

Trauma SAQs

Emergency Medicine Fellowship Program



How to use this book:

1) Complete SAQs

- < 3 months until exam: Exam conditions – focus on clear answers ‘to time’
- 3-6 months until exam: Transition towards exam conditions
- > 6 months until exam: Open book is ok, ‘focus on good answers and developing knowledge acquisition

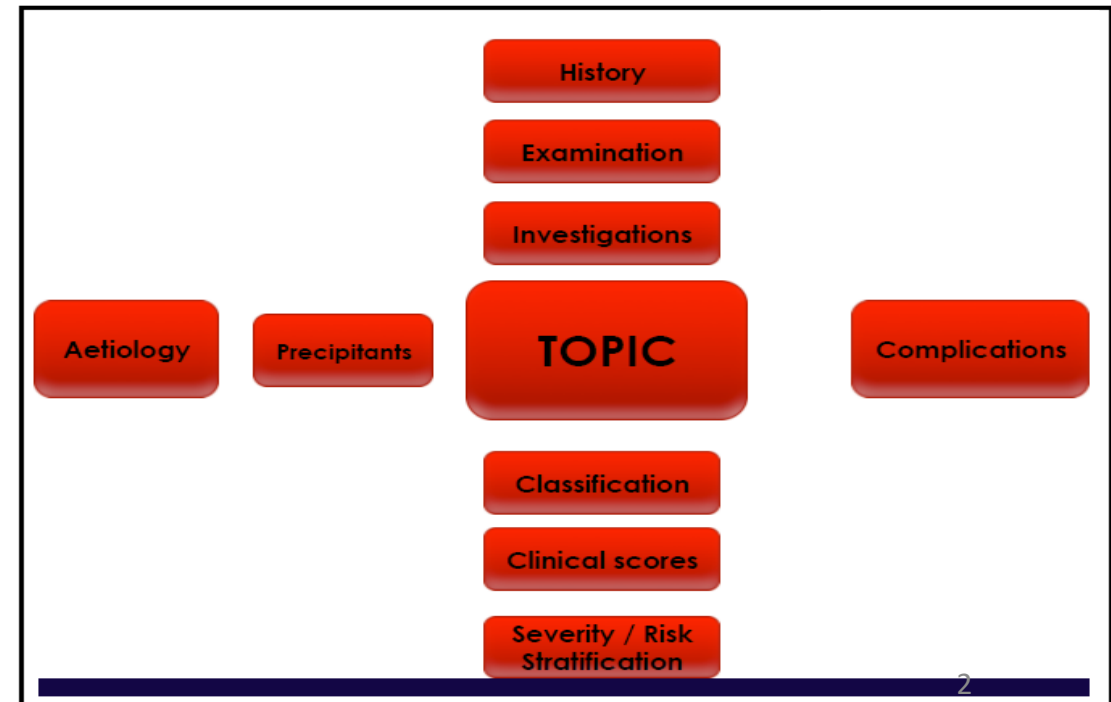
2) Read and study around SAQ

- Use each SAQ as motivation to study around the individual topic
- Think about the different ways the topic could come up in the SAQ exam (use the topic structure provided by APEM course)

3) Write SAQs to further develop this program

- Review syllabus of medical expertise
- Create SAQs relating to topics not covered in this book, please format to be in exam-format, include answers
- This will help further develop this program as well as help you think like an examiner
- Return to ben.shepherd86@gmail.com

ALL THE BEST!



Trauma

4.1 Trauma

- a) Epidemiology of trauma T H
- b) Mechanisms of injury T H
- c) Principles of management of trauma T Ex
- d) Trauma team concepts T H
- e) Trauma scoring systems T H
- f) Glasgow Coma Score E Ex
- g) Imaging modalities in trauma I H
- h) Assessment and management of multiple trauma DIS Ex
- i) Spinal immobilisation techniques P Ex
- j) Head trauma
 - i) Assessment and management of head trauma DIS H
 - ii) Scalp lacerations DIS H
 - iii) Skull fractures DIS H
 - iv) Extradural haematoma DIS H
 - v) Subdural haematoma DIS H
 - vi) Intracerebral haematoma DIS H
 - vii) Diffuse axonal injury DIS H
 - viii) Penetrating head injury DIS H
- ix) Minor head injury DIS Ex
- x) Post concussive syndrome DIS H
- xi) Emergency department drainage of traumatic intracranial haematomas P G
- k) Chest trauma
 - i) Assessment and management of chest trauma DIS H
 - ii) Pneumothorax DIS Ex
 - iii) Haemothorax DIS H
 - iv) Pulmonary contusion DIS H
 - v) Myocardial contusion DIS H
 - vi) Fractured ribs DIS H
 - vii) Fractured sternum DIS H
 - viii) Flail chest DIS H
 - ix) Pericardial tamponade DIS H
 - x) Tracheobronchial rupture DIS H
 - xi) Oesophageal perforation DIS H
 - xii) Diaphragmatic rupture DIS H
 - xiii) Great vessel injury DIS H
 - xiv) Penetrating thoracic injury DIS H
 - xv) Emergency department thoracotomy P H
 - xvi) Traumatic asphyxia DIS H
- l) Abdominal trauma
 - i) Assessment and management of abdominal trauma DIS H
 - ii) Diagnostic peritoneal lavage P H
 - iii) Splenic injury DIS H
 - iv) Hepatic injury DIS H
 - v) Renal injury DIS H
 - vi) Pancreatic injury DIS H
 - vii) Hollow viscus injury DIS H
 - viii) Great vessel injury DIS H
 - ix) Penetrating abdominal injury DIS H
 - x) Abdominal compartment syndrome DIS G

- m) Genitourinary trauma
 - i) Assessment and management of genitourinary trauma DIS H
 - ii) Ureteric injury DIS H
 - iii) Urethral injury DIS H
 - iv) Bladder injury DIS H
 - v) Penile rupture DIS G
 - vi) Testicular trauma DIS G
 - vii) Penetrating genitourinary injury DIS G
- n) Pelvic trauma
 - i) Assessment and management of pelvic trauma DIS H
 - ii) Major pelvic fracture DIS H
 - iii) Exsanguinating pelvic injury DIS H
- o) Spinal cord injury
 - i) Assessment and management of spinal cord injury DIS H
 - ii) Spinal cord syndromes DIS H
 - iii) SCIWORA DIS H
- p) Neck trauma
 - i) Assessment and management of neck trauma DIS H
 - ii) Penetrating neck injury DIS H
 - iii) Laryngotracheal injury DIS H
 - iv) Vascular injury DIS H
 - v) Nerve injury DIS H
- q) Maxillofacial trauma
 - i) Assessment and management of maxillofacial trauma DIS H
 - ii) Facial lacerations DIS H
 - iii) Nasal fractures DIS H
 - iv) Mandibular fractures DIS H
 - v) Le Fort fractures DIS H
 - vi) Zygomatic fractures DIS H
 - vii) Orbital injury DIS H
 - viii) Temporal bone fractures DIS H
 - ix) Dental trauma DIS G
 - x) Tooth avulsion DIS G
 - xi) Intraoral lacerations DIS G

- r) Extremity trauma
 - i) Assessment and management of extremity trauma DIS H
 - ii) Traumatic amputation DIS H
 - iii) Arterial injury DIS H
 - iv) Compartment syndromes DIS H
 - v) Crush syndrome DIS H
- s) Trauma in pregnancy
 - i) Assessment and management of trauma in pregnancy DIS H
 - ii) Obstetric complications of trauma DIS H
 - iii) Uterine rupture DIS H
 - iv) Perimortem caesarean section DIS G
- t) Trauma in children
 - i) Assessment and management of trauma in children DIS H
 - ii) Paediatric aspects of trauma management DIS H
 - iii) Non-accidental injury DIS H

COLUMN "LO" – CATEGORIES OF LEARNING OBJECTIVES

DIS - Diseases/Injuries/Symptoms	D - Pharmacological & toxicological agents	COLUMN "LP" – LEVELS OF PRACTICE Ex - Expert H - High G - General
E - Physical Examination	P - Procedures S - Systems	
I - Investigations	Eq - Equipment NCI - Non-clinical/clinical interface	
M - Medical Interventions	T - Theories	

You are the consultant in an urban ED, on a busy shift. You receive ambulance pre-notification about a domestic dispute. They are transporting 2 patients both with shotgun wounds. ETA is 10 minutes.

Patient 1: 46 year old male with wounds to his left chest and abdomen
GCS 12 (E3V4M5)
P 110
BP 80/-

Patient 2: 43 year old female with minor wounds to her left forearm
Vitals are stable

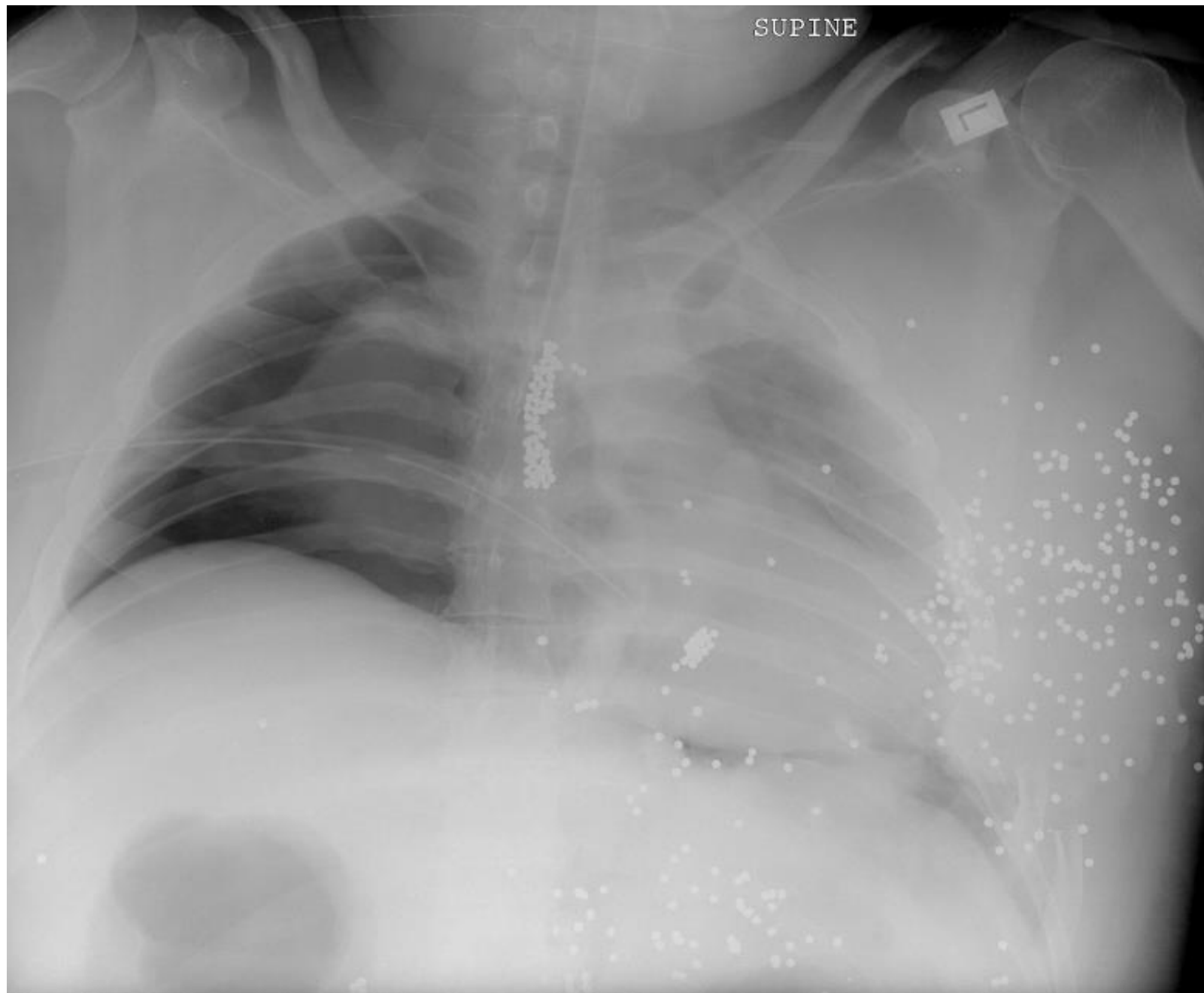
- i. Outline 4 key issues involved in this scenario (4 marks)

- ii. The male patient is in shock despite 2 litres of normal saline pre-hospital. His GCS has fallen to 8. His chest is hyper-resonant on the right with bilaterally reduced breath sounds. He has an acute abdomen.
List 4 immediate management priorities (4 marks)

- iii. List 5 positive findings on the male patient's CXR (5 marks)

AN XRAY IS SHOWN IN THE PROPS BOOKLET, PAGE 3

- iv. The male has been transferred to theatre. While you are reviewing the female, the police ring to advise you of her husband's possible arrival. He is the suspected perpetrator, and may be armed.
Outline 4 key issues in your immediate response (4 marks)



Pre-hospital bypass of smaller centres directly to designated trauma centres is routine practice in many metropolitan environments

- i. List the criteria used by paramedics to determine which trauma patients should bypass smaller centres (6 marks)

- ii. Describe the main difficulty arising from the inclusion of mechanism of injury as part of a triage tool (2 marks)

- iii. List 2 advantages and 2 disadvantages of trauma bypass (4 marks)

- iv. A long distance to reach a major trauma service requires paramedics to manage patients en route. In what circumstances does the evidence support “permissive hypotension” in the pre-hospital setting? (3 marks)

A 5 year old boy has been brought to your emergency department after a road traffic accident. He has had a blood transfusion commenced by the retrieval service for haemorrhagic shock. The second unit has already been commenced.

1. What is the definition of massive transfusion in this child? (2 marks)

2. List eight potential complications of massive transfusion for this child (4 marks)

3. If he was to have a cardiac arrest. What are the 4 likely causes (4 marks)

You are working in a level 1 trauma centre on a busy Sunday evening when you receive an ambulance notification about a 23 year old male involved in a high speed motorcycle accident. He was intubated at the scene, has IV access and has received 250ml of normal saline.

His observations in the ambulance are as follows:

GCS	3	(E1, M1, V1)
HR	140	beats/min
BP	76/58	mmHg
SaO ₂	92%	on 100% O ₂

They are 5 minutes away.

i. List the top five (5) priorities to prepare for the patient's arrival?

- 1 _____
- 2 _____
- 3 _____
- 4 _____
- 5 _____

ii. What are the three (3) components of the "lethal triad of trauma" and how would you act to prevent these from contributing to the patient's morbidity and mortality?

	Component	Action
1		
2		
3		

The patient arrives in your Emergency Department. On examination he has decreased air entry to his left chest. He has a soft abdomen.

His observations are unchanged.

An eFAST ultrasound scan is performed that shows a large amount of left pleural fluid and evidence of a left sided pneumothorax. There is no evidence of abdominal or pericardial free fluid.

A chest drain has been inserted.

iii. Describe three (3) indications for immediate transfer to the operating theatre for his chest injuries?

- 1 _____
- 2 _____
- 3 _____

You have been asked to retrieve a 20 year old male, who was in a high speed MVA from a small peripheral hospital 100km away, by helicopter. His communicated injuries include rib fractures, fractured right femur and a traumatic subarachnoid haemorrhage.

His Vital signs:

BP 108/60 mmHg HR 105 bpm Temp 36.9 °C RR 28 /min Sat 92% RA GCS 14 (E4,M6,V4)

b) List Two (2) important steps in your preparation of this man for transport under each of the headings airway, breathing and circulation (6 marks)

Airway

1. _____

2. _____

Breathing

1. _____

2. _____

Circulation

1. _____

2. _____

d) State five (5) steps to optimise his ICP? (5 marks)

1. _____

2. _____

3. _____

4. _____

5. _____

c) List five (5) general limitations in patient retrieval by helicopter (5 marks).

1. _____

2. _____

3. _____

4. _____

5. _____

You are the retrieval doctor at a pre-hospital scene where there has been a single-occupant rollover MVA. The driver has been trapped for 2 hours by extensive compression of both legs by dashboard and steering column intrusion. He has chest and head injuries (GCS 7)

- i. What are the potential pathophysiological consequences of rapid release of this patient's legs? (2 marks)

- ii. What therapies could you use to mitigate these pathophysiological consequences? (3 marks)

On arrival at the nearby trauma centre, concerns are raised about the possibility of a bilateral lower leg compartment syndrome.

- iii. Outline a technique for measuring compartment pressures (4 marks)

- iv. What pressure threshold would confirm suspicions of compartment syndrome? (1 mark)

- v. The patient's creatine kinase is 7000 IU/L. The renal registrar wants you to start a mannitol infusion to reduce renal injury from tubular deposition. List 3 disadvantages or adverse effects of mannitol in this context (3 marks)

A 68 year old driver is involved in a motor vehicle accident and is intubated for a Glasgow Coma Score of 3. His wife states that he has been off balance for 3 weeks and she didn't want him to drive.

An axial slice of his brain CT scan is shown in Props booklet ;Page 5.

1. List five (5) abnormal findings on this image (5 marks)

1. _____
2. _____
3. _____
4. _____
5. _____



2. What is the likely diagnosis based on the CT findings? (1 mark)

- _____
- _____

3. List eight (8) advantages of a standard protocolled CT Brain in trauma (8 marks)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

4. List four (4) limitations of a contrast-enhanced CT abdomen/pelvis in trauma (4 marks)

1. _____
2. _____
3. _____
4. _____

You are working in a rural emergency department (with on site General Surgery and Anaesthetics services and 90 Km away from a trauma centre) on a Saturday evening. A 35 year old previously well male without any allergies, is brought in by ambulance following a motor vehicle accident. He was the restrained driver of a car that skidded in wet weather and struck a tree. His only injury is a strike to the left lateral head.

On arrival he is alert, his pupils are equal and reactive to light but he is amnesic to the events and repeatedly asks staff: what had happened.

His vitals are:

BP	130/85	mmHg
HR	90	/min
Sats	98%	RA
Temp	36.5°C	
GCS	14	(E4 V4 M6)

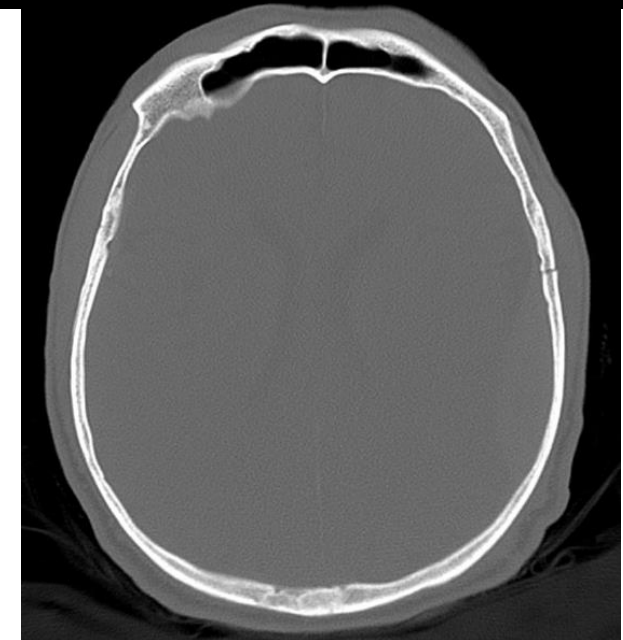
CT scan of the patient is provided in the PORPS BOOKLET ; Pages 5 and 6.

a) State three (3) most important abnormal findings (3 marks).

1. _____

2. _____

3. _____



Following the CT the patient drops his GCS to 10 (E2, V3, M5). His pupils remain equal. You decide to intubate him.

b) State five (5) important considerations when intubating this patient (5 marks).

1. _____
2. _____
3. _____
4. _____
5. _____

Your intubation progresses smoothly and the patient is stable. Due to bad weather, Helicopters cannot fly. You decide to transfer the patient by road ambulance to the trauma centre.

c) List five (5) important steps in preparing for the transfer of this patient. (5 marks).

1. _____
2. _____
3. _____
4. _____
5. _____

As you prepare to leave, the patient becomes bradycardia (HR 54) and hypertensive (BP - 200/110). Your nurse informs you that the patient's left pupil has become dilated.

d) State your immediate five (5) actions for his condition (5 marks).

1. _____
2. _____
3. _____
4. _____
5. _____

A 33-year-old man presents following a single punch knocking him to the ground. He had a GCS of 7 on arrival and has been intubated prior to CT scan.

He has returned to the ED following CT of his brain and cervical spine.

CT of the cervical spine is normal and he has no other injuries.

His current observations are pulse 60/min and BP 155/85 mmHg. His pupils are equal and reactive.

A single image from his brain CT is attached:

See image on page 13 in separate book

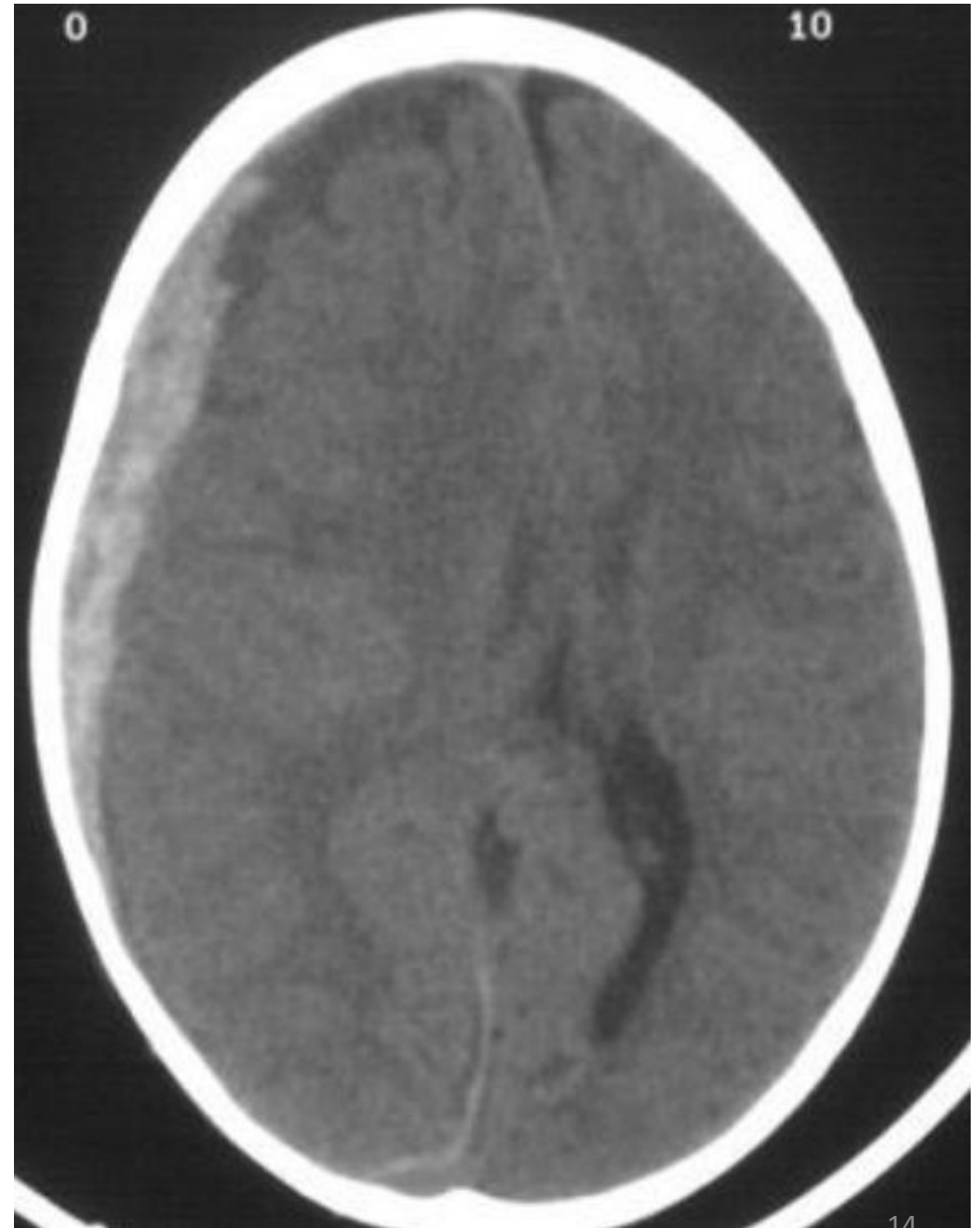
1. Describe **3** abnormalities on the CT image. (2 marks)

(1) _____

(2) _____

(3) _____

The neurosurgical team is en route to hospital and the patient will be going to the operating theatre in approximately 1 hour.



2. Assuming his clinical status remain unchanged, describe 8 treatments and their therapeutic target which should be performed in the ED prior to transferring this patient to theatre (8 marks)

	Treatment	Therapeutic Target
1		
2		
3		
4		
5		
6		
7		
8		

30 minutes later his left pupil becomes fixed and dilated. His pulse rate is 50/min and his BP 160/100

3. Describe two additional treatments, with dosage where relevant, that you would immediately institute. (2 marks)

(1) _____

(2) _____

A 74 year old man presents after a fall the night before. He is now complaining of reduced mobility. Past medical history includes atrial fibrillation and hypertension. His medications are dabigatran, metoprolol and aspirin. GCS is 15.

- i. Outline the findings on the CT image (4 marks)

A CT BRAIN IS SHOWN IN THE PROPS BOOKLET, PAGE 7

- ii. List 4 possible treatments you would consider using and your rationale for each (8marks)

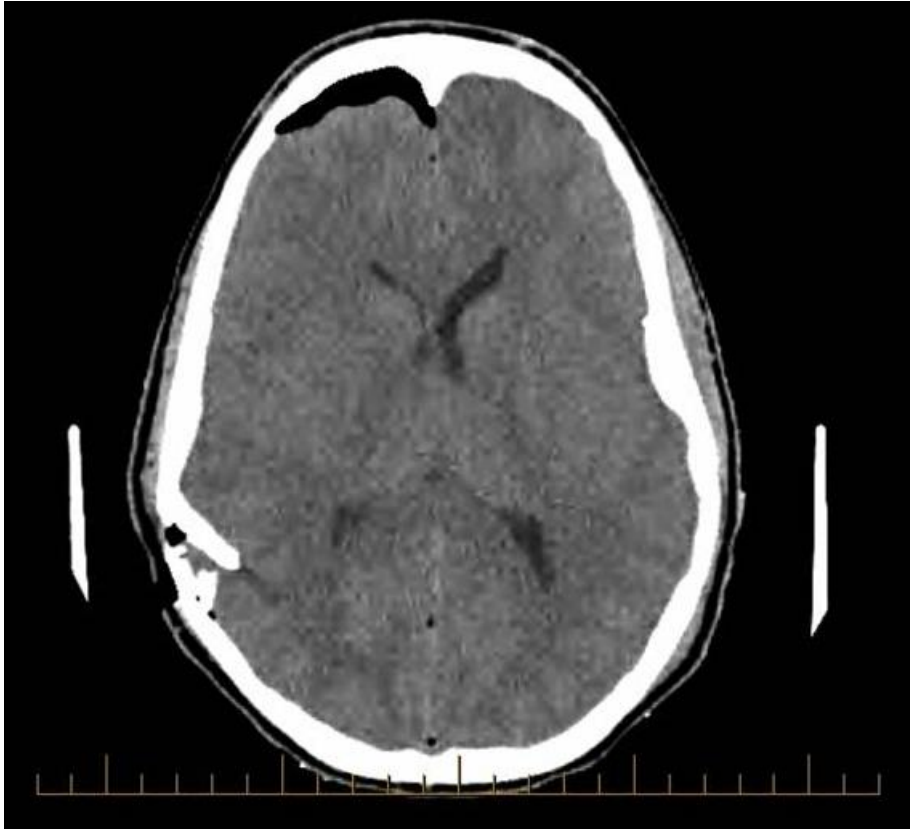


- iii. List 2 important additional features on assessment that are required to assist your treatment decision (2 marks)

- iv. List one other option for the management of NOAC associated bleeding (1 mark)

You have intubated a patient with a severe head injury from an assault.

His CT is attached.



- (a) List the abnormalities on this CT (50%)
- (b) Would you provide seizure prophylaxis? (20%)
- (c) Outline your management and define your physiological targets in the initial resuscitation for this presentation. (30%)

A 25 year old man sustains facial injuries in a high speed motor vehicle crash in which he was the unrestrained driver.

His observations are:

GCS	15	
HR	100	/min
BP	130/75	mmHg supine
O ₂ saturation	97%	room air



a) List 3 abnormal findings seen in the above photograph. (3 marks)

b) What underlying injuries are of most concern given the above information (3 marks)

c) Outline 4 potential clinical concerns potentially affecting management of this patient's airway? (4 marks)

A 55 year old man is brought to the Emergency Department following a fall from a ladder. The patient was approximately 3 metres high and landed on concrete.

On arrival he is awake and is complaining of severe abdominal pain. His observations are as follows:

HR	110	beats/min
BP	100/55	mmHg
RR	22	/min
SaO ₂	100%	on 6L O ₂ via Hudson mask
GCS	15	(E4, V5, M6)

A CT scan is performed.

The CT image is available in the prop booklet supplied - page 11.

i. What is the diagnosis? Provide 3 radiological features to support your diagnosis.

Diagnosis: _____

1 _____

2 _____

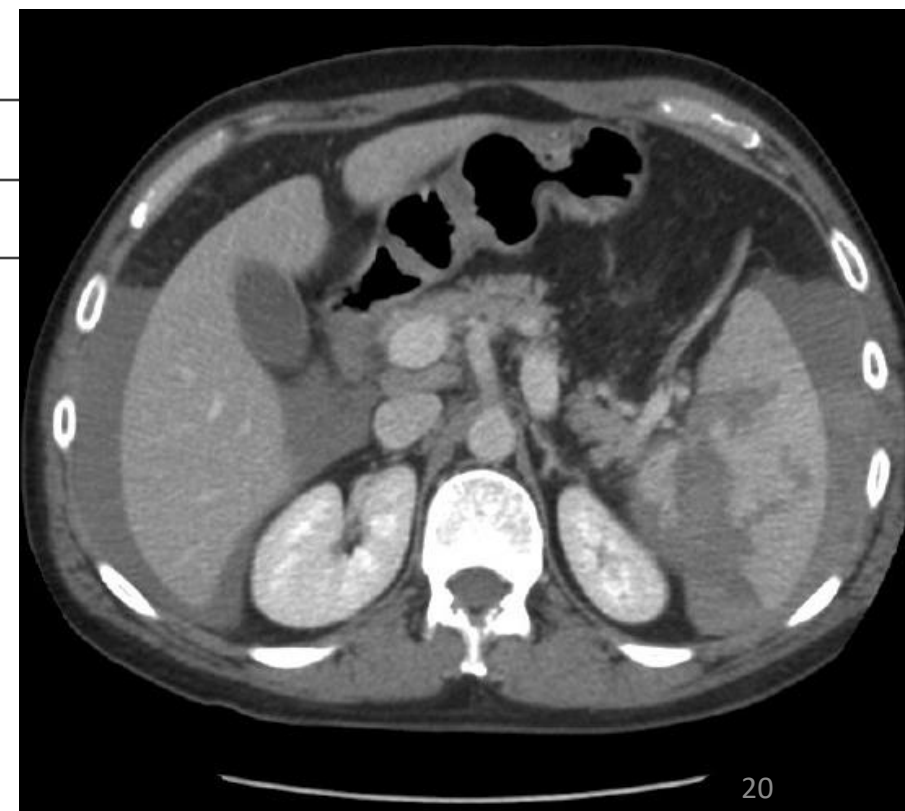
3 _____

ii. The major management options are conservative vs operative management. Describe three (3) pros and three (3) cons of each approach.

Conservative Management	
Pros	Cons

Operative Management	
Pros	Cons

iii. Your registrar asks you about the correct ratios for massive transfusion. Describe your current ratio for massive transfusion and name one (1) recent study to support your decision.



A 40 yo builder presents after falling from a ladder. His only complaint is of moderate upper abdominal pain.

His vital signs on arrival:

HR	90	/min
Sats	97 %	RA
BP	100/60	/min
GCS	15	

His CT SCAN is taken and shown in PROPS BOOKLET ; page 8.

a) List three (3) abnormalities on his CT. (3 marks)

1. _____

2. _____

3. _____

b) What is your diagnosis? (1 mark)



c) List & Justify four (4) key further Investigations to be performed in the ED. (4 marks)

	Investigation	Justification
1		
2		
3		
4		

d) State four (4) criteria in this patient that would lead you to consider Angiography with embolisation. (4 marks)

1. _____

2. _____

3. _____

4. _____

i. With regard to blunt abdominal trauma, complete the table with 2 pros and cons of each diagnostic modality (12 marks)

	PROS	CONS
FAST SCAN		
CT SCAN		
DIAGNOSTIC PERITONEAL LAVAGE		

ii. List two contraindications to performing a FAST exam in trauma. Provide an example for each (4 marks)

iii. Bowel and mesenteric injuries are particularly associated with an abdominal "seatbelt sign". What CT radiographic findings are classically seen in this injury (3 marks)

A 38 year old man is involved in a motor vehicle accident. He is complaining of chest pain. A chest x-ray is obtained on arrival as part of the trauma series and is reproduced below. His vital signs on arrival to your Emergency Department are:

Temp	36.2	°C
BP	135/82	mmHg
HR	105	beats/min normal sinus rhythm
RR	28	/min
SaO ₂	93%	on room air
GCS	15	

His CXR is shown in the props booklet provided - page 17.

i. List two (2) positive findings and two (2) negative findings on this x-ray

- 1 _____
- 2 _____
- 3 _____
- 4 _____

ii. What is the likely diagnosis of the lung findings on x-ray?

iii. List three (3) alternative differential diagnoses for the positive x-ray findings

- 1 _____
- 2 _____
- 3 _____



iv. List four (4) complications associated with this diagnosis

- 1 _____
- 2 _____
- 3 _____
- 4 _____

A 6 year old boy is brought in by ambulance with a penetrating chest wound after an incident with a knitting needle and loom bands (small rubber bands) while playing with his little brother.

A clinical photograph is supplied



1. Write three (3) statements that describe the injury in this photo.

2. List six (6) possible complications that may be associated with this presentation

The patient's chest pain worsens. Vital signs are:

RR 40 /min
PR 160 bpm
BP 60 systolic mmHg
SaO2 98% on room air

3. Describe your three (3) most important management priorities

You receive a Priority 1 call from the ambulance service. They are en route with a 24 yr old male in cardiac arrest following chest trauma.

a. List 2 indications for emergency thoractomy in penetrating chest trauma (2 Marks)

1. _____

2. _____

b. List 2 indications for emergency thoracotomy in blunt chest trauma (2 Marks)

1. _____

2. _____

c. List 4 contraindications for emergency thoracotomy (4 Marks)

1. _____

2. _____

3. _____

4. _____

d. List 4 aims of performing an emergency thoractomy (2 Marks)

1. _____

2. _____

3. _____

4. _____

A 45 yr old male presents following a motor vehicle accident. He complains of chest pain having struck his chest on the steering wheel.

a. List 4 cardiac injuries associated with blunt chest trauma (4 Marks)

1. _____

2. _____

3. _____

4. _____

b. List 2 investigations that can rule out blunt cardiac injury (2 Marks)

1. _____

2. _____

c. List 8 ECG findings associated with blunt cardiac injury (4 Marks)

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

An 84 year old man is brought to your emergency department following a high speed car accident. He has signs of multiple left rib fractures. Two hours after arriving in the emergency department he becomes more breathless and distressed.

His observations are:

- GCS 14
- HR 75 bpm
- BP 100/60
- RR 24

His arterial blood gas results are below

			Reference Range
pH	7.14		(7.35-7.45)
pCO ₂	60	mmHg	(35-45)
pO ₂	114		
HCO ₃ ⁻	17	mmol/L	(21-28)
Lactate	1.4	mmol/L	(< 2.0)
FiO ₂	50	%	
Na ⁺	139	mmol/L	(135-145)
K ⁺	4.8	mmol/L	(3.2-4.3)
Cl ⁻	116	mmol/L	(99-109)
Glucose	11.3	mmol/L	(3.0-6.0)

a. List 4 key abnormalities on the above blood gas (2 Marks)

1. _____
2. _____
3. _____
4. _____

b. Calculate the patient's expected pCO₂ and show the formula used (2 Marks)

c. Calculate the patient's A-a gradient and show the formula's used (2 Marks)

d. List 8 potential causes for the patient's clinical picture and ABG result (4 Marks)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

IMAGES FOR THIS QUESTION ARE IN THE PROPS BOOKLET – IMAGES A-F

i. Which of the M-mode images (IMAGE A or B) demonstrates a pneumothorax? (1 mark)

ii. Why is the other image NOT consistent with pneumothorax (4 marks)

iii. Which of the M-mode IVC images (IMAGES C or D) is consistent with a tension pneumothorax? (1 mark)

iv. Why is the other image NOT consistent with pneumothorax? (4 marks)

v. Which image (IMAGE E or F) is consistent with pleural sliding? (1 mark)

vi. Why is the other image NOT consistent with pleural sliding? (4 marks)

IMAGE A

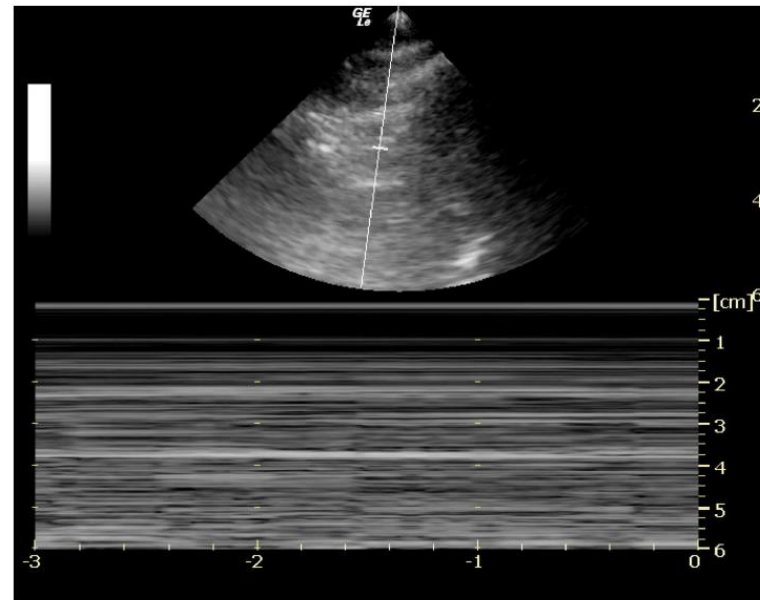


IMAGE B

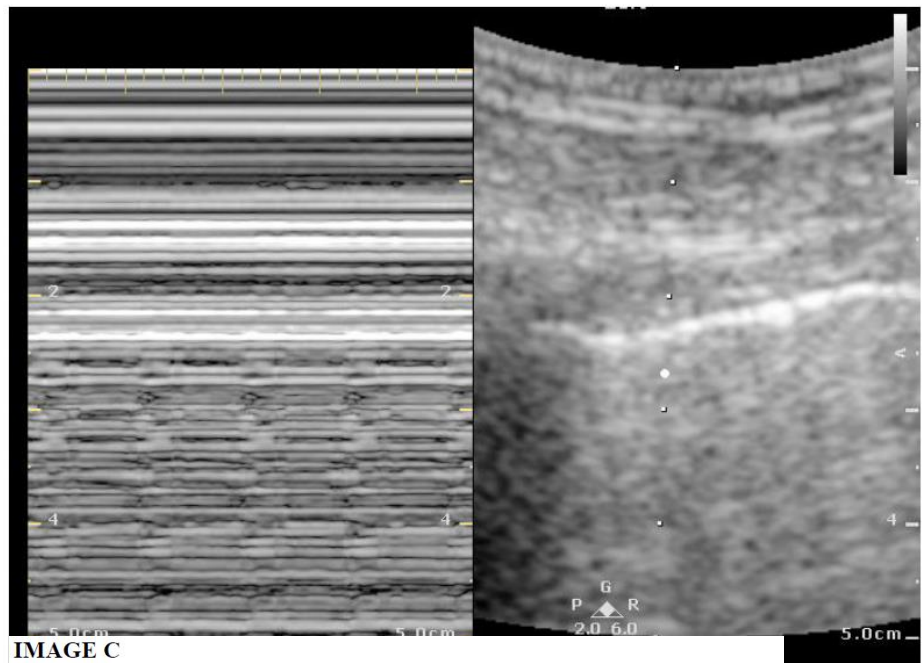


IMAGE C

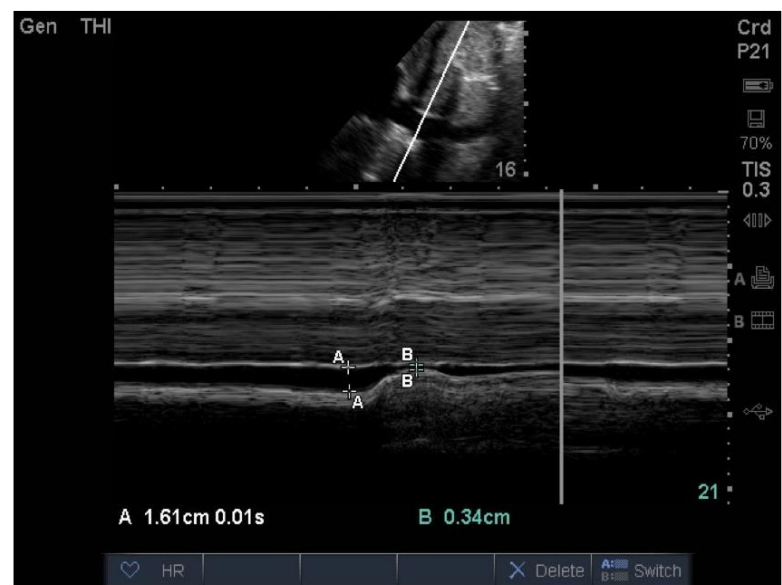


IMAGE D

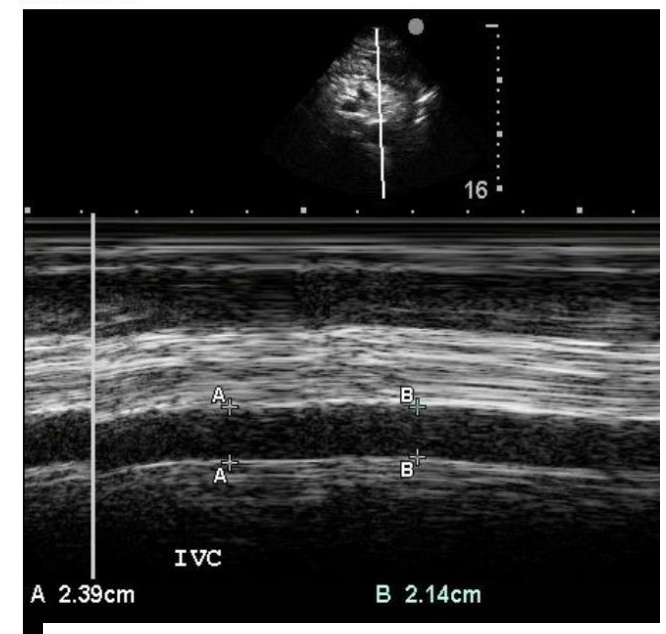


IMAGE E

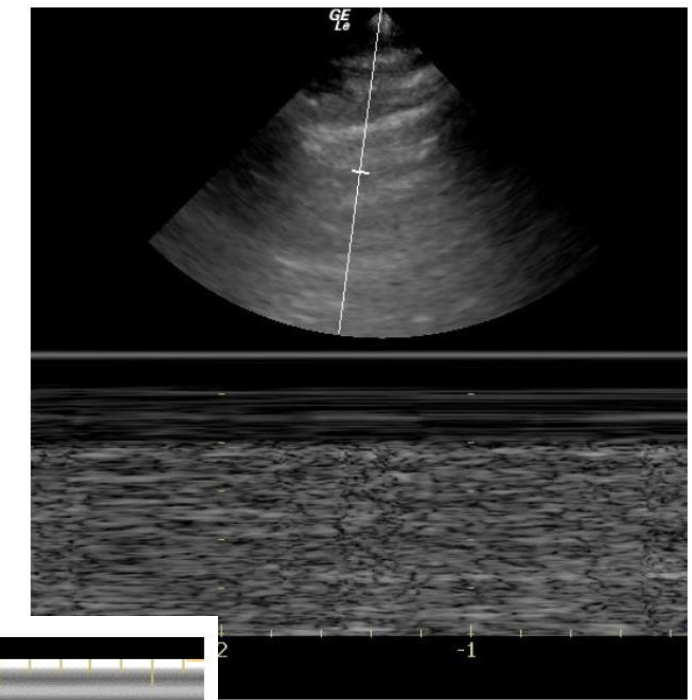
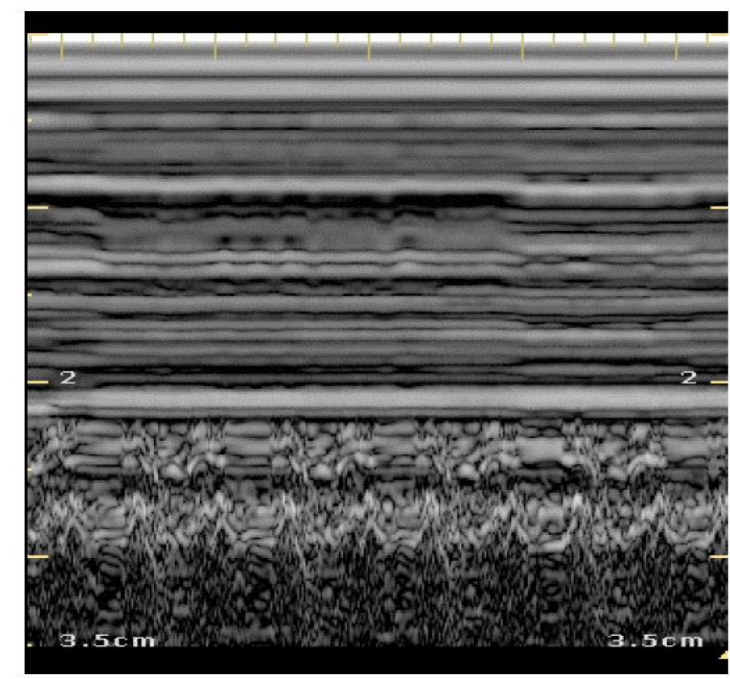


IMAGE F



i. In the pre-hospital setting, list 3 advantages and 3 disadvantages of ultrasound in confirming pneumothorax (6 marks)

ii. Write brief notes on the pros and cons of needle decompression vs finger thoracostomy (6 marks)

iii. List 4 clinical signs or symptoms of a tension pneumothorax (4 marks)

A 26 year old male presents after a domestic dispute with this injury. He is confused and agitated.

Vital signs are:

BP 85/-40

PR 130

Sats 94% on RA

GCS 13

RR 28.

He looks grey and sweaty.



1. List 3 possible life threatening injuries (2 marks).

i. _____

ii. _____

iii. _____

After the placement of 2 x16G IVC and 500ml of IV crystalloid he becomes progressively more hypotensive and has a PEA arrest.

2. List 2 indications of emergency thoracotomy (1 mark).

i. _____

ii. _____

3. List 4 contraindications to performing an emergency thoracotomy (4 marks).

i. _____

ii. _____

iii. _____

iv. _____

4. List 3 procedures that can be performed once the chest is opened (3 marks).

i. _____

ii. _____

iii. _____

A 25 year old man has been brought to the ED after being stabbed once in the epigastrium. There are no other injuries.

He appears pale, sweaty and agitated.

His vital signs on arrival are:

GCS	14	E4 V4 M6
Pulse	125	/min
BP	75/40	mmHg
O2 sats	94%	15L O2 via non-rebreather mask

1. List your 2 most important radiological investigations. For each provide 2 significant positive or negative findings. (6 marks)

Investigation	Finding

2. List 4 principles of your fluid resuscitation strategy. (4 marks)

3. List 3 indications for urgent thoracotomy in the operating theatre. (3 marks)

4. List 3 indications for intubating this patient in the ED. (3 marks)

5. List 6 possible causes of the high peak airway pressures.

(6 marks)

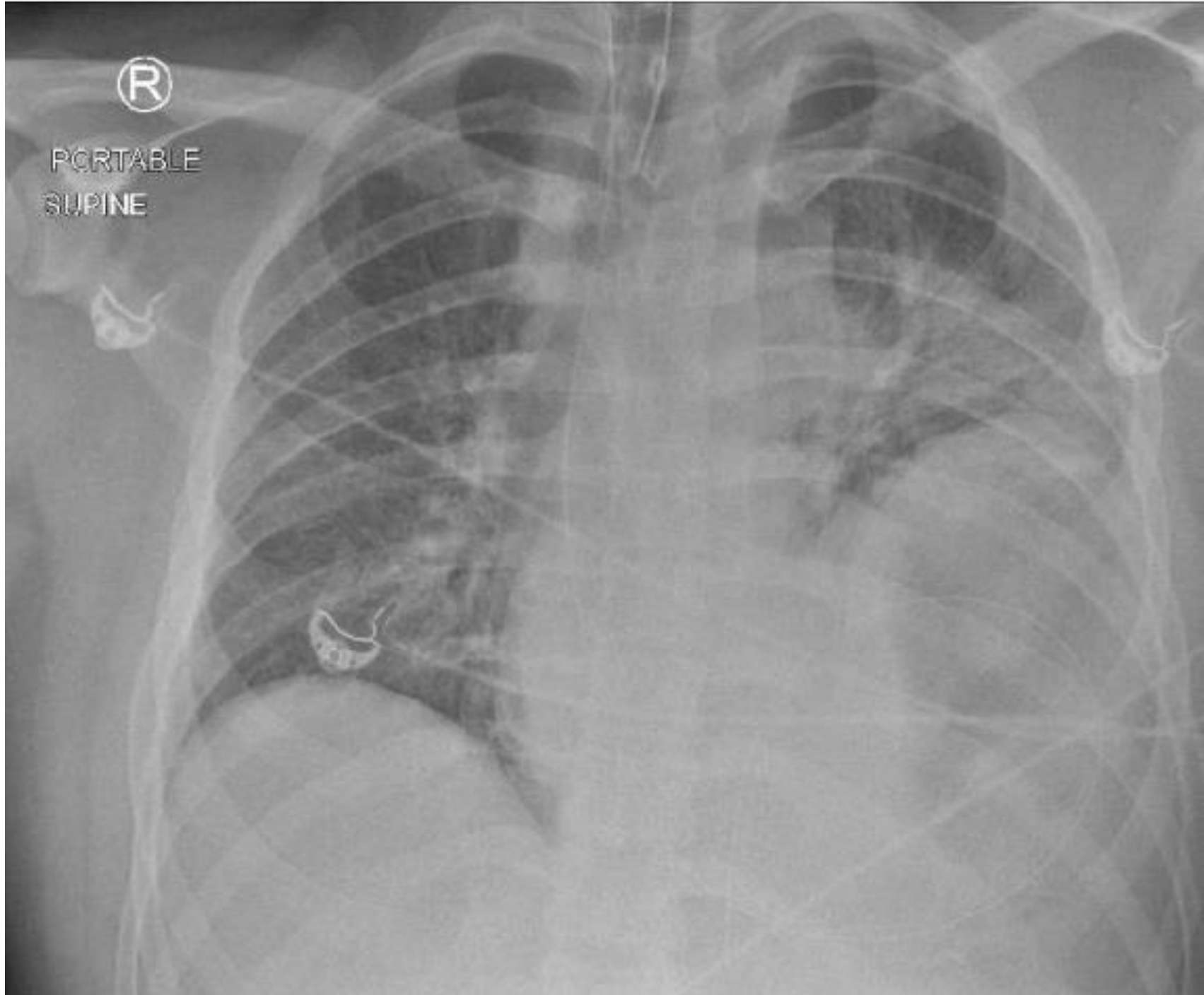
A 27 year old male driver has been involved in a motor vehicle crash at 140kph. He was taken to a rural base hospital and was intubated soon after arrival in ED. Current vital signs are BP 80/40 mmHg, P 140 bpm.

A CHEST XRAY IS SHOWN IN THE PROPS BOOKLET, PAGE 4

i. List 6 findings on his CXR (6 marks)

ii. List 5 potential diagnoses in order of severity (5 marks)

iii. List the next 3 investigations you would order/perform, in order of priority and provide your reasoning (6 marks)



You are the overnight registrar in your tertiary hospital ED. You receive an ambulance pre-arrival call at 2am for a 25 year old male, stabbed multiple times in the chest. ETA is 10 min.

Vital signs: HR 150 bpm
BP 72/41 mmHg
SaO2 90% on 15L
RR 30 bpm
GCS 12

i. List 6 potential life threatening injuries in this patient (6 marks)

ii. Briefly describe how you would prepare to receive this patient (5 marks)

iii. What are the indications for ED thoracotomy in trauma (3 marks)

iv. Provide an estimate of survival rates following ED thoracotomy for traumatic arrest (2 marks)

In penetrating chest trauma	
In blunt trauma	

A 28yo male has been BIBA.

Assaulted by a “business” partner in a carpark late at night.

Found unconscious, prone when people were alerted by yelling.

He has a stab wound to the right lateral chest and a blunt skull injury with bogginess.

GCS – 3, PR 140, BP 70/40, RR 36, Sats not accurate (poor peripheral perfusion), pupils equal 4mm, sluggish.

Pre-hospital Mx: intercostal needle right chest, 3 sided dressing right chest, IVC, NS 250mls, oxygen , collar.

(a) How do you manage his shock (25%)

(b) Describe your technique for ICC insertion for a stabbed chest (25%)

(c) Describe your approach to intubation in this situation (25%)

(d) Will you intubate before or after ICC insertion? Justify your decision. (25%)

A 22 year old male is brought in by ambulance having been involved in a high speed motor vehicle accident.

On arrival his observations are as follows:

GCS	13	(E3, M6, V4)
PR	140	bpm
BP	80/50	mmHg
SaO2	96%	on room air

He has no significant past history and is on no medication

A portable pelvic xray is performed as part of his workup.



1. Describe the three (3) most important positive findings.

2. List five (5) treatment priorities relevant to this patient

3. Describe four (4) essential elements of a massive transfusion protocol

You are in a Rural Emergency Department, when you receive ambulance pre-notification of a 24 year old Male, involved in a motorbike accident, with primarily right abdominal and pelvic injuries. His vital signs: GCS 15 HR 130 BP 75/45 SaO2 98% on room air RR 24 and Temperature 35°C. The estimated time of arrival is 10 minutes.

a) List Four (4) important preparations you would undertake prior to his arrival (4 marks).

1. _____
2. _____
3. _____
4. _____

On arrival, the patient's vital signs remain unchanged despite administration of 2 litres of normal saline by the ambulance paramedic. He is alert and complains of severe right lower abdominal and pelvic pain.

b) List Four (4) initial management priorities in managing the patient's injuries.(4 marks)

1. _____
2. _____
3. _____
4. _____



The eFAST examination is negative and his CXR is normal.
His Pelvic X-ray is shown in the Prop Booklet , page 15 .

c) List three (3) relevant findings in his Xray (3 marks).

1. _____
2. _____
3. _____

d) List Four (4) important priorities in management of his shock (4 marks)

1. _____
2. _____
3. _____
4. _____

e) List two (2) physiological and three (3) pathological aims of resuscitation / massive transfusion, in this patient (5 marks):

A. Physiological:

1. _____
2. _____

B. Pathological:

1. _____
2. _____
3. _____

f) State the definition of Massive Transfusion for : (2 marks)

1) Adults:

- _____
- _____

2) Children:

- _____
- _____

A 55 year old female patient is brought in by ambulance to the emergency department after being involved in a high speed MVA. The pelvic X-ray from her trauma series is reproduced. The c-spine and chest X-rays are normal.



i. List three (3) immediate treatment priorities in this case.

1. _____

2. _____

3. _____

____ / 3

ii. What is the lethal triad in this patient?

1. _____

2. _____

3. _____

____ / 3

iii. List five (5) factors that would predict the need for massive transfusion for this patient.

1. _____

2. _____

3. _____

4. _____

5. _____

A 55 year old female patient is brought in by ambulance to the emergency department after being involved in a high speed MVA. The pelvic X-ray from her trauma series is reproduced. The c-spine and chest X-rays are normal.

Massive transfusion has been administered while waiting for the retrieval team to provide transfer to the local level 1 trauma centre. An arterial blood gas has been performed.

pH	7.20	(7.35-7.45)
pCO ₂	30	(35-45)
pO ₂	58	(50% FiO ₂)
HCO ₃	14	(24-32)
Na ⁺	140	(135-145)
K ⁺	6.0	(3.5-5.0)
Cl ⁻	100	(95-110)

i. Provide two (2) calculations to help you to interpret this gas result.

Derived value 1:

Derived value 2:

ii. Using this scenario and the derived values, list three (3) potential causes for the abnormal results.

1. _____

2. _____

3. _____

_____ / 3

iii. List six (6) therapeutic goals for resuscitation in the event of massive transfusion.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

A 51 year old man is brought in by ambulance having fallen onto his back from 10 metres. He has no significant past medical history, and is on no medications.

His observations on arrival are:

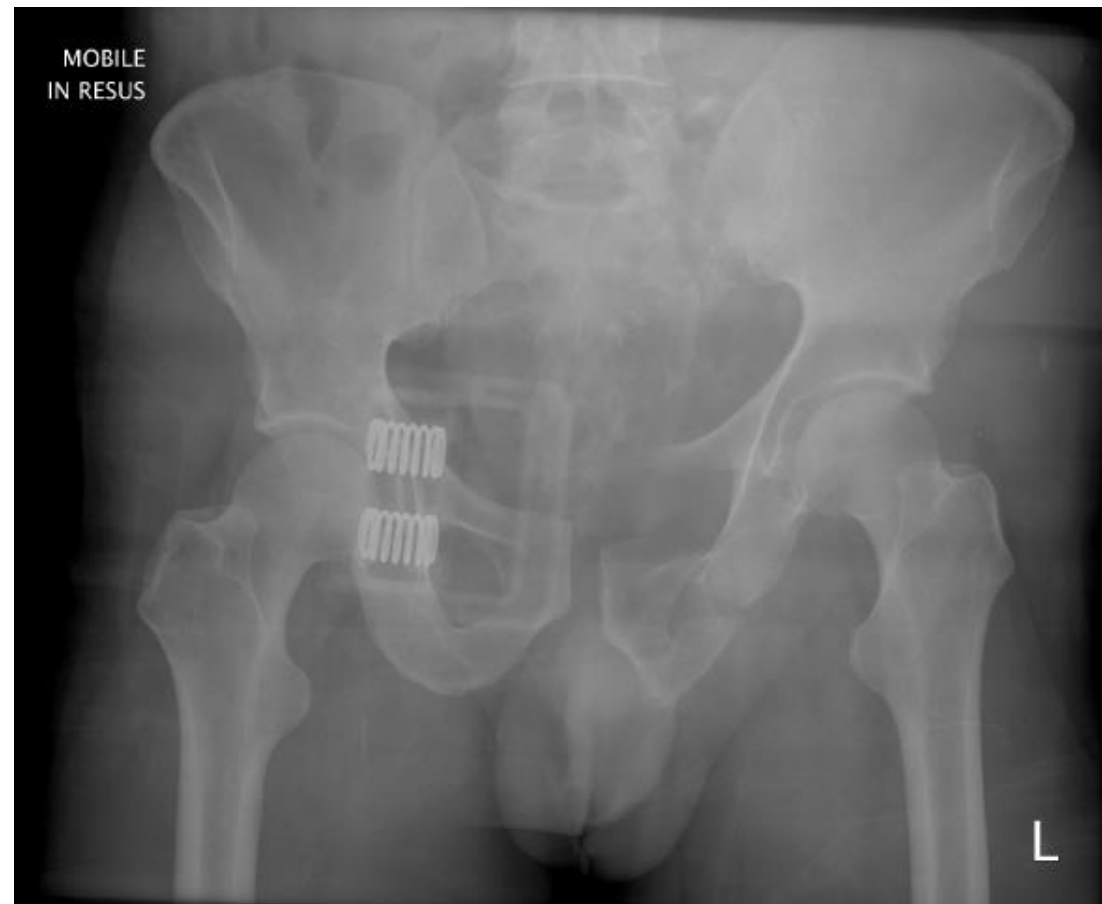
GCS 15, P 110, SBP 70, RR 20, SaO2 99% 6L Hudson mask

- i. List the 3 most important findings on the portable pelvic Xray (3 marks)

AN XRAY IS SHOWN IN THE PROPS BOOKLET, PAGE 7

- ii. What is the Young classification of injury (1 mark)

- iii. List 5 treatment priorities in this patient (5marks)



- iv. Describe 4 essential elements of a massive transfusion protocol (4 marks)

A 24 year old male presents after slipping down a hill while playing football and being struck in the neck with a stick.

His injury is shown in a clinical photograph in the props booklet provided - page 9.

i. Describe three (3) positive and one (1) negative finding in the clinical photograph.

- 1 _____
- 2 _____
- 3 _____
- 4 _____

ii. What zone of the neck is involved?

iii. List five (5) relevant structures that could potentially be injured.

- 1 _____
- 2 _____
- 3 _____
- 4 _____
- 5 _____

iv. What one (1) imaging investigation would you request.

v. Outline four (4) steps in management.

- 1 _____
- 2 _____
- 3 _____
- 4 _____



A 45 year old previously well man is brought by ambulance in hard collar, after falling off a ladder with head strike and brief LOC. He has a GCS of 15 and his vital signs on arrival are normal. His examination reveals posterior lower cervical and upper thoracic spine tenderness, 3/5 weakness in the upper limbs and 4/5 weakness in the lower limbs.

1. Describe the CT image, Shown in PROPS booklet - page 7; listing two (2) relevant positive findings (2 marks).

1. _____

2. _____

2. What is the most likely diagnosis for his neurological presentation? (1 mark).

3. List three (3) measures you would take to prevent secondary spinal injury (3 marks).

1. _____

2. _____

3. _____

4. Define neurogenic and spinal shock (2 marks).

Neurogenic Shock: _____

Spinal Shock: _____



An 87-year-old lady from home presents after slipping and falling down her stairs. She has neck pain, and no other injuries.

You are concerned about possible spinal cord injury.

1. Complete the following table detailing signs and mechanism of various spinal cord syndromes (8 marks)

Syndrome	Signs	Mechanism
Central Cord Syndrome		
Anterior Cord Syndrome		
Brown Sequard Syndrome		
Posterior Cord Syndrome		

She has a CT scan performed of her cervical spine.

See images on pages 3 & 4 in separate book

2. Describe the CT findings (2 marks).

On examination you find an incomplete cord injury.

3. List 4 things you can do (apart from spinal immobilisation) as secondary prevention of further injury. (4 marks)



An 80 year old man presents with neck pain after a fall. He has mixed motor and sensory abnormalities and you suspect an incomplete spinal cord injury.

i. Complete the table below with typical features of partial spinal cord syndromes (9 marks)

Syndrome	Usual mechanism	Motor features	Sensory features
Central cord syndrome			
Anterior cord syndrome			
Brown Sequard			

ii. Explain the typical examination findings in central cord syndrome based on the neuroanatomy of the spinal cord. You may use a diagram. (3 marks)

iii. List 5 potential adverse effects or complications of the use of semi-rigid collars for c-spine immobilization (5 marks)

You are the Emergency Consultant in-Charge in a Tertiary Emergency Department, and have been given pre-notification about a 20 year old male that has allegedly been stabbed in the anterior neck and actively bleeding. The Ambulance will arrive in 10 minutes and his current vital signs:

BP	100/75	mmHg
HR	85	/min
RR	22	/min
Sats	92%	RA
Temp	36°C	
GCS	14	(Intoxicated)

a) State four (4) preparation priorities before this patient's arrival. (4 marks)

1. _____
2. _____
3. _____
4. _____

Upon arrival he has active, non pulsatile bleeding from a single wound in Zone II (Roon and Christianson Classification).

b) State the boundaries of Zone II of the neck. (1 mark)

c) List four (4) important anatomical structures in Zone II. (4 marks)

1. _____
2. _____
3. _____
4. _____

d) List four (4) hard aerodigestive signs in penetrating neck trauma that would mandate emergent theatre? (4 marks)

1. _____
2. _____
3. _____
4. _____

5. You diagnose a cord syndrome. Describe three (3) cord syndromes and differentiate them by completing the following table regarding aetiology, clinical presentation and prognosis. (12 marks)

	1	2	3
Cord Syndrome (3 marks)			
Aetiology (3 marks)			
Clinical Presentation (3 marks)			
Prognosis (3 marks)			

A 62 year-old man is brought to your ED after an assault during a home invasion. He has been stabbed in the anterior right side of neck and was pushed down a steep flight of stairs with possible head and neck injuries due to the fall.

Initial assessment:

GCS 10; combative
HR 125 per minute
BP 105/65 mmHg
Head: Right parietal large boggy swelling
Neck: Wound at right side of anterior neck, extends from medial aspect of clavicle to level of cricoid, extensive haemorrhage

i. List 5 immediate management priorities? (5 marks)

ii. List 3 potential harmful effects of hard collar use in this patient (3 marks)

iii. List 4 clinical features which would suggest this patient has a critical vascular injury (4 marks)

iv. Given his mechanism of injury you are concerned he may have sustained an acute cord injury. List 2 possible acute spinal cord syndromes in this case and identify 2 associated clinical findings (4 marks)

Acute Cord Syndrome	Clinical Finding

i. List 5 different methods of spinal immobilisation for a suspected C-spine injury with neck pain but no abnormal neurology, and no other injuries (5 marks)

ii. List 5 complications of cervical spine immobilisation (5 marks)

iii. Clinical decision rules are frequently derived using logistic regression analysis. Define/describe logistic regression (2 marks)

iv. List 4 exclusion criteria that were used in the derivation of the Canadian C-spine rules and preclude its use in practice (4 marks)

v. According to the Canadian C-spine rules, which stable adult patients are mandated to have C-spine radiography (3 marks)

A 25-year-old man has been brought in to your emergency department after sustaining a knife wound to his neck in an assault.

His vital signs and GCS are normal.

See image on page 12 in separate book

1. Describe the injury seen in the picture above: (3 marks)



2. Complete the following table for each of the three zones of the neck. (12 marks)

NECK ZONE	ANATOMICAL LANDMARKS	ANATOMICAL STRUCTURES WHICH MAY BE INJURED	INVESTIGATION MODALITY
ZONE III			
ZONE II			
ZONE I			

3. List the indications for emergent intubation of this patient. (5 marks)

An 11 year old boy presents via ambulance. A basketball stand has collapsed and struck him on the left side of the face, head and neck trapping him for several minutes. He was unconscious during this time. He is sitting on the ambulance trolley. He has limited mouth opening and 2 large left through and through cheek lacerations requiring continuous oral suctioning for bleeding. There is left sided neck swelling and linear bruising overlying his left anterior neck. He is not moving his neck due to pain.

Vital signs GCS 15 and moving all 4 limbs to command
P 78 bpm
BP 110/65 mmHg
RR 16 bpm
SaO₂ 99% on RA

i. Outline important aspects of the child's initial management (10 marks)

ii. A CT angiogram is performed. List 5 pertinent findings. (5 marks)

CT IMAGES ARE SHOWN IN THE PROPS BOOKLET, PAGES 7-9





A 28 year old man has been out kite surfing and was thrown into the water at high speed. He is brought in on a spinal board with C-spine protection. He was intubated and ventilated for retrieval and a morphine and midazolam infusion is being used for sedation. He has had no paralyzing agents since he was intubated 3 hours earlier. His observations on arrival are pulse 65 bpm and BP 90/60. He is peripherally warm and well perfused. Assessment performed indicates an isolated injury as shown on the lateral Cervical spine xray below.



a) List three concerning abnormalities on this xray. (3 marks)

b) What is the likely diagnosis? (2 marks)

c) Name 5 other features of examination which would support this diagnosis. (5 marks)

Burns

4.2 Burns

- a) Evaluation of the patient with burns M Ex
- b) Early management of severe burns M Ex
- c) Burn wound care M H
- d) Management of minor burns M H
- e) Inhalation injury DIS H
- f) Chemical burns DIS H
- g) Electrical burns DIS H
- h) Tar burns DIS H
- i) Sunburn DIS H
- j) Oral burns DIS H
- k) Escharotomy P H

COLUMN "LO" – CATEGORIES OF LEARNING OBJECTIVES

DIS - Diseases/Injuries/Symptoms	D - Pharmacological & toxicological agents	
E - Physical Examination	P - Procedures	S - Systems
I - Investigations	Eq - Equipment	NCI - Non-clinical/clinical interface
M - Medical Interventions	T - Theories	

COLUMN "LP" – LEVELS OF PRACTICE

Ex - Expert
H - High
G - General

A 40 year old man was injured in a campsite accident. He was burned when his shirt was set alight by an open fire. He has full thickness thermal burns to his entire right upper limb and entire anterior chest wall. There are no other injuries. Soon after arrival in your regional ED, he is intubated and ventilated. Ventilatory parameters are satisfactory. He weighs 100kg.

1. Estimate the percentage of total body surface area (TBSA) burned in this patient, showing your method of calculation.

The patient has received initial fluid resuscitation and is cardiovascularly stable.

2. What is Parkland's formula?

3. Use Parkland's formula to calculate the volume and rate of fluid you will use over the next 24 hours. State which type of fluid you will use.

4. List five (5) parameters used for intravenous fluid rate adjustment in this patient.

An 18 year old man is transferred by ambulance to your rural emergency department after a self inflicted burn injury. Two hours ago the patient set himself alight with petrol after a fight with his girlfriend. He was intubated at the scene by the intensive care paramedic.

A clinical photograph is shown in the prop booklet, page 3.

i. Describe the burn giving four (4) relevant findings. (4 marks)

1 _____

2 _____

3 _____

4 _____

ii. List five (5) important complications of this injury. (5 marks)

1 _____

2 _____

3 _____

4 _____

5 _____



After a thorough examination, you calculate his percentage of body surface area involved to be 80%. During the two hours since the injury the patient has received 2 litres of normal saline. His current blood pressure is 100/60 mmHg and pulse rate is 80 bpm.

iii. Assuming the patient weights 70kg, calculate the patient's fluid requirements for the first 24 hours. Show your calculation. (2 marks)

iv. Prescribe your fluid treatment for your patient. (2 marks)

INTRAVENOUS FLUID PRESCRIPTION chart

Fluid	Additives	Rate ml/hr

v. List four (4) measures for monitoring adequate of fluid resuscitation. (4 marks)

1 _____

2 _____

3 _____

4 _____

vi. List five (5) indications for transfer of any patient to a burns unit. (5 marks)

1 _____

2 _____

3 _____

4 _____

5 _____

iv. The patient's mother has arrived. List three (3) facts you need to convey to the family. (3 marks)

1 _____

2 _____

3 _____

A 2 year old girl presents to your tertiary ED with burns after pulling a pot of boiling water from a stove. The incident occurred 20 minutes ago. Her distraught mother brought her straight to ED.

Her photo is shown in PROPS BOOKET ; Page 4.

Her vital signs on arrival:

HR	150	/min
BP	90/50	mmHg
Sats	95 %	RA
RR	35	/min
Wt	10 Kg	

a) State five (5) initial steps in your management of the burnt area over the next 20 min. (5 marks)

1. _____
2. _____
3. _____
4. _____
5. _____



b) State your IV fluid management for this patient, assuming 12% Total Body Surface Area burned (7 marks).

	Calculation	Rate	Fluid
Resuscitation		Initial Subsequent	
Maintenance			

A rural GP has contacted your Emergency Department requesting management advice for a patient who has sustained flame burns to his legs. The GP estimates the burns are mixed partial and full thickness. The GP has faxed a BSA chart to you the areas of burn are shaded in grey.

a. Estimate the patient's BSA% of burn (1 Mark)

b. List the 3 components required to calculate the estimated burns resuscitation fluid regime for this patient (3 Marks)

1.

2.

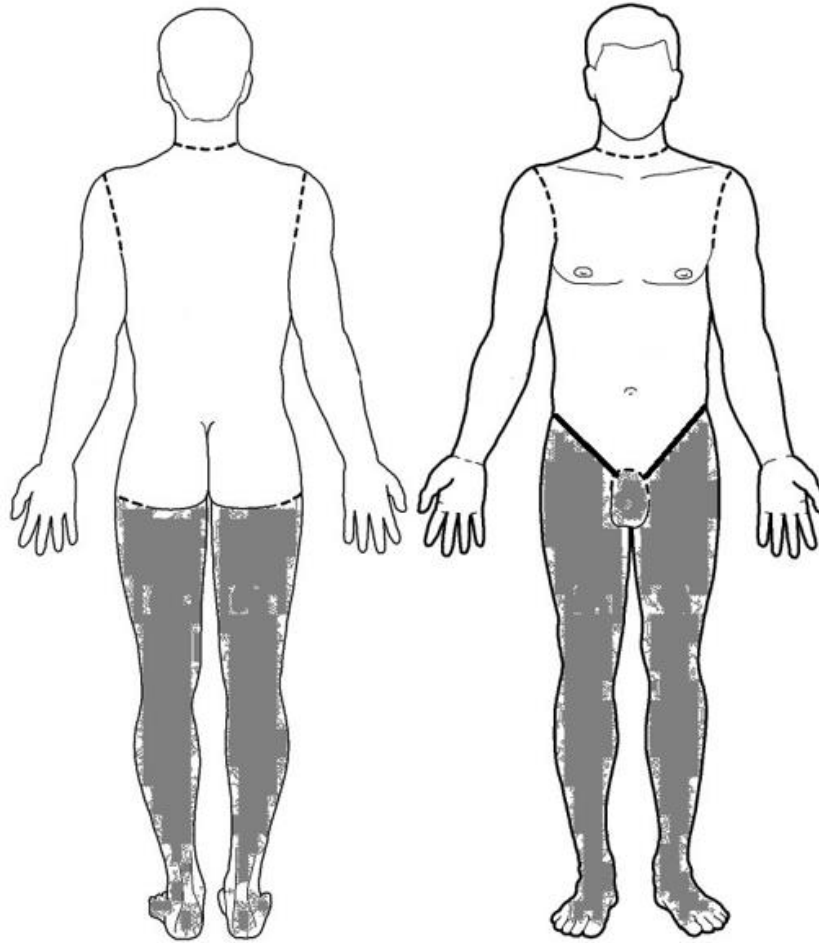
3.

c. You calculate the patient's estimated burns resuscitation volume to be 11840 mls crystalloid. The patient's burn occurred 1 hour ago. What regime would you give the GP to deliver this fluid volume? (4 Marks)

d. List 2 end points useful in assessing adequacy of burns fluid resuscitation (2 Marks)

1.

2.



A 15 yr old male has been brought to your Emergency Department having sustained a burn from a camp fire.

a. List 10 indications for Burns Centre referral (5 Marks)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

b. List 10 complications associated with burn injuries (5 Marks)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

An 18 year old man is transferred by ambulance to your rural emergency department after a self inflicted burn injury. Two hours ago the patient set himself alight with petrol after a fight with his girlfriend. He was intubated at the scene by the intensive care paramedic.

A clinical photograph is shown in the **PROPS BOOKLET; PAGE 7**.

a) State four (4) important features of these burns. (4 marks)

1. _____
2. _____
3. _____
4. _____

b) List four (4) predictable important complications of this injury. (4 marks)

1. _____
2. _____
3. _____
4. _____



After a thorough examination, you calculate his percentage of body surface area involved to be 80%. During the two hours since the injury the patient has received 2 litres of normal saline. His current blood pressure is 100/60 mmHg and pulse rate is 80 bpm.

c) Assuming the patient weights 70kg, calculate the patient's fluid requirements for the first 24 hours. Show your calculation. (2 marks)

d) Prescribe your fluid treatment for your patient for the first 8 hours ? (4 marks)

Date	Fluid	Additives	Rate ml/hr

e) List four (4) measures for monitoring adequate of fluid resuscitation. for this patient (4 marks)

1. _____
2. _____
3. _____
4. _____

You are the duty consultant in charge of an urban ED. A 55 year old gentleman is brought to your resuscitation bay after being rescued after the gas from a barbeque exploded in his face. His estimated weight is 80 kg.



1. List 5 clinical signs and symptoms you would actively look for in this patient (2.5 marks).

- i. _____
- ii. _____
- iii. _____
- iv. _____
- v. _____

2. List 5 investigations you would perform in this patient (2.5 marks).

- i. _____
- ii. _____
- iii. _____
- iv. _____
- v. _____

On exposure of the patient you estimate he has sustained **10%** deep dermal burns.

3. Calculate this patient's fluid requirements in the first 8 hours. Show working. (1 mark)

4. List 8 criteria requiring transfer to a specialised burns unit (4 marks).

- i. _____
- ii. _____
- iii. _____
- iv. _____
- v. _____
- vi. _____
- vii. _____
- viii. _____

A 53 year old female had a syncopal episode and collapsed onto an electric heater. She sustained a facial burn. She is now haemodynamically stable and GCS 15.

You are in a rural ED.

A CLINICAL IMAGE IS SHOWN IN THE PROPS BOOKLET, PAGE 13

i. List 4 issues to consider in your assessment of this patient (4 marks)

ii. How would you describe this burn to the burns registrar on call at the tertiary hospital (2 marks)

iii. Outline 4 issues in the management of this burn (4 marks)

iv. List 2 possible adverse sequelae from this burn (2 marks)

