will start with lower dose of ketamine and higher dose of paralytic). If using sux, should mention keeping atropine ready for bradycardia).
- Adrenaline (or metaraminol) available as push dose or infusion set up in case of CVS collapse

- Additional probes if required:

“Can you tell me more about your intubation plan?”

“You mentioned induction drugs. Can you give details?”

“You mentioned treating the hypotension. How exactly would you do that?”

Part 4 (5 mins – 7 mins)

By the **5 minute mark**, ask:

“While you are preparing to intubate, you note that the patient’s heart rate has dropped to 50 bpm. How would you manage the patient now?”

Resuscitation: Candidate should recognise that the patient is in PEA-arrest (or peri-arrest) and priorities are initiating PEA algorithm for HR < 60:

Note: *If does not initiate CPR based on HR must specify immediate pulse check and to begin CPR/ALS if inadequate circulation (absent/weak pulse)*

Allocate roles to deliver:

- CPR at rate 100-120/min, 2 minutely pulse/rhythm/rate check
- Ventilation rate 15:2 ratio 100% O₂
- Adrenaline given immediately 10mcg/kg (100mcg) or 0.1ml/kg of 1:10000 (1ml) + repeated every 2nd cycle:
- (Need to have the right rate/depth, right timing and dose of adrenaline to be at standard).



- Consideration of 4 H's and 4 T's: Hypovolaemia (sepsis)/ Hypoxia most likely reversible causes:
 - Hypoxia – ensure adequate ventilation with BVM. Intubation/ LMA or iGel OK with reasonable justification as long as they do not interfere with the quality of CPR. Intubation should not require induction drugs as now arrest scenario.
 - Fluid loading: Crystalloid 20 ml/kg (N. Saline or Hartmanns) for presumed sepsis/ hypovolaemia
 - VBG to assess pH, electrolytes, PCO₂, BGL etc
- Assign staff member to talk to parents and offer to bring them in to room.
- Examiner ask for additional details as required: only **AFTER** they have mentioned the topic e.g.:

“Could you provide further details regarding CPR/ ventilation/ use of adrenaline?”

“Could you provide further details regarding use of fluids / reversible causes?”



Domain	Criteria	Marking rules to be 'at a minimum level of competence'/other comment	Criteria met / not met
Medical Expertise: Initial Assessment & Management (40%)	Pre-arrival phone advice: • Recognises critically unwell child with life threatening septic shock and hypoxia. • Advises to provide high flow oxygen, establish vascular access urgently and administer fluid bolus of 20ml/kg to be at standard. • Asking for paediatric inpatient registrar assistance is reasonable and acceptable. After arrival to resuscitation room: <u>Resuscitation:</u> Candidate should recognise that the patient is pre-arrest and priorities are: • Airway: Place child in neutral position and place a guedel airway to relieve obstruction if possible. (or nasopharyngeal airway) (prior to further vascular access attempts) • Breathing: Oxygenate BVM with PEEP valve at 100% and assist breaths as needed, or non -rebreather if ventilating OK with above manoeuvres. • Circulation-Place IO in proximal or distal tibia – no further attempts at IV access: ○ Landmarks for IO - The most common and preferred site in children is the proximal tibia: anteromedial aspect of the tibia. 2-3cm below the tibia tuberosity. Alternative sites are: -Distal tibia – 2-3cm above the medial malleolus • Describe process and taking of bloods for culture, gas (to be sent to lab), BSL, • Give bolus of 0.9% NaCl – 20 mls/kg or 240 mls (10 mls/kg acceptable for first as well) • Presumed sepsis – likely pneumonia – give antibiotics - Ceftriaxone 50 mg/kg and flucloxacillin 50 mg/kg (or other acceptable broad spectrum antibiotics) • Recheck BP if not improved further bolus of 20 mls/kg of 0.9% NaCl • Must check BSL on arrival and if low treat with 2mls/kg of 10% dextrose. History of presentation: Localising symptoms or signs of infection, other differentials: neurol deficit/ abdominal exam etc. Vaccination status, sick contacts	• Provides appropriate pre-arrival advice (oxygenation, IV access, IV fluid bolus) <i>All required</i> • Addresses airway obstruction and hypoxia immediately after arrival (uses BVM or assesses adequacy of ventilation) • Obtains IO access and describes one appropriate location (no further attempts at vascular access) • Initiates fluid resuscitation - with correct type and amount. • Gives appropriate antibiotics • Checks BSL and treats hypoglycaemia if present.	
		Feedback Statements – Did the candidate adequately:	
		• Give appropriate advice prior to arrival • Apply specific time-critical interventions for airway and breathing issues • Identify and promptly resuscitate shock and provide specific therapy • Identify and provide supportive care needs for critically ill child	



Medical Expertise: Further Assessment & Management (30%)	Recognise high risk intubation and need to stabilize before intubation to avoid cardiorespiratory arrest. <u>Optimise Circulation:</u> • Further fluid loading 10 mls/kg up to 40 ml/kg • Start pressors/inotropes (adrenaline infusion 0.05-0.2 mcg/kg/min). Aim SBP >= 70 if not responsive to fluid <u>Prepare for intubation:</u> • 100% oxygen, BVM with PEEP assisted breaths is needed <u>Drugs:</u> • Ketamine 0.5 – 2 mg/kg (fentanyl 1-2 mcg/kg) • Muscle relaxant – Suxamethonium 2mg/kg or rocuronium 1.2 mg/kg (or anything else appropriate – not propofol) Must check K+ if using suxamethonium. Better candidates will give lower dose of ketamine and larger dose of paralytic. • Adrenaline available push dose or infusion set up in case of CVS collapse <u>Team:</u> • Airway nurse ,Procedure ,Dr – most senior or anaesthetic help, Team leader, nursing circulation, Dr circulation <u>Equipment:</u> • Tube 4.0 ETT cuffed 0 3.5 uncuffed • Length – 12 cm oral • Length 14 cm nasal • CO₂ monitoring • Full monitoring • CMAC or standard blade	Minimally Competent Criteria: • Identifies need to optimise before intubation • Treats ongoing hypotension with further fluids and/or mentions inotropes/pressors • Provides a safe plan for intubation with safe choice of drugs, doses • Addresses critical hypoxia prior to induction (BVM). Feedback Statements – Did the candidate adequately: • Identify the need to optimise before intubation • Treat ongoing hypotension • Provide intubation plan that considers circulation issues • Provide intubation plan to address breathing issues	
Prioritisation & Decision Making (30%)	When child drops HR 50 bpm <u>Resuscitation:</u> • Initiating PEA algorithm for HR < 60: Allocate roles to deliver efficient CPR. <i>(If does not initiate CPR based on HR must specify immediate pulse check and to begin CPR/ALS if inadequate circulation/weak/absent pulse to be at standard):</i> ○ CPR at rate 100-120/min, 2 minutely pulse/rhythm check ○ Ventilation throughout CPR ~10 breaths per minute – ratio of 15:2 ○ Ensuring adequate oxygenation/ ventilation: ▪ Ensure Bag valve device attached to 100% O₂ adjuncts, intubate with minimal interruption to quality of CPR/ALS (induction meds not required) if ongoing arrest ○ Adrenaline given immediately 10mcg/kg (100mcg) or 0.1ml/kg of 1:10000 (1ml) + repeated every 2nd cycle: (alternate inotropes/vasopressors acceptable in safe and correct doses/rates). (Consideration of atropine use at the onset of bradycardia is acceptable). ○ Consideration of 4 H's and 4 T's: Hypovolaemia (sepsis)/ Hypoxia most likely reversible causes: ▪ Hypoxia – should secure an ETT when possible, good ventilation via BVM with PEEP valve ▪ Hypovolaemia Fluid loading: Crystalloid 20 ml/kg (N. Saline or Hartmanns) for presumed sepsis/ hypovolaemia – if not done already- increase inotropes ▪ VBG to assess electrolytes , BSL again • Assign staff member to talk to parents and offer to bring them in to room. • Identify need for PICU.	Minimally Competent Criteria: • Recognises cardiac arrest and initiates management as per APLS: <i>(If does not initiate CPR based on initial information may not score above 'Just at Standard' for domain)</i> • Follow APLS algorithm for PEA arrest: Correct Chest compression/ respiratory rate + adrenaline 10mcg/kg <i>(All required)</i> • Considers reversible causes of cardiac arrest: 1) Hypoxia: 2) Hypovolaemia: Give 20 ml/kg fluid load 3) Mention hyper/hypokalaemia or performing VBG <i>(at any stage). All 3 required – may be met by actions.</i> Feedback Statements – Did the candidate adequately: • Recognise cardiac arrest promptly and initiate CPR • Follow appropriate APLS algorithm • Consider relevant reversible causes	