

Note: This is Online Appendix 1 of Ferreira G, Bishop DG, Gopalan PD. The impact of the framing effect on performance in a simulated emergency anaesthetic scenario in medical officers: A prospective, randomised, double-blinded study. J Coll Med S Afr. 2025;3(1), a262. <https://doi.org/10.4102/jcmsa.v3i1.262>

Online Appendix 1

Simulation timeline

TABLE 1-OA1: Outline of simulator sequence of events and expected management

Progress	Vital signs	Patient condition	Theatre activity: Prompted by the facilitator
Baseline (Handover 2 minutes) 0-120 seconds	BP 120/70 HR 87 (sinus rhythm) SATS 94% P _A CO ₂ 5.0 Ppeak 24 Resp: GAEB	Stable	The Facilitator will say: We have just done the checklist and introduced you, the surgeons are about to start the procedure.
120 – 240 Seconds	BP 110/82 HR 99 SATS 88% P _A CO ₂ 6.0 Ppeak 28 Resp: Decreased air entry bilaterally	Hypoxic, cardiovascular stable	-
240 – 300 Seconds	BP 90/60 HR 110 SATS 70% - 40% P _A CO ₂ : 2.5 Ppeak: 40 Resp: Silent Chest	Hypoxic, clinical deterioration, unstable	-
300 – 360 Seconds	PEA, HR 0 Sats: Not recordable. P _A CO ₂ : 0	PEA, arrest	End of the assessment

DOPES, Dislodged Tube (Auscultation), Obstruction (foreign body, mucous plug, secretions), Pneumothorax, Equipment failure, Stacking (Bronchospasm). PEA (Pulseless electrical activity); HR, Heart Rate; BP, Blood pressure; Ppeak, Peak airway pressure; Resp., respiratory.

Assessment sheet

In your opinion as the examiner did the participant:

Only entertain one diagnosis?

Yes No

Did the participant entertain more than one diagnosis but not the correct one?

Yes No

TABLE 2-OA1: xxx

Progress	Vital signs	Patient condition	Steps taken by participant
Baseline (Handover 2 Minutes)	BP 120/70 HR 87 (sinus rhythm) SATS 94% P _{ACO2} 5.0 Ppeak 24	Stable	None
0-120 seconds	Resp: GAEB on auscultation		
120 – 240 Seconds	BP 110/82 HR 99 SATS 88% P _{ACO2} 6.0 Ppeak 28 Resp: Decreased air entry bilaterally	Hypoxic, cardiovascular stable	Has the participant noticed the change in condition? Yes No Time: Min: Sec: Called for help? Yes No Time: Min: Sec: Increased FIO ₂ ? Yes No Time: Min: Sec: Listened to chest? Yes No Time: Min: Sec: Assessed DOPES or any other stepwise approach? Yes No Time: Min: Sec: Suctioned ETT, removed ETT, or any other measure to assess obstruction. Yes No Time: Min: Sec: Correct diagnosis made. Yes No Time: Min: Sec: At time of diagnosis or corrective measure scenario ends.

240 – 300 Seconds	BP 90/60 HR 110 SATS 70% - 40% Ppeak: 40 Resp: silent chest	Hypoxic, clinical deterioration, unstable	Has the participant noticed the change in condition?
			Yes No Time: Min: Sec:
			Called for help?
			Yes No Time: Min: Sec:
			Increased FIO ₂ ?
			Yes No Time: Min: Sec:
			Listened to Chest?
			Yes No Time: Min: Sec:
			Assessed DOPES or any other stepwise approach?
			Yes No Time: Min: Sec:
			Suctioned ETT, removed ETT, or any other measure to assess obstruction.
			Yes No Time: Min: Sec:
			Correct diagnosis made.
Yes No Time: Min: Sec:			
At time of diagnosis or corrective measure scenario ends..			
300 – 360 Seconds	PEA, HR 0 Sats: Not recordable. PACO ₂ : 0	PEA, arrest	End of the assessment

DOPES, Dislodged Tube (Auscultation), Obstruction (FB, Mucous Plug, Secretions), Pneumothorax, Equipment failure, Stacking (Bronchospasm). PEA (Pulseless electrical activity). HR (Heart Rate). BP (Blood pressure). Ppeak (Peak airway pressure). Resp (respiratory). GAEB (Good air entry bilaterally). ETT (Endotracheal Tube).

Post simulation questionnaire:

Feedback questionnaire from the participants. Each question is given -2 points for "bad", -1 point for "mediocre", 0 point for "Average", 1 point for "good" and 2 points for "excellent"

Feedback questionnaire to be completed by the participants.

- | | |
|---|----------------------|
| 1. Quality of briefing | <input type="text"/> |
| 2. Relevance of scenario | <input type="text"/> |
| 3. Quality of the simulation equipment | <input type="text"/> |
| 4. Realism of the simulator environment | <input type="text"/> |
| 5. Your experience of the simulation | <input type="text"/> |

Did you have any prior knowledge of the study or simulation that may have affected your performance?

Yes No

Please list your differential for the simulation in which you just participated?

What was your leading diagnosis for the simulation?

Did the handover help you reach the correct diagnosis?

Did the Handover make you focus on the wrong diagnosis?

Simulation

Mr Smith who has been intubated will become progressively hypoxic during the simulation. The cause of the hypoxia will be an obstruction of the endotracheal tube by a dislodged mucous plug. The silent chest caused by the mucous plug will provide a clinical conundrum for participants as this could be severe bronchospasm. Candidates are led further down the cognitive trap of bronchospasm in the experimental group.

Experimental group

This is Mr Smith; he is a 40-year-old man who has been booked for an appendectomy. He has a background history of poorly controlled asthma. There was nothing else to note from his past medical or surgical history. Mr Smith was pre oxygenated with 100% oxygen to end tidal oxygen of 80%. I performed a rapid sequence induction (RSI) with cricoid pressure. (2mg/kg Propofol and 1.5mg/kg Suxamethonium) Endotracheal tube (ETT) placement was confirmed with (Carbon Dioxide) CO₂ and misting and strapped at 22cm at the lips. I put him on the ventilator, Volume controlled ventilation (VCV) 6mls/kg with a Respiratory Rate (RR) 12 and Positive end expiratory pressure (PEEP) of 7. He is currently being maintained with Isoflurane at a Minimal alveolar concentration (MAC) 1%. My analgesic plan included Paracetamol, a Non-steroidal Anti-inflammatory (NSAID) post operatively and to slowly titrate 10mg Morphine. I should not be too long and should be back to take over in 30 minutes.

Control group

This is Mr Smith; he is a 40-year-old man who has been booked for an appendectomy. Mr Smith was pre oxygenated with 100% oxygen to end tidal oxygen of 80%. I performed a rapid sequence induction (RSI) with cricoid pressure. (2mg/kg Propofol and 1.5mg/kg Suxamethonium) ETT tube placement was confirmed with CO₂ and misting and strapped at 22cm at the lips. I put him on the ventilator, VCV 6mls/kg with a RR 12 and PEEP of 7. He is currently being maintained with Isoflurane at a MAC 1%. My analgesic plan included Paracetamol, an NSAID post operatively and to slowly titrate 10mg Morphine. I should not be too long and should be back to take over in 30 minutes

Randomization:

Both assessors and candidates will be blinded



Sealed, white, opaque envelopes will be used to randomize participants.



The number of participants per seating will be confirmed on the day. That number will be matched by the number of envelopes. If an odd number of candidates are present the envelopes will be rounded up to the nearest even number.



50% of the envelopes will have the control simulation and 50% will have the experimental simulation. Matching the number of candidates.



Each envelope will have a unique number. That number will serve as the participant identifier and will link the candidate to the control or experimental group, respectively. Assessors will be blinded from knowing which participants are in the control and which are in the experiment.



Envelopes will be placed into a box for candidates to draw randomly. This will be done one at a time on entering the pre brief room.

FIGURE 1-OA1: Randomisation