

FExNet 2026

Collated SAQs: Trauma — Chest, Abdomen & Pelvis

QUESTION BOOKLET

22 short-answer questions covering thoracic, abdominal, and pelvic trauma — chest wall and pleural injuries, pulmonary parenchymal injuries, aortic and cardiac trauma, solid-organ and hollow-viscus injury, pelvic ring disruption, massive transfusion, and damage-control resuscitation. Stems are written in detailed prose with abbreviations spelt out in full on first use; sub-questions labelled a) b) c) state the required number of responses.

22 questions • 236 marks

ACEM-aligned format. Sub-questions labelled a) b) c). Mark allocations indicative; references cited in the Answer Booklet. Question and answer indexes are clickable.

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Question 1 | Tension Pneumothorax (12 marks)

A 32-year-old man is brought to your emergency department by ambulance after a high-speed motor vehicle collision in which he was the restrained driver. He has been intubated in the field for severe respiratory distress and a Glasgow Coma Score of 8. On primary survey, he has asymmetrical chest rise with reduced air entry on the left side, distended neck veins, and tracheal deviation to the right. His vital signs deteriorate during your assessment to a heart rate of 130 beats per minute and a systolic blood pressure of 70 millimetres of mercury, with peripheral oxygen saturation of 88 percent on 100 percent oxygen via the bag-valve circuit. The assistant is having increasing difficulty bag-ventilating the patient with rising peak inspiratory pressures.

- a)** List 4 clinical features that confirm tension pneumothorax in a ventilated trauma patient. (4 marks)

- b)** Describe the immediate decompression procedure (4 components: indication, anatomical landmarks, technique, alternative sites). (4 marks)

- c)** List 4 differential diagnoses for unilateral absent breath sounds in a ventilated trauma patient. (4 marks)

Question 2 | Penetrating Chest Wound — Sucking Chest Injury (11 marks)

A 6-year-old boy is brought to your urban emergency department by ambulance after a domestic incident at home where his older brother accidentally fired a knitting needle at him from a homemade rubber-band launcher. The needle penetrated his right anterior chest wall in the fourth intercostal space, mid-clavicular line. On arrival, the child is alert but distressed, and you can hear an audible sucking noise through the chest wound on inspiration. His respiratory rate is 40 breaths per minute, heart rate 160 beats per minute, blood pressure 60 millimetres of mercury systolic, peripheral oxygen saturation 98 percent on room air.

a) Name the injury AND describe the underlying physiological problem (3 marks). (3 marks)

b) List 4 immediate management priorities. (4 marks)

c) List 4 possible complications of penetrating chest trauma in this anatomical location. (4 marks)

Question 3 | Cardiac Tamponade — Penetrating Chest Trauma (12 marks)

A 25-year-old man presents to the emergency department having sustained a single stab wound to the precordium during an altercation thirty minutes earlier. On arrival, he is anxious and dyspnoeic with cool peripheries. His heart rate is 130 beats per minute, blood pressure 78 millimetres of mercury systolic with a narrow pulse pressure, respiratory rate 28 breaths per minute, peripheral oxygen saturation 96 percent on room air, Glasgow Coma Score 14. His neck veins are distended despite hypotension, and heart sounds are difficult to auscultate over the precordium. A bedside subxiphoid ultrasound view demonstrates a moderate pericardial effusion with right ventricular diastolic collapse.

- a)** List the 3 components of Beck's triad AND state which feature in this patient is the most specific. (3 marks)

- b)** State 4 immediate management priorities. (4 marks)

- c)** List 5 indications for emergency department (resuscitative) thoracotomy. (5 marks)

Question 4 | Massive Haemothorax (11 marks)

A 27-year-old female restrained driver is brought to your tertiary emergency department after a head-on motor vehicle collision at high speed. On arrival, she is alert, complaining of severe left-sided chest pain. Her heart rate is 130 beats per minute, blood pressure 85 millimetres of mercury systolic, respiratory rate 32 breaths per minute, peripheral oxygen saturation 92 percent on a non-rebreather mask. On examination, the trachea is central, but the left hemithorax is dull to percussion with absent breath sounds. A chest radiograph confirms complete opacification of the left hemithorax. A 32-French intercostal catheter is inserted into the fifth intercostal space, mid-axillary line, with immediate drainage of 1500 millilitres of blood.

a) Define massive haemothorax AND state 2 indications for emergency thoracotomy in this patient. (3 marks)

b) List 4 likely sources of bleeding in massive haemothorax. (4 marks)

c) State 4 management priorities while transferring to theatre. (4 marks)

Question 5 | Flail Chest and Pulmonary Contusion (11 marks)

A 65-year-old woman is brought to the emergency department by ambulance after she fell approximately four metres from her roof while clearing leaves. She complains of severe right-sided chest pain that is worse with respiration, and she is unable to take a deep breath. Her medical history includes chronic obstructive pulmonary disease and atrial fibrillation, for which she takes apixaban. On arrival, she is alert, with a respiratory rate of 32 breaths per minute, peripheral oxygen saturation 89 percent on room air rising to 94 percent on 6 litres oxygen via Hudson mask, heart rate 120 beats per minute, blood pressure 130/85 millimetres of mercury. On inspection of her chest, you observe paradoxical movement of a segment of the right anterolateral chest wall.

- a)** Define flail chest AND state the underlying physiological mechanism of respiratory compromise. (3 marks)

- b)** List 4 specific concerns regarding management of this patient given her age and comorbidities. (4 marks)

- c)** List 4 components of multimodal analgesia for rib fractures in this patient. (4 marks)

Question 6 | Blunt Traumatic Aortic Injury (11 marks)

A 45-year-old male restrained driver is brought to your tertiary emergency department by helicopter retrieval after being involved in a head-on motor vehicle collision at approximately 100 kilometres per hour. He was extricated from significant vehicle deformity. On arrival, he is conscious with a Glasgow Coma Score of 15 but is complaining of severe interscapular back pain. His heart rate is 110 beats per minute, blood pressure 175/105 millimetres of mercury in the right arm but 140/90 millimetres of mercury in the left arm. The supine chest radiograph shows a widened mediastinum, obscured aortic knob, and depression of the left main bronchus.

a) List 5 chest radiograph features suggesting blunt thoracic aortic injury. (5 marks)

b) Name the anatomical site of injury most commonly involved AND state the imaging modality of choice. (3 marks)

c) State 3 management priorities while awaiting definitive operative or endovascular repair. (3 marks)

Question 7 | Diaphragmatic Rupture (10 marks)

A 28-year-old male restrained passenger has been brought to your emergency department after a side-impact motor vehicle collision. On arrival he is alert with a Glasgow Coma Score of 15, complaining of left shoulder-tip pain and shortness of breath. His vital signs are: heart rate 110 beats per minute, blood pressure 118/72 millimetres of mercury, respiratory rate 26 breaths per minute, peripheral oxygen saturation 94 percent on room air. On chest auscultation, breath sounds are reduced on the left side and you faintly hear bowel sounds in the left thorax. Chest radiograph shows an irregular elevated left hemidiaphragm with what appears to be a gastric bubble in the left thorax.

a) List 4 chest radiograph features suggesting diaphragmatic rupture. (4 marks)

b) List 3 reasons that diaphragmatic rupture is often missed in the acute phase. (3 marks)

c) State 3 management principles. (3 marks)

Question 8 | Pelvic Fracture — Haemodynamically Unstable (13 marks)

A 22-year-old male motorcyclist is brought to your tertiary emergency department after a high-speed collision with a tree. He is conscious but groaning with severe lower abdominal and pelvic pain. He is tachycardic and hypotensive despite paramedic-administered intravenous crystalloid and one unit of packed red cells. On arrival his heart rate is 140 beats per minute, blood pressure 70 millimetres of mercury systolic, respiratory rate 28 breaths per minute, peripheral oxygen saturation 96 percent on high-flow oxygen. The trauma team has applied a pelvic binder pre-hospital. Pelvic radiograph in the resuscitation bay shows widening of the pubic symphysis with vertical shear of the right hemipelvis. The extended focused assessment with sonography in trauma (extended FAST) is negative for free fluid, and the chest radiograph is unremarkable.

a) List 4 sources of pelvic haemorrhage AND state the predominant vascular source. (4 marks)

b) List 5 management priorities for haemodynamically unstable pelvic fracture. (5 marks)

c) Compare ADVANTAGES and DISADVANTAGES of operative (packing/external fixation) vs angiographic (embolisation) management — list 1 of each. (4 marks)

Question 9 | Bladder and Urethral Injury (10 marks)

A 35-year-old male is brought to your emergency department after a high-speed motor vehicle collision. Examination reveals an unstable pelvic ring fracture, blood at the urethral meatus, scrotal haematoma, and a high-riding prostate on rectal examination. He is complaining of suprapubic pain and an inability to void.

a) List 3 examination findings supporting urethral injury. (3 marks)

b) Name the imaging investigation of choice AND describe the procedure. (3 marks)

c) List 4 management priorities for confirmed urethral disruption. (4 marks)

Question 10 | Blunt Splenic Injury (11 marks)

A 28-year-old male is brought to your emergency department after a high-speed motor vehicle collision. He was the restrained driver. He complains of left upper quadrant abdominal pain and left shoulder-tip pain. On primary survey, his airway is patent, breath sounds are equal bilaterally, and his vital signs are: heart rate 105 beats per minute, blood pressure 115/75 millimetres of mercury, respiratory rate 22, peripheral oxygen saturation 98 percent on room air, Glasgow Coma Score 15. The extended FAST examination shows free fluid in the splenorenal recess. Computed tomography of the abdomen with intravenous contrast demonstrates a grade 3 splenic laceration (parenchymal laceration involving trabecular vessels) with moderate haemoperitoneum but no contrast blush.

a) Describe the AAST splenic injury grading scale (grades 1-5). (4 marks)

b) List 4 criteria for non-operative management. (4 marks)

c) List 3 considerations following splenectomy. (3 marks)

Question 11 | Blunt Hepatic Injury (11 marks)

A 23-year-old male presents to your emergency department after falling from a first-floor balcony onto concrete. He is intoxicated. He is complaining of isolated abdominal pain. His vital signs on arrival: heart rate 130 beats per minute, blood pressure 80/60 millimetres of mercury, respiratory rate 26, peripheral oxygen saturation 91 percent on room air, Glasgow Coma Score 15. Bedside extended FAST examination demonstrates significant free fluid in Morison's pouch. After resuscitation with one litre of 0.9 percent saline and two units of packed red cells, his blood pressure improves to 105/65. Computed tomography of the abdomen with contrast shows a grade 4 hepatic laceration involving 50 percent of the right lobe with active extravasation, and approximately 1500 millilitres of haemoperitoneum.

a) List 4 'most abnormal' features you would expect to see on this CT. (4 marks)

b) List 5 clinical goals you are aiming for whilst awaiting definitive management AND state the intervention to achieve each. (5 marks)

c) List 2 indications for emergency operative intervention (laparotomy) over angiographic embolisation. (2 marks)

Question 12 | Penetrating Abdominal Trauma (11 marks)

A 32-year-old man is brought to your emergency department after sustaining a single stab wound to the left lower abdomen during an altercation. The wound is located in the left iliac fossa, is approximately 3 centimetres in length, and there is some omentum protruding through the wound. He is alert, haemodynamically stable with heart rate 92 beats per minute and blood pressure 128/78 millimetres of mercury, but is complaining of significant abdominal pain with guarding on examination.

a) List 4 indications for immediate laparotomy in penetrating abdominal trauma. (4 marks)

b) List 4 imaging or bedside investigations that may guide management in a haemodynamically stable patient with a stab wound (when laparotomy is not immediately indicated). (4 marks)

c) List 3 immediate management priorities. (3 marks)

Question 13 | Focused Assessment with Sonography in Trauma (FAST) (10 marks)

A 23-year-old female is brought to your emergency department following a high-speed motor vehicle collision. She has normal vital signs but tenderness in the right upper quadrant abdomen with no peritoneal signs. The secondary survey reveals no other injuries. An abdominal focused assessment with sonography in trauma examination is performed.

a) Outline the role of FAST in haemodynamically stable blunt abdominal trauma. (3 marks)

b) List 4 limitations of FAST in trauma. (4 marks)

c) List 3 advantages AND 3 disadvantages of whole-body computed tomography ('pan scan') in trauma. (3 marks)

Question 14 | Damage Control Resuscitation (12 marks)

A 32-year-old male has been involved in a high-speed motor vehicle collision. He is intubated on arrival with severe respiratory distress and obvious chest, abdominal, and pelvic injuries. The pre-hospital team has performed bilateral finger thoracostomies and given two units of packed red cells. His vital signs: heart rate 117 beats per minute, blood pressure 110/60 millimetres of mercury, peripheral oxygen saturation 96 percent on 100 percent inspired oxygen, temperature 35.7 degrees Celsius. Initial venous blood gas: pH 7.18, base excess -8, lactate 4.5 mmol/L, ionised calcium 0.78.

- a)** Define the 'lethal triad' of trauma AND describe how each component perpetuates the others. (4 marks)

- b)** List the 4 principles of damage control resuscitation. (4 marks)

- c)** List 4 specific measures to address coagulopathy in this patient. (4 marks)

Question 15 | Blunt Renal Trauma (9 marks)

A 26-year-old man is brought to your emergency department after he was thrown from his horse landing on his right flank. He has visible right flank bruising, marked tenderness over the right costovertebral angle, and macroscopic haematuria. His vital signs are stable. Computed tomography shows a grade 4 right renal laceration involving the collecting system with moderate perinephric haematoma, but no contrast extravasation.

a) List 3 indications for surgical exploration in renal trauma. (3 marks)

b) List 3 management options for non-operative renal injury. (3 marks)

c) List 3 complications of renal trauma. (3 marks)

Question 16 | Hollow Viscus Injury (10 marks)

A 38-year-old woman is brought to your emergency department after a high-speed motor vehicle collision in which she was the restrained driver. Her seatbelt had a transverse abrasion across her abdomen ('seatbelt sign'). On arrival 1 hour post-injury, she is haemodynamically stable but has progressively increasing diffuse abdominal pain. The first computed tomography of abdomen with contrast performed 30 minutes after arrival showed only mesenteric stranding and a small amount of free fluid between bowel loops, but no organ injury. Six hours later she develops generalised peritonism.

- a)** List 4 computed tomography findings that should raise concern for hollow-viscus or mesenteric injury. (4 marks)

- b)** Explain why hollow-viscus injury is often missed on early computed tomography. (3 marks)

- c)** State 3 management priorities for delayed presentation of bowel perforation. (3 marks)

Question 17 | Tracheobronchial Injury (10 marks)

A 35-year-old man is brought to your emergency department after a high-energy chest crush injury when a metal beam fell across his anterior chest. He arrives intubated by paramedics and on positive pressure ventilation. Despite an apparently well-positioned endotracheal tube, he has a continuous large air leak from his right intercostal catheter, and his peripheral oxygen saturation remains at 89 percent on 100 percent inspired oxygen. There is significant subcutaneous emphysema extending from his neck to his lower abdomen.

a) List 4 clinical or radiological features suggesting major tracheobronchial injury. (4 marks)

b) Name the diagnostic investigation of choice AND state what it should evaluate. (3 marks)

c) List 3 ventilation modifications for management. (3 marks)

Question 18 | Blunt Cardiac Injury (10 marks)

A 45-year-old male restrained driver was involved in a head-on motor vehicle collision. He arrives with anterior chest wall bruising in a pattern consistent with steering-wheel impact. Despite adequate volume resuscitation, he remains hypotensive (blood pressure 95/60 millimetres of mercury), tachycardic at 110 beats per minute, and has new-onset atrial fibrillation on his electrocardiogram. His chest radiograph and extended FAST for haemothorax/pneumothorax/tamponade are unremarkable. Troponin is 0.45 (normal less than 0.04).

a) List 4 manifestations of blunt cardiac injury. (4 marks)

b) List 3 investigations to assess blunt cardiac injury. (3 marks)

c) State 3 management priorities. (3 marks)

Question 19 | Paediatric Thoracoabdominal Trauma (10 marks)

A 7-year-old girl (estimated weight 22 kilograms) was a restrained passenger in a moderate-speed motor vehicle collision. She is brought to your tertiary emergency department complaining of right upper quadrant abdominal pain. Her vital signs are: heart rate 130 beats per minute, blood pressure 90/55 millimetres of mercury, respiratory rate 28 breaths per minute, peripheral oxygen saturation 99 percent on room air. Computed tomography shows a grade 2 hepatic laceration with small haemoperitoneum.

- a)** List 4 anatomical and physiological differences in paediatric trauma compared to adults. (4 marks)

- b)** Calculate this child's resuscitation parameters: fluid bolus volume, blood transfusion volume, and tranexamic acid dose. (3 marks)

- c)** State 3 considerations specific to paediatric non-operative management of solid-organ injury. (3 marks)

Question 20 | Major Trauma in Pregnancy (11 marks)

A 28-year-old woman at 30 weeks gestation has been brought to your tertiary emergency department by ambulance after a high-speed motor vehicle collision. She was the restrained driver and the airbag deployed. She is conscious with a Glasgow Coma Score of 15 but is reporting severe abdominal pain and a small amount of vaginal bleeding. Her vital signs: heart rate 120 beats per minute, blood pressure 100/80 millimetres of mercury, respiratory rate 24 breaths per minute, peripheral oxygen saturation 95 percent on room air, temperature 37.0 degrees Celsius. Examination reveals a tense, tender uterus and a transverse seatbelt mark across her gravid abdomen.

a) List 4 management priorities specific to trauma in pregnancy. (4 marks)

b) List 4 examination findings supporting placental abruption. (4 marks)

c) List 3 indications for emergency / perimortem Caesarean delivery in the trauma setting. (3 marks)

Question 21 | Abdominal Compartment Syndrome (10 marks)

A 42-year-old man, day 1 post-emergency damage-control laparotomy with abdominal packing for severe intra-abdominal haemorrhage, has been transferred to your intensive care unit. Despite ongoing resuscitation his haemodynamic status is deteriorating. Over the past 4 hours his urine output has dropped to less than 20 millilitres per hour, peak airway pressures have risen from 28 to 42 centimetres of water, his abdomen is tense and distended, and his bladder pressure (intra-abdominal pressure) is measured at 24 millimetres of mercury.

a) Define abdominal compartment syndrome AND state the diagnostic threshold. (3 marks)

b) List 4 organ-system manifestations. (4 marks)

c) List 3 management options. (3 marks)

Question 22 | Mass Casualty Field Triage (10 marks)

You are the duty trauma director. Pre-hospital control informs you that a multi-vehicle pile-up on the freeway has produced 8 confirmed casualties. The first three are arriving at your emergency department in 10 minutes: Patient A: A 35-year-old female with a bilateral femur fracture and pelvic fracture; conscious; heart rate 130 beats per minute; blood pressure 80/50. Patient B: A 48-year-old male with an obvious flail chest; respiratory rate 38; peripheral oxygen saturation 86 percent. Patient C: An 18-year-old male with isolated wrist fracture; vitals normal.

- a)** Assign field triage category (red / yellow / green / black) to each patient AND justify briefly. (4 marks)

- b)** List 3 ED preparation actions on receiving the pre-hospital notification. (3 marks)

- c)** State the principles of mass-casualty triage that differ from routine emergency department care. (3 marks)
