Section 1: Case Summary

Scenario summary

Scenario title	PACU emergency: Hypotension – pulmonary embolism
Keywords	PACU, Hypotension, Pulmonary Embolism, Venous Thromboembolism, Defibrillation
Brief description of case	After hours (1900 Friday) 64M post laparotomy for small bowel obstruction in PACU, extubated with arterial line in situ. HMO review for pain management, complaining of epigastric pain. Found SOB, agitated and hypotensive. Eventually requires buzzer push for severe refractory hypotension and ALS + defibrillation + discussion regarding thrombolysis post-procedure.

Goals and objectives

Educational goal	Safe temporisation and escalation of care. Recognition and management of thromboembolism in post-operative period.
Objectives	1. Perform A-E assessment 2. Simultaneous temporisation and assessment to synthesise DDx of post-op hypotension and cardiac arrest 3. ALS shockable and non-shockable pathways 4. Safe management of defibrillation 5. Recognise complexity of decision making regarding perioperative thromboembolism treatment and destination planning

Learners, setting and personnel

Target learners	X Junior learners	☐ Senior learners	X Staff	
	X Physicians	X Nurses	☐ RTs	☐ Inter-professional
	☐ Other learners			
Location	X Sim lab	☐ In situ	☐ Other:	
Recommended number of facilitators	Instructors: 1 overseeing, +/- 1 mannequin voice			
	Sim actors: 1 bedside nurse			
	Sim techs: mannequin			

Scenario development

Date	16/9/24
Developers	Heidi Thies
Version	1.0

Section 2A: Initial patient information

A. Patient Chart

Patient name: Andrew Kelly	**Age**: 64	**Gender**: M	**Weight**: 98kg
Presenting complaint PACU arrival time 1800 (~1 hour prior) following prolonged laparotomy for large bowel obstruction. Initially drowsy but rousable. Now complaining of pain, increasingly agitated.			
Triage note			
Allergies NKDA			
Past medical history T2DM Hypertension Hypercholesterolaemia Smoker Obesity	**Current medications** Metformin 1000mg BD Linagliptin 5mg daily Rosuvastatin 40mg daily Amlodipine 10mg daily		

Section 2B: Additional patient information

Information that needs to be requested for by the learner
Admitted with small bowel obstruction yesterday. Has been unwell for several weeks with weight loss and increasing fatigue. Found to have volvulus from cancer of small bowel. Prolonged resection, found to have large segment of dead bowel. Stoma formed. Grade 2b intubation RSI (fentanyl 250mcg, propofol 80mg, suxamethonium 100mg). Given methadone 15mg intraoperatively + TAP catheters inserted by surgeons and loaded with 20mL 0.75% ropivacaine (10mL each side). Metaraminol infusion run throughout, weaned at end of case.

Section 3: Technical requirements/Room vision

<table>
<tr><th colspan="4">Patient</th></tr>
<tr><td>X Manikin</td><td>☐ Simulated patient</td><td>☐ Task trainer</td><td>☐ Hybrid</td></tr>
<tr><th colspan="4">Special Equipment Required</th></tr>
<tr><td colspan="4">Adult mannequin with arms and legs. Intubation and COR required
Patient monitor: ECG, invasive BP, pulse-oximetry, capable of end tidal CO2.
ECG machine
Defibrillator (training or live)
IV pole with IV fluid
Airway trolley
Arrest trolley</td></tr>
<tr><th colspan="4">Medications Required</th></tr>
<tr><td colspan="4">1L bag CSL
100mL bag 0.9% NaCl
10mmol MgSO4
10mL syringe fentanyl (10mcg/mL)
Metaraminol 10mg in 20mL
Adrenaline 1:1000 and 1:10 000
Propofol 20mL
Suxamethonium 2mL
Amiodarone 150mg amps x 2</td></tr>
<tr><th colspan="4">Moulage</th></tr>
<tr><td colspan="4">Male wig
Honeycomb dressing midline laparotomy
Abdominal drain x1
Wound catheters x2
Patient monitoring connected:
- 3-lead ECG
- Left radial arterial line with pressure bag + line
- Left cub fossa peripheral IVC 18G with 1L bag of fluid connected
- SpO2
- Hudson mask</td></tr>
<tr><th colspan="4">Monitors at Case Onset</th></tr>
<tr><td colspan="2">X Patient on monitor with vitals shown</td><td colspan="2">☐ Patient not y et monitored</td></tr>
<tr><th colspan="4">Patient Reactions and Exam Findings</th></tr>
<tr><td colspan="2">Cardio:
Sinus tachycardia (~120bpm)
SBP 95 with narrow pulse pressure</td><td colspan="2">Neuro:
GCS 14 (E4, V4, M6)</td></tr>
<tr><td colspan="2">Resp:
Chest clear, RR 30</td><td colspan="2">Head/Neck:
Normal</td></tr>
<tr><td colspan="2">Abdo:
Laparotomy wound, drain with blood-stained fluid, wound catheters</td><td colspan="2">MSK/Skin:
Warm peripheries
Right calf swollen</td></tr>
</table>

Other:	
Exam findings that require manikin programming, or patient cues (eg. moaning when abdomen palpated) Moaning when abdomen palpated Speaking incomplete sentences	

Section 4: Sim Actor and Standardised Patients

Bedside	I	Hi, thanks for coming. I'm James/Jane, the PACU nurse looking after Andrew
	S	Andrew is a 64yo man who has had a laparotomy for a small bowel obstruction this afternoon. He's been here about an hour and is now complaining of pain.
	B	He had a GA, methadone and wound catheters. He has a history of T2DM, hypertension and smokes.
	A	He's become increasingly agitated, and now complaining of worsening pain in his upper abdomen despite the fentanyl protocol.
	R	Is there anything else we can give him for pain relief?
Patient		

Section 5: Scenario progression

Patient vitals	Patient status	Learner actions/modifiers/triggers to progress		Facilitator notes
1. <u>Baseline</u> HR/Rhythm: Sinus tach, 120bpm BP: 90/65 RR: 30 SpO2: 97% Hudson mask Temp: 36.3 GCS: 14, pain 8/10	Confused, agitated, difficulty breathing due to pain and SOB	<u>Expected learner actions</u> ☐ receive ISBAR handover ☐ Perform A-E assessment ☐ Review anaesthetic chart ☐ Give fluid bolus +/- metaraminol bolus ☐ Give analgesia	<u>Modifiers</u> BP transiently increases to 105 after fluid/metaraminol Drops again after 1 minute or when gives analgesia <u>Triggers</u> Gives analgesia or 5 minutes passes	PACU nurse to press learner for more analgesia
2. <u>State 2</u> HR increase to 130 with ST segment elevation BP drop to 75/40 SpO2 drop to 94% Hudson mask	Drowsy	<u>Expected learner actions</u> ☐ recognise deterioration ☐ reperform A-E ☐ consider DDx ☐ further fluid + metaraminol bolus ☐ call for help – ISBAR to senior attendence	<u>Modifiers</u> <u>Triggers</u> 5 minutes pass	PACU nurse to ask “why do you think he’s hypotensive?” After 5 mins: PACU nurse to mention “his respiratory rate seems to be quite high” With call for help → 1 senior joins (anaesthetist in charge)
3. <u>State 3</u> (PEA arrest) HR 80 sinus BP flat/CPR	unresponsive	<u>Expected learner actions</u> ☐ Recognise arrest ☐ Call for help ☐ start CPR, allocate roles ☐ rhythm check: non-shockable pathway (adrenaline) ☐ Work through 4Hs and 4Ts	<u>Modifiers</u> <u>Triggers</u> 5 minutes pass	With further call for help → The rest of the group joins After ~5 minutes or if PE mentioned during 4H/4T: PACU nurse to mention “his right leg looks a bit bigger than his left”

4. <u>State 4</u> (VF arrest) VT BP flat/CPR	unresponsive	<u>Expected learner actions</u> ☐ Intubation ☐ Rhythm check – shockable pathway ☐ continue DDx 4Hs and 4Ts ☐ investigations (ABG, TTE) ☐	<u>Modifiers</u> Initial intubation no end tidal CO2 (unsuccessful) - Either LMA insertion or 2nd intubation successful <u>Triggers</u> Successful intubation: rhythm check	After 1st ETT attempt: PACU nurse to ask "I can't see any end tidal CO2, are you sure the tube is in the right place?" after 1st intubation attempt
1. <u>State 5</u> (ROSC) HR 120 SR with ST depression BP 100/75 SpO2 94% on 100% FiO2 ET CO2 normal trace	Some spont breath attempts	<u>Expected learner actions</u> ☐ A-E assessment ☐ post-resuscitation care ☐ destination planning/referrals ☐ consideration of thrombolysis ☐	<u>Modifiers</u> <u>Triggers</u>	Conclude sim

Appendix:

Anaesthetic chart
Investigation results