

FExNet 2026

Collated SAQs: Neurology and Neurosurgery

QUESTION BOOKLET

22 short-answer questions covering the ACEM Fellowship neurology and neurosurgery curriculum — ischaemic and haemorrhagic stroke, endovascular intervention, subarachnoid haemorrhage, status epilepticus, central nervous system infection, neuromuscular emergencies, vertigo, headache, ventriculo-peritoneal shunt malfunction, spinal cord and cauda equina emergencies, delirium. 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 • 246 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 | Acute Ischaemic Stroke — Thrombolysis (13 marks)

A 65-year-old right-handed man is brought to your tertiary emergency department by ambulance after his wife found him on the floor at home, unable to speak. Symptom onset was witnessed 90 minutes ago. He has a background of treated hypertension and hypercholesterolaemia. On arrival his observations are: heart rate 95 beats per minute (irregular), blood pressure 175/105 millimetres of mercury, respiratory rate 18 breaths per minute, peripheral oxygen saturation 98 percent on room air, blood glucose 6.8 millimoles per litre. Examination reveals right-sided hemiplegia (arm worse than leg), left gaze deviation, global aphasia, and right-sided facial droop. National Institutes of Health Stroke Scale score is 18. Non-contrast computed tomography of the brain shows early ischaemic changes in the left middle cerebral artery territory but no haemorrhage.

a) List 4 risk factors for ischaemic stroke evident or suggested in this case. (4 marks)

b) Name the thrombolytic agent and dose used in ischaemic stroke per current Australian guidelines, AND state the time window. (4 marks)

c) List 5 absolute contraindications to thrombolysis. (5 marks)

Question 2 | Endovascular Clot Retrieval Pathway (11 marks)

You are the on-call emergency consultant at a tertiary trauma and stroke centre. A 62-year-old woman is brought in with right hemiplegia, gaze deviation, and global aphasia. Symptom onset was 3 hours ago. Computed tomography of the brain shows no haemorrhage, with a left middle cerebral artery hyperdense vessel sign and Alberta Stroke Program Early CT score of 8. Computed tomography angiography demonstrates an M1 segment occlusion. The patient has been given alteplase. The interventional radiology team is en route.

- a)** List 5 inclusion criteria for endovascular thrombectomy per current Australian guidelines. (5 marks)

- b)** List 3 stakeholder groups to involve when developing a regional clot-retrieval protocol. (3 marks)

- c)** List 3 information sources to establish current standard of care. (3 marks)

Question 3 | Anticoagulant-Related Intracerebral Haemorrhage (12 marks)

A 70-year-old man with permanent atrial fibrillation (treated with warfarin), ischaemic heart disease, and hypertension is brought to your emergency department by his daughter, who reports increasing confusion over 1 week. Examination reveals a Glasgow Coma Score of 13 (E3 V4 M6), heart rate 90 beats per minute (irregular), blood pressure 160/95 millimetres of mercury, respiratory rate 18 breaths per minute. Non-contrast computed tomography of the brain shows bilateral hyperdense crescent-shaped collections in the subdural space (the right side larger than the left) with effacement of cortical sulci and 5 millimetres of midline shift. International normalised ratio is 7.1.

a) State the diagnosis AND list 3 supportive imaging features. (3 marks)

b) State the warfarin reversal regimen with drug, dose, and target endpoint. (5 marks)

c) List 4 management priorities while awaiting neurosurgical review. (4 marks)

Question 4 | Subarachnoid Haemorrhage — Diagnostic Pathway (11 marks)

A 36-year-old woman presents to your emergency department complaining of a sudden, severe occipital headache that began 5 hours ago while she was at the gym. The headache reached maximum intensity within 1 minute of onset (thunderclap) and has been associated with photophobia and one episode of vomiting. She has no significant past medical history. Her vital signs are: heart rate 75 beats per minute, blood pressure 142/85 millimetres of mercury, respiratory rate 16 breaths per minute, peripheral oxygen saturation 98 percent on room air, temperature 36.8 degrees Celsius. Glasgow Coma Score is 15. Neurological examination is non-focal. Non-contrast computed tomography of the brain performed by your registrar has been reported as normal.

a) Describe the Ottawa Subarachnoid Haemorrhage Rule AND state how it is used. (5 marks)

b) List 2 next-step investigation options AND a pro and con of each. (4 marks)

c) Name the 2 red-cell breakdown products that cause yellow discolouration (xanthochromia) of cerebrospinal fluid. (2 marks)

**Question 5 | Subarachnoid Haemorrhage — Management and Complications
(12 marks)**

A 50-year-old woman has been brought to your tertiary emergency department after a witnessed collapse at work, preceded by complaint of a severe headache. Glasgow Coma Score is now 8 (E2 V2 M4). She has been intubated. Her vital signs are: heart rate 115 beats per minute, blood pressure 200/110 millimetres of mercury, peripheral oxygen saturation 90 percent on fraction of inspired oxygen 0.8. Computed tomography of the brain shows hyperdense material in basal cisterns, sylvian fissures, and ventricular system, consistent with diffuse subarachnoid haemorrhage with intraventricular extension.

- a)** State the World Federation of Neurosurgical Societies grading scale for subarachnoid haemorrhage AND state the grade for this patient. (5 marks)

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

- c)** List 2 acute pulmonary complications of subarachnoid haemorrhage. (2 marks)

Question 6 | Adult Status Epilepticus (12 marks)

A 35-year-old woman is brought to your emergency department by ambulance after a witnessed prolonged generalised seizure that has been ongoing for 25 minutes. Her medical history is unknown to bystanders. She has received 5 milligrams of intramuscular midazolam by paramedics and 10 milligrams of intravenous diazepam in the resuscitation bay, but she continues to seize. Her vital signs are: heart rate 140 beats per minute, blood pressure 170/95 millimetres of mercury, peripheral oxygen saturation 92 percent on 8 litres oxygen via Hudson mask, temperature 38.5 degrees Celsius. Bedside glucose is 5.6 millimoles per litre.

a) Define convulsive status epilepticus AND state the stepwise pharmacological algorithm. (4 marks)

b) List 5 differential diagnoses for status epilepticus in this previously well woman. (5 marks)

c) List 3 serious complications of prolonged status epilepticus. (3 marks)

Question 7 | First Adult Seizure (11 marks)

A 27-year-old previously healthy woman is brought to your suburban emergency department after a witnessed first-ever generalised tonic-clonic seizure. The seizure was witnessed by her partner and self-resolved after 5 minutes, followed by 30 minutes of post-ictal confusion. She is now alert and orientated. Her vital signs are: heart rate 105 beats per minute, blood pressure 123/84 millimetres of mercury, peripheral oxygen saturation 99 percent on room air, Glasgow Coma Score 15. Neurological examination is non-focal. Bedside glucose is 5.4 millimoles per litre.

a) List 4 causes for a first seizure to consider. (4 marks)

b) List 4 reasons to perform urgent computed tomography of the brain. (4 marks)

c) State 3 components of safe-discharge advice for a first seizure with normal investigation. (3 marks)

Question 8 | Bacterial Meningitis (12 marks)

A 30-year-old woman presents to your emergency department with fever, headache, photophobia, and neck stiffness for 5 days. Her symptoms initially started like an upper respiratory tract infection and have not improved despite oral antibiotics commenced by her general practitioner. On arrival her temperature is 38.8 degrees Celsius, heart rate 110 beats per minute, blood pressure 125/72 millimetres of mercury, respiratory rate 22 breaths per minute, Glasgow Coma Score 15. Examination reveals nuchal rigidity, positive Kernig's and Brudzinski's signs, but no focal neurology and no rash.

a) List 5 contraindications to immediate lumbar puncture. (5 marks)

b) State the empirical IV antibiotic regimen with rationale. (4 marks)

c) List 3 cerebrospinal fluid features that support bacterial meningitis (typical findings). (3 marks)

Question 9 | Viral Encephalitis (10 marks)

A 45-year-old man is brought to your emergency department with 3 days of fever, headache, and progressive confusion. He had a brief generalised seizure in the ambulance. On arrival, his temperature is 38.7 degrees Celsius, heart rate 105 beats per minute, blood pressure 130/80 millimetres of mercury, respiratory rate 22 breaths per minute, peripheral oxygen saturation 96 percent on room air. Glasgow Coma Score is 12 (E3 V3 M6) with no focal neurological deficit but disoriented in time and place. There is no rash, neck stiffness mild.

a) List 4 features distinguishing encephalitis from meningitis. (4 marks)

b) State the empirical management AND list 3 investigations. (4 marks)

c) List 2 considerations for autoimmune encephalitis (non-infective). (2 marks)

Question 10 | Acute Vertigo — Central versus Peripheral (12 marks)

A 60-year-old male with type 2 diabetes mellitus and treated hypertension presents to your emergency department with a 4-hour history of severe rotatory vertigo (described as the room spinning), nausea, and multiple episodes of vomiting. He feels unsteady on his feet and is unable to ambulate. His blood pressure is 175/95 millimetres of mercury; other vital signs are within normal limits. There is no preceding upper respiratory tract infection or recent head injury. He has had no previous episodes of vertigo.

a) Complete the table — list 3 peripheral and 3 central causes of vertigo. (6 marks)

b) Describe the HINTS-plus examination AND state the interpretation indicating a central cause. (4 marks)

c) List 2 indications for advanced imaging (magnetic resonance imaging) in this patient. (2 marks)

Question 11 | Acute Migraine and Cluster Headache (11 marks)

A 33-year-old woman presents to your emergency department with a recurrent severe headache. She describes the pain as throbbing, unilateral on the right side, severity 9/10, with associated nausea, vomiting, and photophobia. She has had similar episodes in the past, occurring approximately once per month, lasting 24-48 hours. She is currently 10 hours into the present episode. Her vital signs are normal. Neurological examination is non-focal.

a) List 4 features supporting migraine. (4 marks)

b) List 5 first-line treatments for migraine, each from a different drug class, with dose. (5 marks)

c) List 2 features distinguishing cluster headache from migraine. (2 marks)

Question 12 | Hypertensive Encephalopathy (11 marks)

A 60-year-old woman presents to your emergency department complaining of a severe gradual-onset headache, blurred vision, and new-onset confusion. Her past medical history includes treated essential hypertension and chronic kidney disease (estimated glomerular filtration rate 35 millilitres per minute). Her vital signs are: heart rate 60 beats per minute, blood pressure 220/130 millimetres of mercury, respiratory rate 20 breaths per minute, peripheral oxygen saturation 96 percent on room air, temperature 37.0 degrees Celsius, Glasgow Coma Score 13 (E3 V4 M6). Computed tomography of the brain shows symmetric vasogenic oedema in the parieto-occipital region but no haemorrhage.

a) Define hypertensive emergency, urgency, AND state the diagnosis here. (3 marks)

b) List 4 antihypertensive options with dose, route, and one advantage of each. (4 marks)

c) State 4 management priorities AND state the blood pressure target. (4 marks)

Question 13 | Guillain-Barré Syndrome (12 marks)

A 26-year-old previously well woman presents to your emergency department with a 10-hour history of gradual onset of bilateral lower-limb weakness, paraesthesia, and low back ache. She has recently returned from a two-week holiday in Spain, during which she had a self-limiting diarrhoeal illness which she attributed to food poisoning. Her vital signs are: heart rate 100 beats per minute, blood pressure 130/80 millimetres of mercury, respiratory rate 36 breaths per minute (shallow), temperature 37.0 degrees Celsius. On examination, she has bilateral symmetric lower-limb weakness with absent ankle and knee reflexes.

a) List 4 differential diagnoses. (4 marks)

b) List 4 features on examination supporting Guillain-Barré syndrome. (4 marks)

c) List 4 monitoring / management priorities (with specific bedside parameters). (4 marks)

Question 14 | Myasthenic Crisis (11 marks)

A 36-year-old woman with known myasthenia gravis (treated with pyridostigmine 60 milligrams orally every 4 hours) presents with progressive weakness, diplopia, dysphagia, and increasing shortness of breath over 24 hours. She has had a recent upper respiratory tract infection. On examination, she has bilateral ptosis, weak neck flexion, and difficulty swallowing her saliva. Her vital signs are: heart rate 110 beats per minute, blood pressure 130/85 millimetres of mercury, respiratory rate 32 breaths per minute (shallow, paradoxical breathing), peripheral oxygen saturation 92 percent on room air, temperature 37.4 degrees Celsius. Forced vital capacity is 12 millilitres per kilogram.

a) Distinguish myasthenic crisis from cholinergic crisis (3 features). (3 marks)

b) State 4 management priorities for myasthenic crisis. (4 marks)

c) List 4 medications to AVOID in myasthenia gravis. (4 marks)

Question 15 | Cauda Equina Syndrome (12 marks)

A 52-year-old man with a history of metastatic prostate cancer presents to your emergency department with a 24-hour history of severe lower back pain radiating bilaterally into both legs, urinary retention, and saddle anaesthesia. On examination, he has bilateral lower-limb weakness (Medical Research Council 3/5), decreased sensation in the perineal region, and reduced anal tone. Bladder scan reveals 800 millilitres of retained urine.

a) List 4 features of cauda equina syndrome. (4 marks)

b) List 4 emergency department management priorities. (4 marks)

c) List 4 differential diagnoses for cauda equina syndrome. (4 marks)

Question 16 | Bell's Palsy and Differentials (10 marks)

A 38-year-old man presents to your emergency department with sudden-onset right-sided facial weakness that he noticed on waking this morning. He is unable to close his right eye fully, has drooping of the right side of his mouth, and difficulty drinking. He has no other neurological symptoms, no headache, no recent illness, no rash, no recent travel. Examination confirms a complete right-sided facial weakness (House-Brackmann grade VI) involving both upper and lower face, including loss of the forehead wrinkle and weak eye closure. The remainder of his neurological examination is normal.

- a)** List 3 features distinguishing peripheral 7th nerve palsy from a central (upper-motor-neurone) lesion. (3 marks)

- b)** List 4 causes of peripheral 7th nerve palsy other than idiopathic Bell's palsy. (4 marks)

- c)** State 3 components of management AND state the natural history. (3 marks)

Question 17 | Delirium in the Elderly (12 marks)

An 82-year-old woman from a residential aged-care facility is brought to your emergency department by ambulance with increasing confusion and agitation over the past 48 hours. The carers report she is combative, intermittently disorientated, and visually hallucinating. She has a history of treated hypertension, atrial fibrillation (on apixaban), and type 2 diabetes mellitus. Her premorbid Mini-Mental State Examination two weeks ago was 24/30. Her vital signs are: heart rate 105 beats per minute, blood pressure 145/85 millimetres of mercury, respiratory rate 22 breaths per minute, peripheral oxygen saturation 95 percent on room air, temperature 37.8 degrees Celsius.

a) List 4 features distinguishing delirium from dementia. (4 marks)

b) List 5 diagnostic categories for organic delirium AND give an example of each (be specific to this patient). (5 marks)

c) List 3 immediate management priorities specific to this delirious patient. (3 marks)

Question 18 | Ventriculo-Peritoneal Shunt Malfunction (11 marks)

An 18-year-old male with a known history of childhood hydrocephalus (treated with ventriculo-peritoneal shunt inserted at age 10, last revised 3 years ago) is brought to your small rural emergency department by his parents. They report he has had increasing headache and vomiting for 2 days and is now confused. Examination reveals: temperature 37.3 degrees Celsius (per axilla), heart rate 114 beats per minute (regular), blood pressure 140/70 millimetres of mercury, Glasgow Coma Score 14 (E3 V5 M6). The nearest tertiary neurosurgical centre is 150 kilometres away.

a) List 4 differential diagnoses related to his shunt. (4 marks)

b) List 4 investigations with rationale. (4 marks)

c) State 3 management priorities given the remote setting. (3 marks)

Question 19 | Spinal Epidural Abscess (11 marks)

A 48-year-old man with a history of intravenous drug use presents to your emergency department with 7 days of progressive severe back pain, fever, and now lower-limb weakness. On examination, he has exquisite tenderness over the L3 spinous process, fever 38.6 degrees Celsius, heart rate 110 beats per minute, blood pressure 105/65 millimetres of mercury. Bilateral lower-limb weakness (Medical Research Council 3/5) with hyperreflexia and bilateral up-going plantar responses, and a sensory level at L1. He is haemodynamically stable but clearly in significant discomfort.

a) List 4 risk factors for spinal epidural abscess. (4 marks)

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

c) List 3 features of the classical triad AND state the diagnostic challenge. (3 marks)

Question 20 | Carotid Artery Dissection (9 marks)

A 35-year-old previously fit woman presents to your emergency department with sudden-onset severe right-sided neck pain associated with right Horner's syndrome (right partial ptosis, miosis, anhidrosis), headache, and pulsatile tinnitus that started while she was at her gym this morning. She had a recent viral illness 1 week ago. Her vital signs are within normal limits. Neurological examination reveals only the Horner's syndrome with no other focal deficits.

a) List 3 features supporting carotid artery dissection. (3 marks)

b) State the imaging modality of choice AND describe expected findings. (3 marks)

c) State 3 management priorities. (3 marks)

Question 21 | Behavioural Change with Organic Cause (11 marks)

A 60-year-old man is brought to your emergency department by ambulance after motorists reported him running among traffic with abnormal behaviour. He is agitated and disoriented. He has a known history of type 2 diabetes mellitus (on metformin and gliclazide) and hypertension. He has no known psychiatric history. Vital signs: heart rate 115 beats per minute, blood pressure 165/95 millimetres of mercury, respiratory rate 24 breaths per minute, peripheral oxygen saturation 96 percent on room air, temperature 37.6 degrees Celsius, capillary glucose 3.2 millimoles per litre.

- a)** List 6 historical features that would support an organic cause for the patient's presentation. (6 marks)

- b)** List 3 investigations with rationale relevant to this patient. (3 marks)

- c)** List 2 drug options for chemical sedation if verbal de-escalation fails AND the patient remains a danger. (2 marks)

Question 22 | Idiopathic Intracranial Hypertension (9 marks)

A 29-year-old obese woman (body mass index 38) presents to your emergency department with a 3-week history of progressively worsening headache, transient visual obscurations, and pulsatile tinnitus. She has no significant past medical history but recently started a course of doxycycline for acne. On examination she has bilateral papilloedema on fundoscopy, a Glasgow Coma Score of 15, and otherwise normal neurological examination. Vital signs are normal. Computed tomography of the brain is unremarkable.

a) List 3 risk factors for idiopathic intracranial hypertension. (3 marks)

b) Describe the diagnostic workup. (3 marks)

c) State 3 components of management. (3 marks)
