

FExNet 2026

Collated SAQs: Trauma in Special Circumstances

QUESTION BOOKLET

22 short-answer questions covering trauma in special populations and environments — thermal/chemical/electrical burns, environmental injury (drowning, hypothermia, heat stroke), hanging, ocular trauma, special populations (pregnancy, elderly, bariatric, paediatric NAI), pre-hospital retrieval, crush injury, and diving emergencies. 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 • 230 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 | Burns — Initial Assessment and Fluid Resuscitation (12 marks)

A 55-year-old man weighing 80 kilograms is brought by ambulance to your urban emergency department after a domestic barbecue gas explosion. He has flame burns to his face, anterior trunk, and circumferentially around both upper limbs. He is conscious with a Glasgow Coma Score of 15 but is hoarse, has soot in his nostrils, and has a brassy cough. His vital signs are: heart rate 115 beats per minute, blood pressure 130/80 millimetres of mercury, respiratory rate 28 breaths per minute, peripheral oxygen saturation 96 percent on a non-rebreather mask, temperature 36.4 degrees Celsius.

- a)** Calculate this patient's percentage total body surface area burnt using the Wallace 'rule of nines' (face = 4.5, anterior trunk = 18, each upper limb = 9 percent in adults). (3 marks)

- b)** Calculate fluid resuscitation requirements using the modified Parkland formula AND state the rate for the first 8 hours. (3 marks)

- c)** List 6 criteria from ANZBA for transfer to a specialist burns centre. (6 marks)

Question 2 | Inhalational Injury and Airway Burns (11 marks)

A 25-year-old firefighter is brought to your tertiary emergency department after being pulled unconscious from a house fire. He has been exposed to smoke for approximately 10 minutes. On arrival, his Glasgow Coma Score is 12 (E3 V4 M5), heart rate 105 beats per minute, blood pressure 120/60 millimetres of mercury, respiratory rate 28 breaths per minute, peripheral oxygen saturation 95 percent on 15 litres oxygen via non-rebreather mask. He has burns to his face and circumferential burns to his neck, with carbonaceous sputum, hoarse voice, and singed nasal hairs.

a) List 5 examination features that indicate an airway-threatening burn. (5 marks)

b) List 4 specific considerations when intubating this patient. (4 marks)

c) List 2 specific toxin-mediated injuries to consider AND state the antidote for each. (2 marks)

Question 3 | Circumferential Burns and Escharotomy (10 marks)

A 42-year-old man has been transferred to your tertiary centre 6 hours after sustaining 35 percent total body surface area flame burns including circumferential deep partial-thickness burns to both upper limbs and the entire anterior trunk. He has been adequately fluid-resuscitated and intubated. You note that his right upper limb is becoming cool, pulseless, and swollen, with progressive loss of capillary refill in the fingers. His ventilator pressures are rising (peak inspiratory pressure 38 cm H₂O on volume control).

a) List 3 indications for escharotomy. (3 marks)

b) Describe the technique for upper-limb escharotomy. (4 marks)

c) List 3 complications of escharotomy. (3 marks)

Question 4 | Chemical Burns (11 marks)

A 32-year-old industrial worker is brought to your emergency department after a 5-litre container of concentrated hydrofluoric acid spilled over his right forearm and hand at work approximately 30 minutes ago. He has had cold-water irrigation at the scene for 20 minutes. He is now complaining of severe, deep, throbbing pain disproportionate to the visible skin injury. There is mild erythema over his right forearm but no obvious burn. His vital signs are: heart rate 95 beats per minute, blood pressure 130/85 millimetres of mercury, respiratory rate 18 breaths per minute.

- a)** Explain the unique mechanism of injury for hydrofluoric acid AND the clinical relevance. (3 marks)

- b)** State 5 management priorities specific to hydrofluoric acid burns. (5 marks)

- c)** List 3 differences in management of acid versus alkali burns. (3 marks)

Question 5 | High-Voltage Electrical Injury (12 marks)

A 36-year-old male electrician is brought to your emergency department after being electrocuted by an 11,000-volt power line. He was thrown approximately 8 metres against a metal panel. Bystander cardiopulmonary resuscitation was performed immediately; ambulance crew found him in ventricular fibrillation and successfully defibrillated to return of spontaneous circulation after a down-time of approximately 20 minutes. He is now intubated and ventilated. On arrival his vital signs are: heart rate 84 beats per minute, blood pressure 145/90 millimetres of mercury, respiratory rate 15 breaths per minute (mandatory), peripheral oxygen saturation 98 percent on hand-bag ventilation. He has entry wounds on his right hand and exit wounds on his left foot.

a) List 4 factors that determine the severity of electrical injury. (4 marks)

b) List 4 organ-system injuries in this patient AND state the pathophysiological mechanism for each. (4 marks)

c) State 4 specific management priorities beyond standard trauma care. (4 marks)

Question 6 | Lightning Strike Injury (9 marks)

A 28-year-old male is brought to your regional emergency department after being struck by lightning while sheltering under a tree during a thunderstorm. He had cardiopulmonary arrest at the scene and received 5 minutes of bystander cardiopulmonary resuscitation before return of spontaneous circulation. On arrival, he is conscious but confused. His vital signs are: heart rate 110 beats per minute, blood pressure 140/85 millimetres of mercury, respiratory rate 22 breaths per minute, peripheral oxygen saturation 96 percent on 8 litres oxygen via Hudson mask, temperature 36.0 degrees Celsius. Examination shows feathery (Lichtenberg) marks across the right side of his chest, ruptured tympanic membrane on the right, and mild left-sided motor weakness.

- a)** Explain why the 'reverse triage' concept applies to lightning strike with multiple casualties. (3 marks)

- b)** List 3 specific injury patterns of lightning strike. (3 marks)

- c)** List 3 management priorities. (3 marks)

Question 7 | Accidental Hypothermia (11 marks)

A 65-year-old man with a history of alcohol use disorder is brought to your emergency department by ambulance after being found unresponsive in a snow-covered drainage ditch following an evening of drinking. The ambient temperature was -2 degrees Celsius. He has been outside for an estimated 6 hours. On arrival, his core (oesophageal) temperature is 26 degrees Celsius. He is unresponsive (Glasgow Coma Score 4), with a slow regular heart rate of 30 beats per minute, blood pressure 70 millimetres of mercury systolic by Doppler, respiratory rate 6 breaths per minute (shallow). His pupils are mid-sized, sluggishly reactive.

- a)** State the Swiss Staging classification for hypothermia AND the stage applicable to this patient. (3 marks)

- b)** List 5 management priorities for severe hypothermia (drug, dose, technique). (5 marks)

- c)** State the principle 'no one is dead until warm and dead' AND give 3 indications to terminate resuscitation. (3 marks)

Question 8 | Drowning / Submersion Injury (11 marks)

A 23-year-old woman was rescued by surf lifesavers from rough surf after submersion of approximately 5 minutes. Bystander cardiopulmonary resuscitation was commenced. On arrival to your tertiary emergency department, she remains intubated. Her vital signs are: heart rate 65 beats per minute, blood pressure 100/60 millimetres of mercury, peripheral oxygen saturation 90 percent on 100 percent inspired oxygen with positive end-expiratory pressure of 5 centimetres of water, temperature 33 degrees Celsius. Her chest radiograph shows bilateral patchy infiltrates.

a) List 4 components of immediate emergency department management. (4 marks)

b) List 4 prognostic factors. (4 marks)

c) Describe 3 specific complications of drowning to anticipate. (3 marks)

Question 9 | Exertional Heat Stroke (10 marks)

A 42-year-old male athlete is brought to your emergency department from a marathon run on a hot summer day (ambient temperature 38 degrees Celsius, high humidity). He collapsed at the 35-kilometre mark and was confused and combative on arrival of the ambulance. On examination in your resuscitation bay, his core temperature (per oesophageal probe) is 41.2 degrees Celsius, heart rate 150 beats per minute, blood pressure 95/55 millimetres of mercury, respiratory rate 32 breaths per minute, peripheral oxygen saturation 96 percent on room air, Glasgow Coma Score 12 (E3 V3 M6). His skin is hot and dry.

a) Distinguish heat exhaustion from heat stroke (state 3 differentiating features). (3 marks)

b) State 4 cooling techniques in order of preference for exertional heat stroke. (4 marks)

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

Question 10 | Hanging and Strangulation (10 marks)

A 35-year-old woman presents to your emergency department after being found by a friend with a ligature around her neck (suspected suicide attempt). She was cut down within an estimated 2-3 minutes and was reported as having brief cardiac arrest with bystander cardiopulmonary resuscitation. She had return of spontaneous circulation on arrival of the ambulance. On arrival to your emergency department, she has a Glasgow Coma Score of 9 (E2 V2 M5), heart rate 110 beats per minute, blood pressure 110/65 millimetres of mercury, respiratory rate 22 breaths per minute, peripheral oxygen saturation 94 percent on 8 litres oxygen via Hudson mask. There is a horizontal ligature mark on her anterior neck with petechial haemorrhages on her conjunctivae and face.

a) List 4 immediate complications to assess for. (4 marks)

b) List 3 examination findings supporting non-fatal strangulation. (3 marks)

c) List 3 specific investigations to consider beyond standard trauma series. (3 marks)

Question 11 | Globe Rupture and Penetrating Eye Injury (11 marks)

A 45-year-old man presents to your emergency department with right eye pain and reduced vision after a metal-on-metal injury at work involving hammering. He reports a sudden sharp pain in the right eye while hammering. On examination, his right visual acuity is reduced to counting fingers, the pupil is teardrop-shaped (peaked superiorly), there is a dark spot on the cornea, and the anterior chamber appears shallow. Tonometry has not been performed. His left eye examination is normal.

a) List 4 examination features supporting globe rupture / penetrating eye injury. (4 marks)

b) State 4 management priorities — emphasise what you would NOT do. (4 marks)

c) List 3 long-term complications. (3 marks)

Question 12 | Hyphaema After Blunt Eye Trauma (9 marks)

A 22-year-old male presents to your emergency department after being hit in the right eye with a tennis ball during a match approximately 1 hour ago. He complains of pain, blurred vision, and headache. Examination of his right eye reveals blood layered in the anterior chamber occupying the lower one-third of the chamber. Visual acuity is reduced to 6/24. His intraocular pressure is 28 millimetres of mercury (normal 10-21). The pupil reacts sluggishly. There is no obvious globe rupture.

a) Describe the grading of hyphaema AND state the grade applicable to this patient. (2 marks)

b) List 3 examination components beyond the slit-lamp examination. (3 marks)

c) List 4 management priorities. (4 marks)

Question 13 | Chemical Eye Injury (9 marks)

A 28-year-old construction worker presents to your emergency department 15 minutes after sustaining a splash of liquid alkali drain cleaner (pH 13) to his left eye while at work. He has had no first aid since the incident. He reports severe eye pain, blurred vision, and inability to open the eye. Examination of the left eye reveals diffuse conjunctival injection, blepharospasm, and a hazy cornea. The right eye is uninvolved.

a) State 4 immediate management steps in order of priority. (4 marks)

b) Describe 3 features that grade severity (Roper-Hall classification). (3 marks)

c) List 2 long-term complications of severe alkali eye burn. (2 marks)

Question 14 | Geriatric Trauma — Anticoagulated Elderly (11 marks)

An 82-year-old woman from a residential aged-care facility presents to your emergency department after an unwitnessed fall. She has a history of permanent atrial fibrillation (on apixaban), severe osteoarthritis, hypertension, mild dementia, and macular degeneration. On arrival, she is conscious with a Glasgow Coma Score of 14 (E4 V4 M6) — her carer states this is her baseline. She has visible bruising over her left chest wall and complains of pain on inspiration. Her vital signs are: heart rate 100 beats per minute (irregular), blood pressure 110/65 millimetres of mercury, respiratory rate 26 breaths per minute, peripheral oxygen saturation 91 percent on room air, temperature 36.8 degrees Celsius. Examination reveals tenderness over the left lateral chest wall with bony crepitus over ribs 5-9.

a) List 4 specific concerns / vulnerabilities in the elderly trauma patient. (4 marks)

b) List 4 management priorities specific to this patient. (4 marks)

c) List 3 measures for secondary prevention of future falls. (3 marks)

Question 15 | Bariatric Trauma (10 marks)

A 38-year-old male with a body mass index of 52 kilograms per square metre (estimated weight 210 kilograms) is brought to your tertiary emergency department after being involved in a rollover motor vehicle accident. He has obvious facial and chest injuries. He is conscious with a Glasgow Coma Score of 13 (E3 V4 M6), and his vital signs are: heart rate 118 beats per minute, blood pressure 130/80 millimetres of mercury, respiratory rate 26 breaths per minute, peripheral oxygen saturation 88 percent on 15 litres oxygen via non-rebreather mask.

- a)** List 4 ways obesity affects assessment and management of airway and breathing in this patient. (4 marks)

- b)** List 3 considerations for vascular access and fluid resuscitation in this patient. (3 marks)

- c)** List 3 considerations for imaging this patient. (3 marks)

Question 16 | Crush Injury and Compartment Syndrome (11 marks)

A 40-year-old male labourer was trapped under a collapsed concrete wall for 4 hours during a construction-site accident. He has been freed and brought to your emergency department by ambulance. On arrival he is alert with a Glasgow Coma Score of 15. His vital signs are: heart rate 115 beats per minute, blood pressure 105/65 millimetres of mercury, respiratory rate 22 breaths per minute, peripheral oxygen saturation 98 percent on room air, temperature 35.8 degrees Celsius. His left lower limb is markedly swollen, tense, with diminished pedal pulses, severe pain on passive stretch of the toes, and tea-coloured urine in the catheter.

a) List 3 triad components of crush syndrome AND their physiological basis. (3 marks)

b) List 5 immediate management priorities. (5 marks)

c) List 3 features of acute compartment syndrome on examination (the 5 P's — list 3 most reliable). (3 marks)

Question 17 | Trauma in Pregnancy — Retrieval Considerations (11 marks)

You are the on-call retrieval consultant for a state helicopter retrieval service. A 32-year-old woman (known to be 32 weeks pregnant) has been involved in a high-speed motor vehicle collision in a remote area approximately 350 kilometres from the nearest tertiary obstetric service. Local ambulance on scene reports she is conscious (Glasgow Coma Score 14), with heart rate 130 beats per minute, blood pressure 95/65 millimetres of mercury, respiratory rate 26, peripheral oxygen saturation 92 percent on 15 litres oxygen via non-rebreather. She is complaining of abdominal pain and vaginal bleeding. The local hospital has no obstetric or operative service.

a) List 4 specific retrieval considerations for trauma in pregnancy. (4 marks)

b) List 4 phone-based clinical advice priorities to give to the local ambulance / hospital team. (4 marks)

c) State 3 indications for emergency / perimortem caesarean delivery during retrieval / on arrival. (3 marks)

Question 18 | Suspected Non-Accidental Injury — Infant (11 marks)

A 3-month-old infant boy is brought to your emergency department by his father, who states the baby has been sleepy all day and not interested in feeds. He also reports a recent cough and fever. On arrival the infant is pale, quiet, and unresponsive. His vital signs are: heart rate 50 beats per minute, blood pressure 95/50 millimetres of mercury, respiratory rate 14 breaths per minute (poor effort), peripheral oxygen saturation 84 percent on room air, temperature 34.8 degrees Celsius. Faint bruising is noted on the cheeks. Initial computed tomography of the head demonstrates bilateral subdural haematomas of mixed ages and diffuse cerebral oedema.

a) List 4 immediate medical management priorities. (4 marks)

b) List 3 features supporting non-accidental injury (abusive head trauma). (3 marks)

c) Outline 4 management priorities related to non-accidental injury concern (separate from medical management). (4 marks)

Question 19 | Pre-Hospital Triage at Multi-Casualty Scene (12 marks)

You are deployed as a flight medical officer with the state helicopter retrieval service to a road traffic crash approximately 270 kilometres north-west of the regional trauma centre. On arrival less than half an hour later, two patients remain trapped by their legs inside the vehicle. Fire and Rescue and ambulance are in attendance. Patient A: A male in his twenties; pulse 119 beats per minute, capillary refill 5 seconds, respiratory rate 34, Glasgow Coma Score 12, estimated extrication time 15 minutes. Cyanosed. Patient B: A female in her twenties; pulse 98, capillary refill 2 seconds, respiratory rate 46, Glasgow Coma Score 14, estimated extrication time 5 minutes. Eyes closed and screaming.

- a) Decide which patient should be extricated FIRST AND justify your decision. (3 marks)**

- b) List 4 injuries you are concerned that Patient B may have sustained AND state the reason for concern. (4 marks)**

- c) List 5 management priorities for Patient A before extrication / transport (including specific medications and procedures). (5 marks)**

Question 20 | Remote Penetrating Trauma — Telephone Advice (10 marks)

You are the on-call trauma consultant at a tertiary centre. A junior doctor at a small rural hospital (approximately 4 hours by road; 90 minutes by helicopter) telephones for advice. He is treating a 28-year-old male farmer who has been impaled by a metal fence-post through his left posterior chest, with the post still in situ. The patient is conscious, in pain, with vital signs: heart rate 110 beats per minute, blood pressure 105/65 millimetres of mercury, respiratory rate 24 breaths per minute, peripheral oxygen saturation 92 percent on room air. The local hospital has no on-site surgical team.

- a)** List 4 priorities you would advise the rural doctor regarding the impaled object. (4 marks)

- b)** List 3 priorities for stabilisation prior to transfer. (3 marks)

- c)** List 3 logistical / coordination priorities. (3 marks)

Question 21 | Diving Injury — Decompression Illness (9 marks)

A 35-year-old male recreational scuba diver is brought to your emergency department 2 hours after surfacing from a 30-metre dive (multiple deep dives over the previous 3 days). He developed progressive joint pain, fatigue, and confusion approximately 30 minutes after surfacing. On arrival to your emergency department he is alert (Glasgow Coma Score 14, mildly confused), with right shoulder pain, paraesthesia in both lower limbs, and hesitancy on bladder palpation suggesting urinary retention. His vital signs are otherwise stable on room air.

a) Distinguish decompression sickness from arterial gas embolism (3 features). (3 marks)

b) List 3 management priorities. (3 marks)

c) List 3 risk factors for decompression illness. (3 marks)

Question 22 | Trauma Care in a Resource-Limited Setting (9 marks)

You are working as the sole consultant at a small rural hospital with no on-site surgical service when a 32-year-old woman is brought in by family after falling from a ladder while picking fruit on her farm. She has fallen approximately 4 metres onto hard ground. On arrival she is alert with a Glasgow Coma Score of 15 but is complaining of severe back pain and unable to feel or move her legs. Her vital signs are: heart rate 60 beats per minute, blood pressure 85/55 millimetres of mercury, respiratory rate 18 breaths per minute, peripheral oxygen saturation 96 percent on 6 litres oxygen via Hudson mask, temperature 35.5 degrees Celsius. The nearest tertiary centre with neurosurgical service is 4 hours away by road or 90 minutes by helicopter.

a) List 4 immediate priorities specific to suspected spinal cord injury. (4 marks)

b) State 3 priorities for retrieval coordination. (3 marks)

c) List 2 documentation priorities for safe handover. (2 marks)
