

## 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	<p>After hours (1900 Friday)</p> <p>64M post laparotomy for small bowel obstruction in PACU, extubated with arterial line in situ.</p> <p>HMO review for pain management, complaining of epigastric pain. Found SOB, agitated and hypotensive.</p> <p>Eventually requires buzzer push for severe refractory hypotension and ALS + defibrillation + discussion regarding thrombolysis post-procedure.</p>

### Goals and objectives

Educational goal	<p>Safe temporisation and escalation of care.</p> <p>Recognition and management of thromboembolism in post-operative period.</p>
Objectives	<ol style="list-style-type: none"> <li>1. Perform A-E assessment</li> <li>2. Simultaneous temporisation and assessment to synthesise DDx of post-op hypotension and cardiac arrest</li> <li>3. ALS shockable and non-shockable pathways</li> <li>4. Safe management of defibrillation</li> <li>5. Recognise complexity of decision making regarding perioperative thromboembolism treatment and destination planning</li> </ol>

### Learners, setting and personnel

Target learners	X Junior learners		<input type="checkbox"/> Senior learners		X Staff	
	X Physicians	X Nurses		<input type="checkbox"/> RTs		<input type="checkbox"/> Inter-professional
	<input type="checkbox"/> Other learners					
Location	X Sim lab		<input type="checkbox"/> In situ		<input type="checkbox"/> 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

<b>Patient name:</b> Andrew Kelly		<b>Age:</b> 64	<b>Gender:</b> M	<b>Weight:</b> 98kg
<b>Presenting complaint</b> PACU arrival time 1800 (~1 hour prior) following prolonged laparotomy for large bowel obstruction. Initially drowsy but rousable. Now complaining of pain, increasingly agitated.				
<b>Triage note</b>				
<b>Allergies</b> NKDA				
<b>Past medical history</b> T2DM Hypertension Hypercholesterolaemia Smoker Obesity		<b>Current medications</b> 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

Patient			
X Manikin	<input type="checkbox"/> Simulated patient	<input type="checkbox"/> Task trainer	<input type="checkbox"/> Hybrid
Special Equipment Required			
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			
Medications Required			
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			
Moulage			
Male wig Honeycomb dressing midline laparotomy Abdominal drain x1 Wound catheters x2 Patient monitoring connected: <ul style="list-style-type: none"> <li>- 3-lead ECG</li> <li>- Left radial arterial line with pressure bag + line</li> <li>- Left cub fossa peripheral IVC 18G with 1L bag of fluid connected</li> <li>- SpO2</li> <li>- Hudson mask</li> </ul>			
Monitors at Case Onset			
X Patient on monitor with vitals shown		<input type="checkbox"/> Patient not yet monitored	
Patient Reactions and Exam Findings			
<b>Cardio:</b> Sinus tachycardia (~120bpm) SBP 95 with narrow pulse pressure		<b>Neuro:</b> GCS 14 (E4, V4, M6)	
<b>Resp:</b> Chest clear, RR 30		<b>Head/Neck:</b> Normal	
<b>Abdo:</b> Laparotomy wound, drain with blood-stained fluid, wound catheters		<b>MSK/Skin:</b> Warm peripheries Right calf swollen	

<b>Other:</b>	
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
<b>1. Baseline</b> 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> <input type="checkbox"/> receive ISBAR handover <input type="checkbox"/> Perform A-E assessment <input type="checkbox"/> Review anaesthetic chart <input type="checkbox"/> Give fluid bolus +/- metaraminol bolus <input type="checkbox"/> 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
<b>2. State 2</b> 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> <input type="checkbox"/> recognise deterioration <input type="checkbox"/> reperform A-E <input type="checkbox"/> consider DDx <input type="checkbox"/> further fluid + metaraminol bolus <input type="checkbox"/> call for help – ISBAR to senior attendance	<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)
<b>3. State 3</b> (PEA arrest) HR 80 sinus BP flat/CPR	unresponsive	<u>Expected learner actions</u> <input type="checkbox"/> Recognise arrest <input type="checkbox"/> Call for help <input type="checkbox"/> start CPR, allocate roles <input type="checkbox"/> rhythm check: non-shockable pathway (adrenaline) <input type="checkbox"/> 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”

<b>4. State 4</b> (VF arrest) VT BP flat/CPR	unresponsive	<u>Expected learner actions</u> <input type="checkbox"/> Intubation <input type="checkbox"/> Rhythm check – shockable pathway <input type="checkbox"/> continue DDX 4Hs and 4Ts <input type="checkbox"/> investigations (ABG, TTE) <input type="checkbox"/>	<u>Modifiers</u> Initial intubation no end tidal CO2 (unsuccessful) - Either LMA insertion or 2 <sup>nd</sup> intubation successful  <u>Triggers</u> Successful intubation: rhythm check	After 1 <sup>st</sup> 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 1 <sup>st</sup> intubation attempt
<b>1. State 5</b> (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> <input type="checkbox"/> A-E assessment <input type="checkbox"/> post-resuscitation care <input type="checkbox"/> destination planning/referrals <input type="checkbox"/> consideration of thrombolysis <input type="checkbox"/>	<u>Modifiers</u>  <u>Triggers</u>	Conclude sim

## Appendix:

### ABG

#### Identifications

Patient ID

Patient Last Name

Patient FIRST NAME

Sample type

Arterial

T

37.0C

FiO2 100%

100

Operator

Jane Simons

#### Blood Gas Values

pH	6.99		[ 7.350 – 7.450 ]
pCO <sub>2</sub>	70.4	mmHg	[ 35.0 – 45.0 ]
pO <sub>2</sub>	86.0	mmHg	[ 75.0 – 105 ]

#### Acid Base Status

cHCO <sub>3</sub> <sup>-</sup> (P)c	17.2	mmol/L	[ 22.0 – 28.0 ]
cBase(B)c	-14.3		[ -3.0 – 3.0 ]
cBase(Ecf)c	-14.5		[ -3.0 – 3.0 ]

#### Oxygen Status

ctHb	122		[ 120 – 150 ]
sO <sub>2</sub>	91.2	%	[ 95.0 – 99.0 ]
p50c	32.86	mmHg	
pO2(a/A)e	36.7	%	
FMetHb	0.9	%	[ 0.4 – 1.2 ]
FCOHb	0.3	%	[ 0.3 – 1.8 ]
p50(st)c	28.88	mmHg	
FShunte	23.4	%	
FO2Hb	84.2	%	[ 90.0 – 98.0 ]
Hctc	0.375		

#### Electrolyte Values

cK <sup>+</sup>	5.0	mmol/L	[ 3.7 – 4.7 ]
cNa <sup>+</sup>	135	mmol/L	[ 136 – 146 ]
cCa <sup>2+</sup>	1.11	mmol/L	[ 1.15 – 1.30 ]
cCa <sup>2+</sup> (7.4)c	1.03	mmol/L	
cCl <sup>-</sup>	105	mmol/L	[ 101 – 110 ]

#### Metabolite Values

cGlu	14.7	mmol/L	[ 3.5 – 5.4 ]
cLac	11.5	mmol/L	[ 0.0 – 2.0 ]